

**FIRST POINT PREVALENCE, KNOWLEDGE AND PREVENTIVE PRACTICES
AGAINST HYPERTENSION AMONG POLICE OFFICERS IN IBADAN NORTH
LOCAL GOVERNMENT AREA OF OYO STATE**

BY

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ABSTRACT

Hypertension also known as high blood pressure is one of the most dangerous risk factors for heart disease and a major global public health challenge that have been identified as the leading risk factor for cardiovascular morbidity and mortality. Occupation is one of the important risk factors of hypertension especially among emergency responders such as Police officers with the second highest prevalence of hypertension (26%) among occupational groups, yet they had some of the lowest rates of awareness (51%), treatment (79%) and control (48%). This study was therefore designed to investigate the First point prevalence, Knowledge and Preventive Practices against hypertension among Police officers in Ibadan North local government area of Oyo state.

The study was a descriptive cross-sectional study using validated semi-structured self-administered questionnaire. Using a multi-stage sampling technique, 170 Police officers consented to participate in the study. The prevalence of hypertension and abdominal obesity were assessed with $\geq 140/90$ mmHg and ≥ 80 cm for female and ≥ 94 cm for male respectively. A nurse conducted the blood pressure (BP) on the left upper arm using a digital Omron HEM 8712 blood pressure monitor. The measurements were taken in the sitting position with exposed outstretched left arm on a table after resting for at least 5 minutes. BP was measured twice for each person in the same sitting position with at least two minutes interval between measurements. The average of both measurements was used for the evaluation in this study. The waist circumference (in centimetres) was measured using a non-stretchable measuring tape at the smallest horizontal girth between the coastal margins and iliac crest at the end of expiration while in a standing position. A 24-point knowledge scale was used to assess the knowledge of hypertension; knowledge score >17 was rated good, KS of $>11 \leq 17$ was considered fair ≤ 11 was rated as poor knowledge. Also, a 13-point practice scale was used to determine hypertension preventive practices; practice score ≤ 9 represented unhealthy practice while practice score >9 represented healthy practice. Data collected were analysed using descriptive and inferential statistics at $p < 0.05$ level of significance.

Mean age of respondents was 36.7 ± 8.4 years. Majority were males (64.7%), married (70.0%), Yoruba (74.8%) and Christians (71.2%). The lowest and highest ranks were Police constable and Chief Superintendent of Police respectively. The first point prevalence of abdominal obesity and hypertension was 51.7% and 17.5% respectively among the respondents. Health workers were the major source of information to respondents. Respondents, (25.9%) had good knowledge, 47.6%

had fair knowledge while (26.5%) had poor knowledge of hypertension. About two-third (68.2%) had unhealthy preventive practices against hypertension (consumption alcohol, foods high in salt and fat content, tobacco smoking etc.).

High prevalence, fair knowledge and unhealthy practices against hypertension were documented among the study population. Health education, policy formulation and implementation and advocacy should be used to motivate Police officers for healthy practices against hypertension such as regular physical exercise, regular medical check-up, consumption of fruits and vegetables and avoidance of alcohol, tobacco and consumption of fatty and salty foods.

Keywords: Hypertension, First point prevalence, Preventive practice, Police officers

Word count: 497

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DEDICATION

This work is dedicated to the Almighty God; the One in whom I live and move and have my being.

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HUSSAIN, Oluwatobi James

CERTIFICATION

This is to certify that this study was conducted by HUSSAIN, Oluwatobi James in the department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan, Nigeria under my supervision.

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TABLE OF CONTENTS

Title page	i
Abstract	ii
Dedication	iv
Acknowledgement	v
Certification	vi
Table of contents	vii
List of Tables	x
List of Figures	xii
Appendices	xiii
Glossary of Abbreviations	xiv
Definition of terms	xv
CHAPTER ONE	INTRODUCTION
1.1 Background to the study	1
1.2 Statement of the problem	3
1.3 Justification	4
1.4 Research Questions	5
1.5 General Objectives	6
1.6 Specific Objectives	6
1.7 Hypotheses	6
CHAPTER TWO	LITERATURE REVIEW
2.1 Nature and extent of burden of hypertension	8
2.2 Prevalence of hypertension	9
2.3 Knowledge of hypertension	12

2.4	Risk factors of hypertension	14
2.5	Preventive practices against hypertension	16
2.6	Sources of information on hypertension	17
2.7	Theoretical framework on hypertension	19
2.8	Conceptual framework on hypertension	21

CHAPTER THREE

METHODOLOGY

3.1	Study design	22
3.2	Study area	22
3.3	Study population	23
3.4	Inclusion criteria	23
3.5	Exclusion criteria	23
3.6	Sample size	23
3.7	Sampling technique	24
3.8	Instrument for data collection	26
3.9	Validation of instrument	26
3.10	Reliability of instrument	27
3.11	Data collection procedure	27
3.12	Data management and analysis	28
3.13	Ethical consideration	28
3.14	Study limitation	29

CHAPTER FOUR

RESULTS

4.1a	Socio-demographics	30
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4.1b	Prevalence of abdominal obesity	35
4.2	Prevalence of high blood pressure	37
4.3	Sources of information on hypertension	39
4.4	Knowledge of hypertension	43
4.5	Hypertension preventive practices	48
4.6	Statistical tests of hypotheses	51
4.7	Logistic regression for significant associations	67
CHAPTER FIVE DISCUSSIONS OF FINDINGS		
5.1.1a	Respondents' socio-demographics characteristics	73
5.1.1b	Prevalence of abdominal obesity	73
5.1.2	First point prevalence of hypertension	74
5.1.3	Sources of information on hypertension	77
5.1.4	Knowledge of hypertension	78
5.1.5	Hypertension preventive practices	79
5.2	Implication of study for health promotion and education	81
5.3	Conclusion	83
5.4	Recommendations	84
	References	85
	Appendices	96

LIST OF TABLES

Table 3.1	Population of Police officers in number of respondents by division	
	number of respondents Ibadan North LGA of Oyo state	25
Table 4.1	Socio-demographic information of respondents	31
Table 4.2	First point prevalence of blood pressure among respondents	38
Table 4.3	Respondents' sources of information on Hypertension	40
Table 4.4	Respondents' knowledge of hypertension	46
Table 4.5	Respondents' hypertension preventive practices	49
Table 4.6.1	Respondents' socio-demographics and prevalence of obesity	52
Table 4.6.2:	Respondents' socio-demographics and prevalence of hypertension	54
Table 4.6.3:	Respondents' socio-demographics and knowledge of hypertension	56
Table 4.6.4	Respondents' socio-demographics and preventive practices against Hypertension	58
Table 4.6.5	Respondents' preventive practices against hypertension and prevalence of hypertension	60
Table 4.6.6	Respondents' preventive practices against hypertension and prevalence of abdominal obesity	62
Table 4.6.7	Respondents' knowledge of hypertension and hypertension preventive Practices	64
Table 4.6.8	Respondents' prevalence of hypertension and prevalence of abdominal Obesity	66
Table 4.7.1	Logistic regression analysis between respondents' sex, age and rank	

	against prevalence of abdominal obesity	68
Table 4.7.2	Logistic regression analysis between respondents' age, rank and marital status against first point prevalence of hypertension	70
Table 4.7.3	Logistic regression analysis between respondents' level of education and knowledge of hypertension	72

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LIST OF FIGURES

Figure 2.1	Conceptual framework on hypertension	21
Figure 4.1	Respondents' age (In years)	32
Figure 4.2:	Respondents' level of education	33
Figure 4.3:	Respondents' average monthly income (In Naira)	34
Figure 4.4:	Abdominal obesity by sex of respondents	36
Figure 4.5:	Respondents' last time of receipt of information on hypertension	41
Figure 4.6:	Respondents' place of receipt of information on hypertension	42
Figure 4.7:	Respondents' Knowledge of Hypertension	47
Figure 4.8:	Respondents' hypertensive preventive practices	50

APPENDICES

Appendix 1	Questionnaire	96
Appendix 2	Allotted points	101
Appendix 3	Letters of Recommendation	104
Appendix 4	Ethical approval	106

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GLOSSARY OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
BMI	Body Mass Index
BP	Blood Pressure
CDC	Centre for Disease Control and Prevention
CHD	Coronary Heart Disease
CVD	Cardiovascular Disease
DALYs	Disability Adjusted Life Years
DBP	Diastolic Blood Pressure
HIV	Human Immunodeficiency Virus
JNC	Joint National Committee
LGA	Local Government Area
SBP	Systolic Blood Pressure
WHO	World Health Organization

DEFINITION OF TERMS

Hypertension: This is a blood pressure of 140/90 mmHg (millimetres of mercury) or more, based on at least two readings on separate occasions (Sen *et al.* 2015).

First point prevalence: This is the proportion of Police officers that have hypertension at the time of this study.

Knowledge: Knowledge is the intellectual understanding of a particular concept or skill (Kaliyaperumal, 2004). In this study, it refers to an individual's understanding of the definition, causes, preventive practices, consequences and treatments of hypertension.

Preventive practices: these are activities repeatedly carried out to hinder or slowdown the occurrence of a disease or infection. It refers to the activities carried out to prevent hypertension among individuals.

Police officers: There are officers and men of the Nigeria Police Force currently working in the Police divisional headquarters in Ibadan North local government area of Oyo state.

CHAPTER ONE

1.0

INTRODUCTION

1.1 Background to the study

Hypertension also known as high blood pressure occurs as a result of long duration of abnormal pressure of the main arteries (Cunha and Mark, 2011). It is one of the most dangerous risk factors for heart disease (Centre for Disease Control and Prevention (CDC), 2015) and a major global public health challenge that have been identified as the leading risk factor for cardiovascular morbidity and mortality (WHO, 2002; Kearney, Whelton, Reynolds, Muntner, Whelton and He, 2004). It is a pivotal determinant of cardiovascular complications such as coronary heart disease, myocardial infarction, stroke or renal insufficiency. It affects approximately one billion people worldwide (that is 4.5% of the current global disease burden). Hypertension causes 7.1 million annual global preventable premature deaths (Kearney *et al.*, 2004; Bhatt, Steg and Ohman, 2006, Gunaranthne, Patel, Potluri, Gill and Hughes, 2008). The prevalence of this disease varies per countries. Overall, global prevalence of hypertension among adult was estimated to be 26.6% in men and 26.1% in women (Kearney *et al.*, 2004). The number of adults with hypertension in 2025 has been predicted to increase by 60% to a total of 1.56 billion adults (Kearney *et al.*, 2004; WHO, 2010).

In sub-Saharan Africa, it is the most rapidly rising cardiovascular disease affecting over Twenty million people (Kadiri, 2005). Hypertension has been found to be one of the most deadly non-communicable diseases in Nigeria (Akinkugbe, 2003). The prevalence rate of hypertension in Nigeria based on the standard measurement of greater than or equal to 140 mmHg Systolic and greater than or equal to 90 mmHg diastolic blood pressure among people older than fifteen years old is 25% (JNC 7, 2003 Standard Treatment Guidelines, 2008). This 25% prevalence rate is too high for a developing country like Nigeria at this time and poses a significant burden on the limited health facilities and resources.

Studies by Kelly (2010), Turnbull (2003) and Yusuf *et al.*, (2004), demonstrated the effects of a number of risk factors for heart disease in relation to hypertension. These are divided into non-modifiable and modifiable. Non-Modifiable factors include: age, gender, family history, and ethnicity. The modifiable factors include: High blood pressure, high serum cholesterol levels,

tobacco smoking, excessive alcohol consumption, obesity, physical inactivity, psychosocial factors, diabetes mellitus and air pollution. While the individual contribution of each risk factor varies between different communities or ethnic groups the consistency of the overall contribution of these risk factors to epidemiological studies is remarkably strong. Some of these risk factors, such as age, gender or family history, are immutable. However, many important cardiovascular risk factors are modifiable by lifestyle change, drug treatment, social change or preventive practices. The Seventh Report of the Joint national Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure 2003 stated the following to be the preventive measures that can be done to mitigate the modifiable risk factors of hypertension. These include: Reduce weight (maintain normal body weight with BMI of 18.5-24.9Kg/m²), Adopt dietary approaches to stop Hypertension (Diet rich in fruit, vegetables, and low-fat dairy; reduced saturated and total fat content), Reduce dietary sodium (≤ 2.4 g/day), Increase physical activity (Aerobic activity >30 min/day most days of the week), Moderate alcohol consumption (Men: ≤ 2 drinks/day Women: ≤ 1 drink/day).

Occupation is one of the important risk factors of hypertension. In particular, emergency responders or protective service workers (e.g., fire fighters, police officers) had the second highest prevalence of hypertension (26%) among occupational groups, yet they had some of the lowest rates of awareness (51%), treatment (79%) and control (48%) (Davila, 2012).

There are several behavioural, physical and psychological factors that predispose emergency responders to hypertension. The strenuous work circumstances may elevate the blood pressure among this population and in turn precipitate the coronary disease. The work profile of such people involves long stretches of relative idleness, punctuated by unpredictable and stressful bursts of high intensity activities that demand solving and tackling life threatening problems (Kales, Tsismenakis, Zhang and Soteriades, 2009). This produces adrenergic rush and higher demands on cardiovascular systems. Persons known as Prehypertensives (BP= 120-139/80-89 mmHg) are more prone to develop hypertension (Kales, Tsismenakis, Zhang and Soteriades, 2009).

The major factors that evoke the hypertension in Police officers are poor nutrition (sometimes attributable to limited opportunities for healthy food), long hours of duty, shift work, sleep deprivation, noise exposure, posttraumatic stress disorder (PTSD) and inadequate knowledge (Wolk, Gami, Garchia-Touchard and Somers, 2005). Improper and unhealthy diet leads to elevated

blood pressure. Police officers commonly spend their days by working overtime and may therefore experience sleep deprivation (Jennings, Muldon and Hall, 2007). In addition, the responsibility of public safety work may lead to stress and in turn increase the likelihood of inadequate sleep. The relation between sleep and metabolic syndrome has been illustrated by various studies documenting associations between sleep disturbance and insulin resistance and weight gain, hypertension and cardiovascular disease (Kitamura, Onishi, Dohi, Okinaka, Ito, Isaka and Nakano, 2002). Fogari, Zoppi, Corradi, Marasi, Vanasia and Zanchetti (2001) reported that blood pressures can be elevated because of high noises due to siren, and mechanised rescue machines.

1.2 Statement of the problem

Coronary heart disease (CHD) was previously considered to be rare in sub-Saharan Africa, but its prevalence is on the increase and now ranks 8th among the leading causes of deaths in men and women in the region (Steyn, Sliwa, Hawken, Commerfor, Onen and Damasceno, 2005). The World Health Organization (WHO) estimated that in 2005, CHD caused approximately 361,000 deaths in the African region, and current projections suggest that this number will nearly double by 2030. More recent projections of mortality and burden of disease suggest that by 2030, CHD will become the leading cause of death in low income countries, contributing 13.4% of total deaths, against the 13.2% from HIV/AIDS. In addition, CHD is projected to rank fifth among the 10 leading causes of Disability Adjusted Life Years (DALYs) in low-income countries by 2030 (WHO, 2006).

Indeed, it has already been projected that up to three quarters of the world's hypertensive population will be in economically developing countries by the year 2025 (Kearney *et al.*, 2005). With increased prevalence of hypertension and the resultant greater economic and health burden, Nigeria will feel the impact mostly due to its population size. The prevalence of hypertension is high in Nigeria and will continue to be on increase (Akinkugbe, 2003). Based on a meta-analysis of prevalence rate of hypertension in Nigeria population, a study carried out by Obinna and Nze (2011) revealed that the prevalence of hypertension in Nigeria is at 22% with a gender difference (males have a higher prevalence than the females). Adediran, Okpara, Adeniyi and Jimoh (2013) reported an overall prevalence of hypertension in Nigeria to be 22.7%. They found out that hypertension is more prevalent among urban than rural dwellers with rate of 32.7% and 12.9% respectively ($p < 0.001$). In a recent study published by the Journal of Cardiology on the prevalence

of hypertension and associated factors among residence of Ibadan North-local government area of Nigeria, Ajayi, Sowemimo, Akpa and Ossai (2016) reported an overall prevalence of hypertension to be 33.1% (male 36.8% and female 31.1%) among the study population. The proportion of self-reported hypertension was 11.1% while 5.1% were currently on anti-hypertension medication. This high prevalence rate in the study was reported to be due to the poor awareness of the prevailing disease. Also, other studies have reported increase in prevalence rate of hypertension among the general populations.

The prevalence of hypertension [systolic blood pressure (SBP) ≥ 140 mmHg, diastolic blood pressure ≥ 90 mm Hg, or use of antihypertensive drugs] was observed among 32.5% of policemen, which was significantly higher when compared with the civilians ($P < 0.01$) in a study conducted on prevalence of hypertension and its associated risk factors among Kolkata-based policemen in West Bengal, India which is also a developing country like Nigeria (Sen, Das, Basu, and Datta, 2015). In Nigeria, Police officers are one of the emergencies responders and due to the nature of the occupation; they are exposed to the risk factors of hypertension such as poor nutrition, sleep deprivation and sudden increase in the adrenaline level due to emergencies that need urgent response. This exposure to the risk factors of hypertension is a source of concern which requires necessary investigations. Therefore, this study was conducted to determine the first point prevalence of hypertension, knowledge and preventive practices among Police officers in Ibadan North Local government area of Oyo state, Nigeria.

1.3 Justification

Taking into account the importance of emergency responders to our communities and society at large, it is our utmost duty to see that our public safety professionals should be made aware of hypertension and its adequate control and potential benefits of prevention of complications and take appropriate actions to promote the cardiovascular wellness programmes. Studies on prevalence of hypertension and its awareness among the general population are well documented in some West Africa countries (Cooper, Rotimi, Ataman, McGee, Osotimehin, Kadiri *et al.*, 1997; Cappuccio, Micah, Emmett, Kerry, Antwi, Martin *et al.*, 2004) including Nigeria (Ogah, 2006; Ekwunife, Udeogaranya and Nwatu, 2010). However, there are limited studies about this subject on emergency responders such as Police officers in Nigeria.

Studies have also revealed that to adequately plan a health promotion intervention needed to effectively reduce the high prevalence of hypertension, there is the need to investigate further on the prevalence, knowledge and preventive practices against hypertension among varying groups of the general population so as to adequately ascertain and focus on specific groups. This is why this study is focusing on the first point prevalence, knowledge and preventive practices of Hypertension among Police officers in Ibadan North Local Government of Oyo State Nigeria. Police officers are the focus because of their importance to the society in enforcing law and order also protecting the masses from internal assaults. Ibadan North local government area was selected because it is the second largest and most civilized local government area in Oyo state and western lifestyle is more prevalent.

Conducting this study among this population will therefore serve to inform the necessary stakeholders on how to better equip the Police officers with knowledge and practices to live a healthy life and to prevent diseases especially the non-communicable diseases so as to be fit to deliver quality police service, partner with other relevant security agencies, participate in efforts aimed at addressing the root causes of crime which will invariably lead to the development of the society.

1.4 Research questions

The study provided answers to the following questions:

- i. What is the first point prevalence of hypertension among police officers in Ibadan North local government area of Oyo state?
- ii. What are the sources of information on hypertension and its preventive practices among Police officers in Ibadan North local government area of Oyo state?
- iii. What is the level of knowledge on the definition, causes (risk factors), symptoms, preventive practices, consequences and treatment of hypertension among Police officers in Ibadan North local government area of Oyo state?
- iv. What are the preventive practices against hypertension among Police officers in Ibadan North local government area of Oyo state?

1.5 General objective:

To investigate the First point prevalence, Knowledge and Preventive practices against Hypertension among Police officers in Ibadan North local government area of Oyo State, Nigeria

1.6 Specific objectives:

The specific objectives were to:

- i. determine the first point prevalence of hypertension among Police officers in Ibadan North local Government area of Oyo state.
- ii. identify sources of information available on preventive measures against hypertension among Police officers in Ibadan North local government area of Oyo State.
- iii. assess the level of knowledge on the definition, risk factors, symptoms and preventive practices and consequences of hypertension among Police officers in Ibadan North local government area of Oyo state.
- iv. establish the preventive practices against hypertension among Police officers in Ibadan North local government area of Oyo state.

1.7 Research hypotheses

The null hypotheses formulated for this study were:

HO1: There is no significant association between socio-demographics characteristics of Police officers and prevalence of abdominal obesity in Ibadan North local government area of Oyo state.

HO2: There is no significant association between socio-demographics characteristics of Police officers and first point prevalence of hypertension in Ibadan North local government area of Oyo state.

HO3: There is no significant association between socio-demographics characteristics of Police officers and knowledge of hypertension in Ibadan North local government area of Oyo state.

- HO4:** There is no significant association between socio-demographics characteristics of Police officers and preventive practices against hypertension in Ibadan North local government area of Oyo state.
- HO5:** There is no significant relationship between preventive practices against hypertension and first point prevalence of hypertension in Ibadan North local government area of Oyo state.
- HO6:** There is no significant relationship between preventive practices against hypertension and prevalence of abdominal obesity in Ibadan North local government area of Oyo state.
- HO7:** There is no significant relationship between preventive practices against hypertension and knowledge of hypertension in Ibadan North local government area of Oyo state.
- HO8:** There is no significant relationship between abdominal obesity and first point prevalence of hypertension in Ibadan North local government area of Oyo state.

CHAPTER TWO

2.0

LITERATURE REVIEW

2.1 Nature and extent of burden of hypertension

Blood pressure is the force that needs to be maintained to enable blood circulates to all parts of the human body. Blood is the medium by which nutrients and oxygen are sent to all parts of the body. The pressure is generated mostly by the pump action of the heart, a vital organ about the size of the clenched fist of a person. Since the blood flow needs to be maintained without any interruptions, the force is maintained during the relaxation phase of the heart by the elastic recoil of the major arteries thereby providing a continuous flow and supply of vital nutrients to all tissues of the body. Blood pressure is recorded in two parts: systolic (the upper figure) – during the contractile phase of the heart, and diastolic (the lower figure) – during the relaxation stage. Blood pressure is said to be high when it exceeds an accepted normal level. Persell (2011) defines hypertension as “a systolic blood pressure ≥ 140 mmHg or diastolic blood pressure ≥ 90 mmHg. High blood pressure is also termed hypertension. Hypertension is said to be present if the blood pressure is persistently at or above 140/90 mmHg (Onwubere, 2005). Blood pressure is measured using an instrument called sphygmomanometer.

The International Society of Hypertension and World Health Organization defines hypertension as a sustained blood pressure of $\geq 140/90$ mmHg. Hypertension or high blood pressure is a very common and serious condition that can lead to or complicate many health problems. The risk of cardiovascular morbidity and mortality is directly correlated with blood pressure. Risks of stroke, Myocardial infarction, angina, heart failure, kidney failure or early death from a cardiovascular cause are directly correlated with blood pressure (BP). Hypertension is often called "the silent killer" because it generally has no symptoms until serious complications develop. This leads to potentially fatal conditions and incapacitating disorders, such as coronary heart disease and stroke. There are two general types of hypertension. One is the essential or primary hypertension which the condition has no known cause. This form of hypertension cannot be cured, but it can be controlled and managed. More than 90% of individuals with hypertension have essential hypertension (Siyad, 2011). Genetic factor may play an important role in the development of essential hypertension. Other behavioural risk factors can also be a cause of essential hypertension. When hypertension is caused by another condition or disease process, it is called secondary

hypertension. Fewer than 10% of patients have secondary hypertension; where either a co-morbid disease or drug is responsible for elevating BP. Obesity, heredity and life style also play a role in the development of hypertension. When symptoms do occur, they can differ between individuals depending on such factors as the level of blood pressure, age, underlying cause, medical history, the presence of complications and general health.

Although hypertension is a common health problem with sometimes devastating consequences, it often remains asymptomatic until late in its course. Hypertension is most time generally symptomless, but increases the risk of various other cardiovascular diseases like stroke, heart attack and non-cardiovascular diseases like renal damage, end stage of renal failure, etc.

2.2 Prevalence of Hypertension

Prevalence is defined as the number of instances of a given disease or other conditions in a given population at a designated time (Last, 1983). Prevalence rates; most times represent cross-sectional events, noted at a single point in time for the state of the group under study (Jenicek and Cleroux, 1982; Feinstein, 1985). This is called point prevalence. Period prevalence refers to the number of cases that occur during a specified period of time, e.g. 1 year (Partinen, 2011). However, this is now rarely used because it takes time to conduct a study and find all cases and in such cases it is generally possible to estimate point prevalence (which can be called just “prevalence”). The prevalence rate is given as the number of persons in the population (number of cases at a specified time/number of persons in the population at that time) (Partinen, 2011). Prevalence is different from incidence as it focuses on disease status and therefore should not be confused (Partinen, 2011).

Prevalence may be reported as a percentage (5%, or 5 people out of 100), or as the number of cases per 10,000 or 100,000 people. The way prevalence is reported depends on how common the characteristic is in the population (National Institute of Mental Health, 2019). There are several ways to measure and report prevalence depending on the timeframe of the estimate;

Point prevalence is the proportion of a population that has the characteristics at a specific point in time,

Period prevalence is the proportion of a population that has the characteristics at any point during a given period if time of interest and

Lifetime prevalence is the proportion of a population who at some point in life has ever had the characteristics (National Institute of Mental Health, 2019).

Hypertension is one of the most dangerous risk factors for heart disease (CDC, 2011). According to Delacroix (2014), 66.9 million Americans have high blood pressure, 36% of that population suffer from uncontrolled high blood pressure. Globally, the overall prevalence of hypertension in adults aged 25 years and above was 40% in 2008 (WHO, 2010). The prevalence of hypertension is increasing over the years globally. Hypertension is considered a risk factor for cardiovascular diseases and premature mortality.

Nwankwo, Tatiana. and Yoon (2013) stated that the worldwide prevalence of hypertension is 40%, while in the U.S. the prevalence of high blood pressure is 29.1%. In a study by Adediran *et al.* (2013) on the overall prevalence of hypertension, Nigeria prevalence of hypertension is at 22.7%. It was observed that the prevalence is more in the urban than rural dwellers with the rate of 32.7% and 12.9% respectively ($p < 0.001$). In another meta-analysis study of estimates of the prevalence of hypertension in Nigeria by Davies *et al.* (2016), overall prevalence of hypertension is at 28.9% where the men have 29.5% rate and the women 25.0% prevalence rate. This increase in prevalence compared with the study of Adediran *et al.* (2013) revealed that more people are having the chronic disease.

In 2008, according to World Health Organization Non-communicable Diseases Country Profiles; the prevalence of hypertension in Nigeria was estimated at 42.8%, diabetes mellitus was estimated at 8.5%, obesity was estimated at 6.5%, raised cholesterol was estimated at 16.1%, current daily smoking of tobacco was estimated at 4.6%, while the cardiovascular diseases (CVDs) accounted for an estimated 12% of all deaths in Nigeria (WHO, 2011). However, the prevalence of hypertension dropped to 18%, diabetes mellitus, 4% while obesity and smoking of tobacco increased to 8% and 6% respectively in 2015 (WHO, 2018). In a study conducted by Obinna and Cletus (2011) also reported a combined prevalence rate of hypertension at 22% with 95% confidence interval of 17% to 27%. The prevalence was reported to range from a minimum of 12.4% to a maximum of 34.8%. There was also gender difference with respect to prevalence of hypertension as males had higher prevalence of hypertension compared to females. This above studies showed that prevalence of hypertension is high in Nigeria.

A comparison of blood pressure patterns of teaching and non-teaching staff of a Nigerian university by Adedoyin, Awotidebe, Borode, Ativie, Akindele, Adeyeye and. Johnson (2016) revealed that the prevalence of high blood pressure was 34.9% with a distribution of teaching to

non-teaching rate of 20.0% and 14.8% respectively. It also revealed that the academic staff has significantly higher systolic blood pressure than non-teaching staff ($t = 2.268$; $p = 0.025$). However, there was no significant difference in the diastolic blood pressure in both groups ($t = 1.326$; $p = 0.187$). There were significant correlation between blood pressure and each of weight, body mass and waist circumference in both group ($p < 0.05$). In another study by Ajayi and Oyeniyi (2016), an overall prevalence of hypertension was reported to be 33.1% (male 36.8% and female 31.1%).

In a cross sectional study carried out by Awosan, Ibrahim, Sabir and Ejimodu (2013), on awareness and prevalence of risk factors of coronary heart disease among teachers and bankers in Sokoto state revealed that hypertension was more prevalent among teachers (33.3%), than bankers (22.9%), this could be related to the fact that the teachers were older and had higher prevalence of other co-morbid conditions such as obesity and diabetes mellitus, but the difference was not statistically significant ($\chi^2 = 1.950$, $p = 0.107$). In logistic regression models, the variables that predicted hypertension were; overweight/obesity (OR = 2.5, 95% CI= 0.018 – 0.153), age (OR = 2.3, 95% CI = 0.001 – 0.018), and diabetes mellitus (OR = 2.3, 95% CI = 0.060 – 0.468). This study demonstrated poor awareness and high prevalence of CHD risk factors among bankers and teachers in Sokoto. Public health education and promotion of healthy lifestyles are suggested to reduce this burden.

In a cross sectional survey carried out in Benue state University on the prevalence and awareness of hypertension among staff and students by (Chinyere, Mwuese and Ara, 2015) revealed the overall prevalence of hypertension in the study population to be 15.7%. It was more prevalent in males than females with rates of 16.5% and 14.1% respectively but the difference was not statistically significant ($p=0.500$). The prevalence from this study was different from what was gotten in a similar study in a south western university community in Nigeria where the prevalence rate was 21% (Erhun, Olayinwola, Agbani and Omotosho, 2005).

A higher prevalence rates have been found in population of non-tertiary institutionalized studies. A study carried out in Benin City, Nigeria among motorcycle riders, revealed a prevalence of 25% (Ibhazehiebo, Iyawe and Ighoroje, 2007) and another similar study was conducted in Kumasi Ghana among similar populations and a prevalence of 28.7% was revealed (Cappuccio *et al.*, 2004). In 2000, 972 million people were reported to have hypertension, a prevalence rate of 26.4% and this number is expected to increase to 1.54 billion by 2025 (Kearney *et al.*, 2005). In sub-Saharan Africa, the overall prevalence of hypertension in 2008 was estimated at 16.2% (95% CI: 14.2 -

20.3) and in the Africa region, about 74.7 million (95% CI: 65.2 to 93.4 million) individuals were estimated hypertensive (Ogah, 2006 and Ogah *et al.*, 2012). In addition, a review undertaken in Nigeria in 2012 found the overall prevalence of hypertension ranged from 8 to 46.4% depending on the study target population, type of measurement and cut-off value used for defining hypertension (Ogah *et al.*, 2012).

2.3 Knowledge of Hypertension

The control of hypertension requires awareness, knowledge and monitoring of the disease through screening. Hypertension has been found to affect about 68 million Americans and a major reason for visit to doctors (Yoon *et al.*, 2012). In Nigeria, it is the commonest non-communicable disease with over 4.3 million Nigerians above the age of 15 years classified as being hypertensive (systolic BP-160 mmHg and diastolic BP- 90 mmHg) using the erstwhile national guidelines (Kadiri, Walker, Salako and Akinkugbe, 1999). According to the Seventh Report of the Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (2004) much of the hypertension, cardiovascular, renal diseases, and stroke might be prevented if the rise in blood pressure with age could be prevented or reduced and if there is increase in knowledge about the disease among the population.

A study by Oliveria, Chen, McCarthy, Davis and Hill (2005) on knowledge of hypertension among a group of hypertensive patients revealed that patients are knowledgeable about hypertension in general but are less knowledgeable about specific factors related to their condition and specifically their own level of blood pressure control. Some of the patients did not know the significance of systolic and diastolic blood pressure. The patients were unaware that the systolic blood pressure are important in blood pressure control and reported that physicians did not emphasize the significance of high systolic blood pressure level. The patients were knowledgeable about the meaning of hypertension and the seriousness of the condition to their health.

Assessment of knowledge of hypertension among adult African-Americans by Twum (2015) revealed a lack of knowledge about hypertension and other related disease. Godfrey and Sarah (2010) in a study carried out in Auchi, Nigeria, the knowledge of patients used in the study was found to be very low and their attitudes to treatment were found negative. This was contrary to the study by Mbuya, Fredrick and Kundi (2014) in Tanzania among teaching staff of higher learning institution. They found out that the majority of the teaching staff is aware of hypertension and

diabetes. However, knowledge of the causes, signs and symptoms, risk factors and complication was not as expected. Ali and Jimoh (2011) found out that members of staff of university of Ibadan, Nigeria demonstrated a relatively high level of knowledge about the complications associated with Hypertension but knowledge about the risk factors and attitude towards the illness was still low. However, level of education significantly influences awareness of complication at (0.05) and knowledge of risk factors (at 0.05).

In a study conducted among entry year medical students, knowledge regarding risk factors of hypertension such as tobacco use, high cholesterol, reduced physical activity and obesity were 71.8%, 73.6%, 47.3% and 73.6% respectively. It was also noted that knowledge was very less concerning some of the risk factors of hypertension among the medical students of gulf region (Shaikh, Mathew, Sreedharan, Muttappallymyalil, Sharbatti and Basha, 2011). In another study done in Riyadh, Saudi Arabia to assess knowledge of primary health care physicians; it identified that currently working physicians had pitiable amount of knowledge especially one third of doctors knew even the definition of hypertension (Al-Khashman, 2001).

In a study done in Pakistan among hypertensive patients concluded that knowledge about hypertension in hypertensive patients was not adequate and in patients with uncontrolled hypertension, it was alarmingly poor due to lack of awareness and control (Aysha, Saniya, Saima, Zahra and Aamir, 2012). It is also pointed that the lack of knowledge among patients is due to improper health education system through media, and several other factors. In a cross sectional survey carried out in Benue state University on the prevalence and awareness of hypertension among staff and students by (Chinyere, Mwuese and Ara, 2015) showed the awareness of hypertension to be 21.6% while the majority of the hypertensive were unaware of their hypertensive status (78.4%) and 69.9% of the hypertensive had not checked their blood pressure for more than 6months.

In a study conducted by Shaikh *et al.*, (2011) among entry year medical students in the university in Ajman, UAE found good knowledge regarding risk factors of hypertension such as tobacco use 71.8%, high cholesterol 73.6%, reduced physical activity 47.3%, obesity 73.6% respectively, whereas deficiencies in knowledge were noted in medical students concerning some of the risk factors of hypertension in gulf region.

According to Akter, Assadi, Singh, Abaszadhezouri, Lamichhane, Ahadi, Mathew, Muttappallymyalil and Gopakumar (2014), in a study carried out among entry level university medical students in Ajman, UAE on their sources of information and level of knowledge on

hypertension revealed knowledge regarding risk factors was smoking 21.7%, high cholesterol 83.2%, physical inactivity 77% and obesity 88.2%. In the present study, a major portion of participants (93.8%) correctly chose stress as a risk factor which increases the risk of hypertension.

2.4 Risk factors of Hypertension

According to the World Health Organization (WHO), a risk factor is any attribute, characteristic or exposure of an individual that increases the likelihood of developing a disease or injury. Some examples of the important risk factors are underweight, overweight, unsafe sex, high blood pressure, tobacco and alcohol consumption and unsafe water, sanitation and hygiene (WHO, 2018). Hypertension has been the most common treatable risk factor of cardiovascular disease that studies have proven to cause about 25% death globally (WHO, 2011). The risk factors of hypertension are numerous and have been found to include but not limited to sedentary lifestyles, unhealthy dietary intake, tobacco smoking, intake of alcohol, hereditary and occupational stress among others. Obesity resulting from physical inactivity has also been found to be a risk factor for the increased prevalence of hypertension (BeLue, Okoror and Iwelunmor, 2009). Different studies on blood pressure have demonstrated the effects of a number of risk factors for hypertension and for other heart disease. These risk factors are divided into non-modifiable and modifiable (Turnbull, 2003; Kelly, 2010; Yusuf, 2004).

The Non-Modifiable Risk Factors: These are in-built factors that cannot be easily changed. These include: Age, gender, family history, geographic variation and ethnicity. Some of these risk factors are immutable (Greenhalgh, Dickson and Dundar, 2009). Blood pressure generally rises with age in both male and female. The rise is steeper in the middle age and thereafter. At initial phase, pressure is more in men while in later phase, rise is more in women. Geographical variation can affect blood pressure via variable contributing factors like temperature, pulse, respiration, hypoxia, primitive condition, etc. Also, based upon survey it is now believed that hypertension may be the result of typical genetic makeup.

Modifiable Risk Factors: These are conditions that can be influenced or changed through an intervention for example through health education and enlightenment. Modifiable risk factors of hypertension include: high serum cholesterol levels, tobacco smoking, excessive alcohol consumption, obesity, physical inactivity, psychosocial factors, diabetes mellitus, and air pollution (Blumenthal, Babyak and Hinderliter, 2010). However, many important cardiovascular risk factors

are modifiable by lifestyle change, drug treatment or social change. The individual contribution of each risk factor varies between different communities or ethnic groups the consistency of the overall contribution of these risk factors to epidemiological studies is remarkably strong.

In a cross sectional study carried out by Awosan, Ibrahim, Sabir and Ejimodu (2013), on awareness and prevalence of risk factors of coronary heart disease among teachers and bankers in Sokoto state revealed that alcohol consumption was more prevalent among bankers (27.6%), than teachers (3.8%). The high prevalence of alcohol consumption observed among the bankers in this study is in concordance with that obtained by Puepet and Ohwovoriola, (2008) in a study conducted in Jos which reported a high prevalence of alcohol consumption (50%), and this could be related to the fact that most of them were Christians, and probably recently transferred from the southern part of the country where the Sharia (Islamic) law that prohibit public sales and consumption of alcohol does not exist. They further revealed the prevalence of cigarette smoking was higher among bankers (7.6%) than teachers (4.8%). Consumption of fatty foods was more prevalent among bankers (77.1%) than teachers (61.9%). Similarly, the prevalence of hypercholesterolaemia was slightly higher among bankers (41.9%) than teachers (37.1%). The high prevalence of hypercholesterolaemia obtained in this study is alarming and much higher than the prevalence of 9.6% reported by Yekeen, Sanusi and Ketiku, (2003) in a study which was carried out among hypertensive patients in Ibadan, Nigeria.

The study also revealed physical inactivity (sedentary lifestyle) was six times more prevalent among bankers (33.3%) than teachers (5.7%) (Awosan et al., 2013), this is similar to the high prevalence of sedentary lifestyle (29.6%) reported in a study among bankers in Ilorin, Nigeria by Jogunola and Awoyemi (2010). While overweight was twice as prevalent among bankers (45.7%) than teachers (22.9%) obesity was more prevalent among teachers (26.7%) compared to bankers (19.0%) (Awosan et al., 2013). The high obesity rates obtained in this study is gradually approaching the obesity rates of 33.0% in males and 36.0% in females that was reported in a study by Ogden, Carroll, Curtin, McDowell, Tabak and Flegal, (2006) among adults in the United States. According to a study by Aduroja, Isola, Akinboboye and Akinboboye (2018) on relationship of abdominal obesity and BMI with blood pressure among Osun State College of Education staff, Nigeria revealed a more significant association of Waist Circumference with BP compared to association of BMI with BP. This indicated that there was a higher chance of developing hypertension with elevated waist circumference, than with high BMI.

2.5 Preventive practices against hypertension

Prevention of hypertension is workable if its awareness and knowledge of its risk factors are increased and this could lead to prevention of its complications (Damansceno, Azevedo, Silva-Matos, Pista, Diogo and Lunet, 2009). The rising prevalence of hypertension worldwide calls for intensification of preventive measures. This is highly recommended for populations in the low- and medium income communities due to a looming explosion of cardiovascular morbidity and mortality. Important issues in hypertension prevention are: Patient education, Screening for hypertension, Primordial prevention, Primary Prevention, Secondary prevention and Improving Awareness

Primordial Prevention: This deals with addressing socio- cultural and socioeconomic factors in the community that encourage the development of hypertension. Health policy makers and professionals should all be involved. Success would also be enhanced if community leaders and local chiefs are committed. Primordial prevention programmes have to be part of local health policies for it to be sustained.

Primary Prevention: It addresses the risk factors that favour the development of hypertension. Examples are: obesity, physical inactivity, excessive salt consumption, alcohol consumption and tobacco smoking etc. Healthy lifestyles are also primary preventive measures. Healthy eating with foods rich in fruits and vegetables also prevent hypertension.

Secondary Prevention: This refers to the management of the complications. This is necessary to intensify both primordial and primary prevention of hypertension in low and medium economy settings. This is because the cost of managing the complications of hypertension in such environment could be enormous and beyond the reach of a majority of individuals. Adequate follow-up is advocated and this should be life-long even when blood pressures have been adequately controlled. At each visit, physical examination should be done and at least once yearly, detailed investigations to assess complications should be carried out. Any identified complication should be appropriately managed (Onwubere, 2013).

Also, according to the Seventh Report of the Joint national Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (2003) it stated the following to be the preventive measures that can be done to mitigate the modifiable risk factors of hypertension. These preventive measures include: Reduce weight (maintain normal body weight with BMI of 18.5-24.9Kg/m²), Adopt dietary approaches to stop Hypertension (diet rich in fruit, vegetables, and low-

fat dairy; reduced saturated and total fat content), Reduce dietary sodium ((2.4 g)/day), Increase physical activity (Aerobic activity >30 min/day most days of the week), Moderate alcohol consumption (Men: ≤ 2 drinks/day Women: ≤ 1 drink/day).

2.6 Source of information on hypertension

In a study by Akter *et al.*, (2014) on the source of information and level of knowledge on hypertension among entry level university students in Ajman, United Arab Emirates, they found out that the major source of information on hypertension among the study population include television, internets, books/magazines/journals. Some also reported that their source of information are from professional talks/seminars, friends and family members. In a similar study, the sources of information on hypertension include the mass media-Newspapers, radio, television, billboard and magazines. Other sources of information on hypertension includes: from health care professional, physicians, nurses and pharmacy.

In a cross sectional study carried out by Awosan *et al.*, (2013), on awareness and prevalence of risk factors of coronary heart disease among teachers and bankers in Sokoto state revealed most (76.2%), of the participants in both groups have ever heard of coronary heart disease. The television was the most common source of information among both the teachers (53.8%) and bankers (43.8%), followed by newspaper/magazines and books. Only very few of the teachers (7.5%) and bankers (13.8%) got information about CHD from health workers. The findings in this study corroborates with the findings in a study among teachers in Bahrain (Attia *et al.*, 2004) in which the common sources of information reported were; television (61%), magazines (39%), newspapers (34%), radio (22.2%), books (28.1%), hospitals (28.6%) and primary healthcare centers (15.7%).

A single-center randomized controlled trial found that traditional mass media (Television, radio, newspapers and magazines) were the most popular sources of information for hypertension knowledge and second most popular source was family/relatives as an effective method to disperse accurate medical information (Tate, Jackovny and Wing, 2003).

A study from the Seychelles Islands (Indian Ocean) reported that the major source of information among hypertensive patients were doctors who were more amenable as a part of consultation for hypertension related education from medical or media sources (Aubert, Bovet, Gervasoni, Rwebogora, Waeber and Paccaud, 2013).

A study conducted among those in childbearing age reported that most of the participants had their information on high blood pressure from health care workers such as physicians, midwives, public health and community nurses as the leading reliable source of information. A few (7%) obtained information from pharmacy, relatives, friends and others when compared to health care providers since they used to utilize the opportunity to the fullest in educating the public by giving awareness on possible life style changes (Kofi, 2011).

In another study done in Tanzania, sources of information categorized as peer, media and formal education where the greatest source of information on hypertension was from peer groups. It also grouped the sources of information as doctors, nurses and pharmacists who gave information regarding symptoms of hypertension, life style changes, use of ARV drugs, use of antihypertensive drugs consequences of untreated hypertension, caution side effects of ARVs, and antihypertensive medicines. This study projects that doctors were the most frequent source of information on hypertension and ARVs compared to Pharmacists (Godeliver, Kagashe, and Fazal, 2011).

According to Akter *et al.*, (2014), in a study carried out among entry level university medical students in Ajman, UAE on their sources of information and level of knowledge on hypertension found general knowledge on Hypertension, mass media such as television/internet (96.2%) served as a major source of information. Health professionals/talks and seminars contributed by 83.6% for information on symptoms of hypertension. According to the level of knowledge on complications, books/magazines and journals contributed to the greatest proportion (68.4%). In the case of knowledge on risk factors with respect to each source of information, it was again greatly contributed by health professionals/talks and seminars (88.8%). Most important knowledge on treatment was equally through television/internet and friends as well as family members (99.2%). Finally for all levels of knowledge on hypertension, most of the information was provided by television/internet (96.2%).

2.7 Theoretical framework

There are so many commonly used theoretical models in health promotion. These include but not limited to; the health belief model, trans-theoretical model, social cognitive theory, theory of reasoned actions, theory of planned behaviour and the PRECEDE-PROCEED model (Glanz, Rimer and Lewis, 2002). Each of these models identifies behavioural influences and factors relevant to issue targeted by health promotion programme. The PRECEDE model was developed by Dr Lawrence Green and colleagues in the 1970's to address the lack of direction and adequacy

of public health promotion to sufficiently plan before implementing an intervention (Glanz *et al*, 2002).

The PRECEDE is an acronym that stands for Predisposing, Reinforcing and Enabling Constructs in Educational/Environmental Diagnosis and Evaluation. This theory helps to understand the causal factors of any given public health behaviour. The three key constructs of this model are explained below:

Predisposing factors: They are factors which motivate or provide a reason for behaviour; they include knowledge, attitudes, cultural beliefs, perceived needs and abilities and readiness to change.

Reinforcing factors: These are factors which come into play after behaviour has been initiated. They encourage repetition or persistence of behaviours by providing continuing rewards or incentives e.g. Social support, praise, reassurance (from family, peers, colleagues, health care workers, law enforcement, and the media) and symptom relief might all be considered reinforcing factors.

Enabling factors: These are factors that enable persons to act on their predispositions; these factors include available resources, accessibility, money, time, supportive policies, assistance, and services.

APPLICATION OF THE MODEL

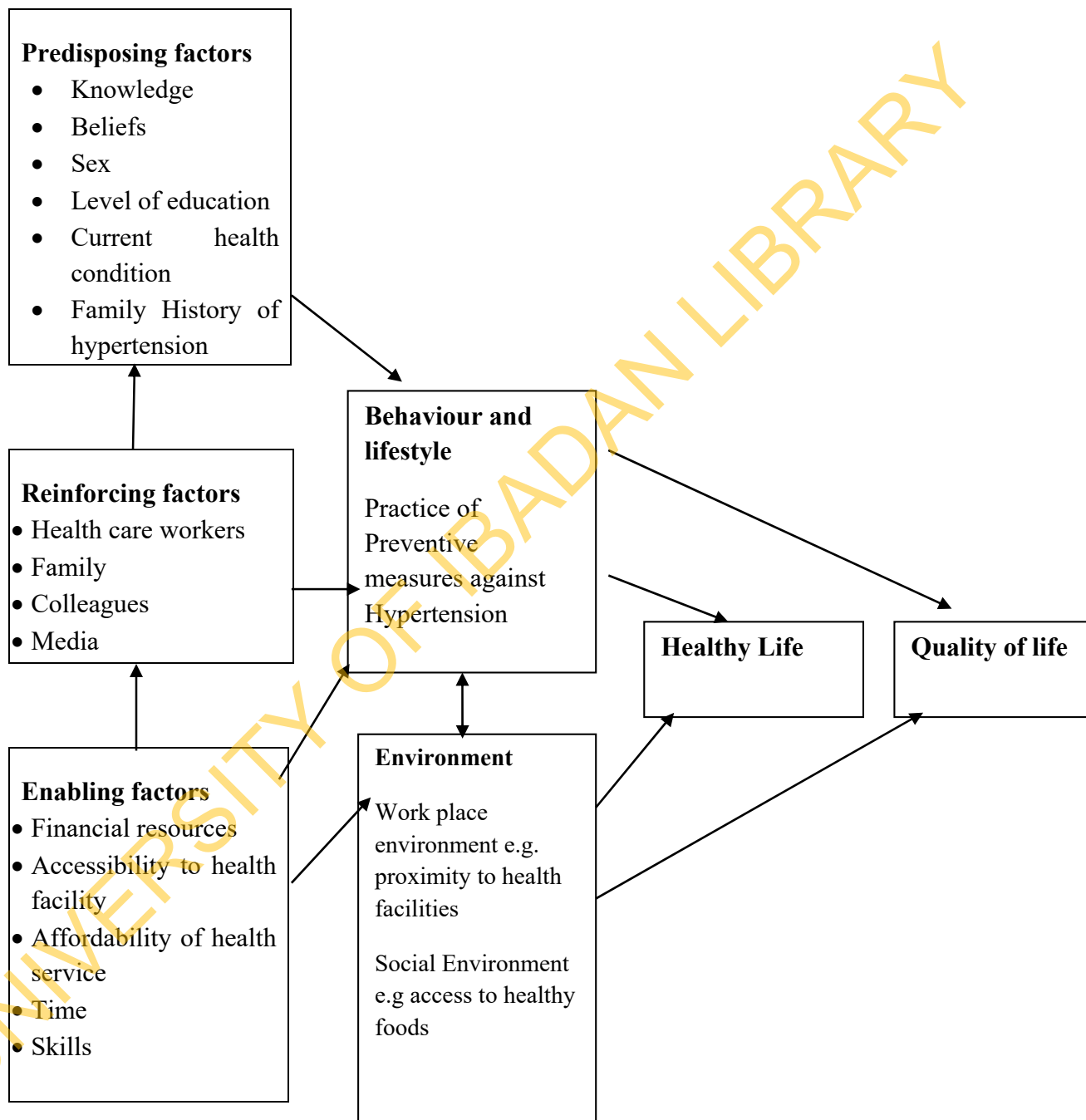
Numerous studies have supported the positive impact the PRECEDE model has had on the effectiveness of health promotion programmes. Some of these studies include preventive behaviours for type 2 diabetes mellitus in high-risk individuals (Moshki, Dehnoalian, and Alami, 2016), health promotion options for breast cancer survivors (Tramm, McCarthy, and Yates, 2012), fitness-emphasized physical activity and heart-healthy nutrition education program for elementary school children (Slawta and DeNeui, 2009), internet based weight management program for young adults (Kattelmann, White, Green *et al*, 2014), among others.

Using the various constructs of the model, it was applied to the current research as follows:

- i. Predisposing factor: These are antecedents to behaviour that provides the rationale for the behaviour. They are intrinsic factors that are unique to the research respondents and make them to practice preventive measures against hypertension. This includes but not limited to knowledge, beliefs, family history and present health conditions.
- ii. Reinforcing factor: These comprises of the feedback or influence of the significant other or people that influence the continuance or discontinuance of practices of preventive measures against hypertension among the respondents. This variable was assessed by asking about the sources of information on hypertension to the respondents and when last such information was received.
- iii. Enabling factors: These are what enable the respondents to act on their predispositions. They are environment bound factors which enable action for or against the practice of measures against hypertension. This variable was assessed in the study by asking about the income of the respondents.

Fig 2.1 Conceptual framework for prevalence, knowledge and preventive practices against hypertension among Police officers

The model discussed above is conceptualised below:



CHAPTER THREE

3.0 METHODOLOGY

3.1 Study design

The study is descriptive cross sectional survey in design. Variables were assessed using semi-structured, self-administered questionnaire.

3.2 Study area

Ibadan North local government area is one of the LGAs in Ibadan metropolis and the second largest LGA after Ibadan North East in the state with population of 308,119 people according to 2006 census and a projected population of 432,900 in 2016 (NPC, 2016). It is one of the five local Government areas that was carved out of the defunct Ibadan Municipal Government by the Federal Military Government of Nigeria on the 27th September, 1991. The LGA covers a landmass of 132,500 square kilometres with a population density of 2,626 persons per square kilometer. Using a growth rate of 3.2% from 2006 census, the 2010 estimated population of the local government is put at 347,998 (www.ibadannlga-oyo.gov.ng, 2018).

Akinyele and Lagelu Local government area bound it to the north, Egbeda local government to the east, Ibadan North West to the west and Ibadan North East to the south. There is little or no serious farming activities in this area being an urban centre. Most of the agriculture crops planted outside this area are being processed in the local government area. Trading and other commercial activities are also predominant in this area. It is also a home for small, medium and large scale industries. It has the largest concentration of virtually different tribes and ethnic groups in the country. Two notable federal institutions are in its domain, the University of Ibadan and University College Hospital (www.ibadannlga-oyo.gov.ng, 2018).

The LGA is subdivided into twelve (12) wards. The local government is governed by an elected chairman and 12 councilors, one elected from each ward (www.ibadannlga-oyo.gov.ng, 2018).

There are seven (7) divisions in the local government with about three hundred (300) Police officers; the divisions being under three area commands: Agodi, Iyaganku and Moniya. The location of the divisional headquarters include the following areas: Sango, Yemetu, Bodija Market, Bodija Housing Estate, Ashi, Ikolaba and Mokola (Nigeria Police Force, Oyo state command).

3.3 Study population

The study population consisted of both male and female Police officers from the rank of constable to the Chief Superintendent of Police who work at the divisional headquarters and outposts. The Police officers population is very important group in the society. The vision statement is to make Nigeria safer and more secure for economic development and growth; to create a safe and secure environment for everyone living in Nigeria.

3.4 Inclusion criteria

Police officers within the sampling frame who consented to participate in the study were recruited for the study.

3.5 Exclusion criteria

Police officers who did not consent (those who gave informed dissent) were excluded from this study.

3.6 Sample size

Sample proportion for this study was calculated using Cochran's formula (1963) with the prevalence of hypertension among firefighters in River state, Nigeria to be 9.6% according to a study on prevalence of hypertension among firefighters in Rivers state, South-South, Nigeria (Douglas and Oraekesi, 2015) which is as follows:

$$n = \frac{Z^2 p (1-p)}{d^2}$$

Where: $Z = 1.96$ (confidence level at 95%)

$p = 0.096$ $q = 1-p = 1-0.096=0.904$

$n =$ Sample size

$d =$ Degree of accuracy set at 0.05 (precision set at 5% significant)

$$n = \frac{1.96^2 \times 0.096 \times 0.904}{0.05^2} = 133.4$$

n is approximately 133

A non-response rate of 10% was anticipated using

$$q = \frac{1}{1-f}$$

Where f = estimated non response rate

1.11

Therefore, 1.11 was multiplied by the sample size calculated to make the sample size approximately 147 in order to address issues of incomplete response.

The sample size for this study was rounded up to 170 Police officers.

3.7 Sampling technique

The eligible participants was selected by a multistage (2 stages) sampling techniques.

Stage 1: Selection of Police divisional headquarters

The seven (7) divisional Police headquarters in the study area were used in the study due to the small size of the population and to ensure representation of all the divisions namely; Sango, Yemetu, Bodija Market, Bodija Housing Estate, Ashi, Ikolaba and Mokola.

Stage 2: Selection of respondents in each Police division

The selection of study respondents in each of the divisions was done by convenient sampling technique due to the fact that not all the officers are always on ground; some were on patrol, some were controlling traffic while others were on special duties. Respondents who consented to be interviewed after necessary information had been given were recruited for the study.

Table 3.1: Population of Police officers and number of respondents by divisions in the LGA

Divisions	Number of officers*	Number of respondents	% selected
Ashi	35	26	15.3
Bodija Estate	35	17	10
Bodija Market	45	25	14.7
Ikolaba	35	19	11.3
Mokola	45	23	13.5
Sango	55	30	17.6
Yemetu	45	30	17.6
Total	295	170	100

Source: Divisional Police Headquarters in Ibadan North LGA of Oyo state

*The actual strength of the Police officers in each division was not released for security reasons

3.8 Instrument for data collection

A sixty-eight (68) item questionnaire was used for data collection (see Appendix 1). The questionnaire was designed to be self-administered. The questionnaire was developed using information obtained from literature on prevalence, knowledge of hypertension and preventive practices against hypertension. It had five (5) sections. The first section was designed to elicit data on socio-demographics of the respondents. The second section assessed the blood pressure, section three was used to identify sources of information for Police officers on hypertension, the section four was used to determine level of knowledge of respondents on the definition, causes (risk factors), symptoms, consequences, treatments and preventive practices against hypertension and section five was used to determine their preventive practices against hypertension.

A nurse conducted the blood pressure (BP) on the left upper arm using a digital Omron HEM 8712 Blood Pressure monitor. The BP was taken only two times with intervals of five days instead of three times with interval of 3 to 4 days, (JNC, 2014). The measurements were taken in the sitting position with exposed outstretched left arm on a table after resting for at least 5 minutes. Blood pressure was measured twice for each person in the same sitting position with at least two minutes interval between measurements. The average of the two measurements was estimated as the blood pressure level of the participant. For those with a raised BP, two additional BP measurements was made at least a week apart. Hypertension (HTN) was defined as average of two measurements of systolic and/or diastolic BP that is $\geq 140/90$ mmHg (Sen *et al.*, 2015). Waist circumference was measured using a measuring tape to assess for abdominal obesity which is a risk factor for hypertension. The waist circumference (in centimetres) was measured using a non-stretchable measuring tape at the smallest horizontal girth between the coastal margins and iliac crest at the end of expiration while in a standing position.

3.9 Validation of instrument

In order to establish face validity of the instruments, the researcher reviewed relevant literatures after which the supervisor reviewed and made suggestion for improvement on the instrument. It was also scrutinized by experts in Non-communicable diseases to validate the instrument and these individuals edited and made useful corrections and suggestions before the draft was tested for reliability.

3.10 Reliability of instrument

Reliability of an instrument is a measure of the consistency in which the instrument will measure what it is supposed to measure (Mugenda and Mugenda, 2003). An instrument is reliable if it gives similar results after several administrations under similar conditions.

In establishing the reliability of the instrument, the researcher applied the pre-test technique. The reliability of the draft instrument was determined by pre-testing among twenty (20) Police officers in Ibadan North-East local government a similar population group where copies of the questionnaire were given to them to fill and their blood pressure and waist circumference measured. After the pre-test, the data gathered were checked for errors and completeness. Each questionnaire was numbered for easy recall and a coding guide was prepared to facilitate entry of the data into the computer software. The data were then subjected to descriptive statistics which was basically frequencies and charts. The reliability co-efficient measure obtained from the pre-test was 0.798.

Following the pretest, the instrument was revised and ambiguous questions were either removed or reconstructed while some were added. For example, questions such as “How many relatives ever had hypertension”, “food items that can increase blood pressure” and “Hypertension can be caused by witches and wizards” were removed while questions like “One of the symptoms of hypertension is headache”, “Certain drugs and condiments can cause hypertension” and “consumption of alcohol cannot cause hypertension were revised to “Regular headache could be a likely symptom of hypertension”, “Use of certain drugs and condiments can cause hypertension” and “Individuals with increased blood pressure can drink alcoholic beverages” respectively. Questions like “Ever received any form of information on hypertension”, “when and where was the last time information received” were added.

3.11 Data collection procedure

The Data were collected by the researcher assisted by a female nurse who helped in the measurement of blood pressure of the respondents. The Police stations were approached with letter of introduction (see Appendix 3) from the Oyo state Commissioner of Police (Medical) after approval has been granted to carry out the study. The respondents were courteously approached and both the benefits and the possible harms that may arise as a result of participating in the study

were explained to each Police officer. Each respondent was given a copy of the questionnaire afterwards and asked to ask for clarification if there is any part that needs explanation.

3.12 Data management and analysis

The questionnaire was reviewed to ensure consistency and completeness before leaving the field. Serial numbers were written on the copies of the questionnaire for easy entry and recall. A coding guide was developed along with the data collection tool in order to facilitate its analysis. Cleaning, recording and coding of data for analysis was done. Using the coding guide, the data collected were entered into the computer using SPSS software. The analysis involved descriptive statistics such as mean, standard deviation, frequency and inferential statistics such as Chi-square and regression analysis were done. The data were presented in tables and charts.

Respondents' knowledge of hypertension was measured on a 24-point knowledge scale. Knowledge Score (KS) of ≤ 11 was rated as poor knowledge, KS of $>11 \leq 17$ was considered fair and KS >17 was rated as good knowledge.

A 13-point scale was used for practices of preventive measures, where a score ≤ 9 represented unhealthy practices and a score >9 represented healthy practices of preventive measures against hypertension.

Chi square test statistic was conducted to investigate the relationship between socio-demographic characteristics and prevalence of abdominal obesity, first point prevalence of hypertension, Knowledge of hypertension, preventive practices against hypertension among Police officers. Also, regression analysis was done to test for the predictors in relationships between variables that were significant.

3.13 Ethical considerations

Ethical approval was obtained from the University of Ibadan/University College Hospital (UI/UCH) Ethics Review Committee (see Appendix 4) to ensure the proposed study meets all the principles and National guidelines in research involving human participants and Permission from Oyo state Police command to conduct study among the respondents.

Informed Consent/Confidentiality: A valid Informed consent was obtained from the study participants through appended signature on the informed consent form after adequate provision of

information. All identifiers were removed from the questionnaire and confidentiality was ensured through protection of data collected from participants. The result of the blood pressure measurement was disclosed privately to each respondent.

Voluntariness: Participants were accorded the right to or not to participate in the study without any consequence. It was made clear to participants that they are under no obligation to participate in the study.

Beneficence: The respondents had the opportunity of checking their blood pressure and health information was given during the study and the findings would be of great value in the design of interventions at promoting cardiovascular wellness programmes among Police officers.

Non-maleficence: The study did not involve any risk as it did not involve utilization of any invasive material. No harm came to respondents who chose to participate in the study. Only the time needed to respond to the questionnaires was required of the participants.

Dissemination of Findings: To ensure study participants are informed about the information gathered, the result of the findings will be sent to the Oyo state Police Headquarters which will be disseminated to the Police officers in the state. Respondents with high blood pressure were referred to the Police Medical service at Eleyele for proper medical attention while some respondents chose to see their family doctors. The contact of one of the doctors at the hospital was obtained. The respondents were referred and followed up to ensure adherence.

Translation of protocol to the local language: Participants are literate in English language. The research instrument was not translated into any local language.

3.14 Study limitation

The preventive practices against hypertension cannot be verified because they were reported and there is no way to verify claims. Also, the data cannot be generalized to all Police officers in Ibadan metropolis let alone for the entire state.

CHAPTER FOUR

4.0

RESULTS

4.1 Socio-demographic characteristics of the respondents

The demographic profile of the respondents are shown on Table 1. The majority 110(64.7%) were males while 60(35.3%) were females. The ages of respondents ranged between 22 and 57 years, mean age was 36.7 ± 8.4 . Most respondents 70(41.1%) were between the ages 31 and 40 years; while those above 40 years of age were 54(31.8%) . Majority 121(71.2%) of the respondents were of the Christian faith, some, 44(25.9%) were of the Islamic faith, 4(2.4%) were Traditional worshippers while 1(0.6%) of the respondent was an atheist. Majority 119(70%) of respondents were currently married, while the rest were not currently married: 45(26.5%) are single, 4(2.4%) were divorced while 1(0.6%) were widowed and separated each.

Majority 81(47.6%) of the respondents possessed degrees from tertiary institution, 77(45.3%) had O' level certificate while only few 12(7.1%) hold postgraduate degrees. In total, 26(15.3%) of the respondents were from Ashi Divisions, 17(10%) from Bodija Estate Divisions, 25(14.7%) from Bodija Market Divisions, 19(11.3%) from Ikolaba Divisions, 23(13.5%) from Mokola Divisions while majority 30(17.6%) each from Sango and Yemetu Divisions. Most 53(31.2%) of the respondents fall within the rank of Sergeant, followed by Inspector 43(25.3%), Constable 28(16.5), Assistant Superintendent of Police 23(13.5%), Corporal 14(8.2%), Deputy Superintendent of Police 6(3.5%) while very few 2(1.2%) and 1(0.6%) of the respondents fall into the ranks of Chief Superintendent of Police and Superintendent of Police respectively.

Majority 127(74.8%) of the respondents were of the Yoruba ethnic group while Igbo 15(8.8%), Hausa 13(7.6%), and some other 15(8.8%) tribes were also represented. The mean monthly income of respondents was $\#52,836.1 \pm 28,416.2$ (US\$172.44 \pm 93.29) with a minimum income of #5, 000 (US\$16.32) and maximum income of #130, 000 (US\$424.28).

Table 4.1: Socio-demographic information of respondents

N=170

Socio-demographic variables	Responses	Number	(%)
Sex	Male	110	64.7
	Female	60	35.3
Religion	Christianity	121	71.1
	Islam	44	25.9
	Traditional	4	2.4
	Atheism	1	0.6
Marital Status	Single	45	26.4
	Married	119	70.0
	Divorced	4	2.4
	Widowed	1	0.6
	Separated	1	0.6
Ranks	Constable	28	16.5
	Corporal	14	8.2
	Sergeant	53	31.2
	Inspector	43	25.3
	Assistant Superintendent of Police	23	13.5
	Deputy Superintendent of Police	6	3.5
	Superintendent of Police	1	0.6
	Chief Superintendent of Police	2	1.2
Ethnic Group	Yoruba	127	74.8
	Igbo	15	8.8
	Hausa	13	7.6
	*Others	15	8.8

*Others: Ijaw, Efik, Urhobo, Nwas, Idoma, Edo, Afemai, Ogoja, Ibibio, Igala, Egun

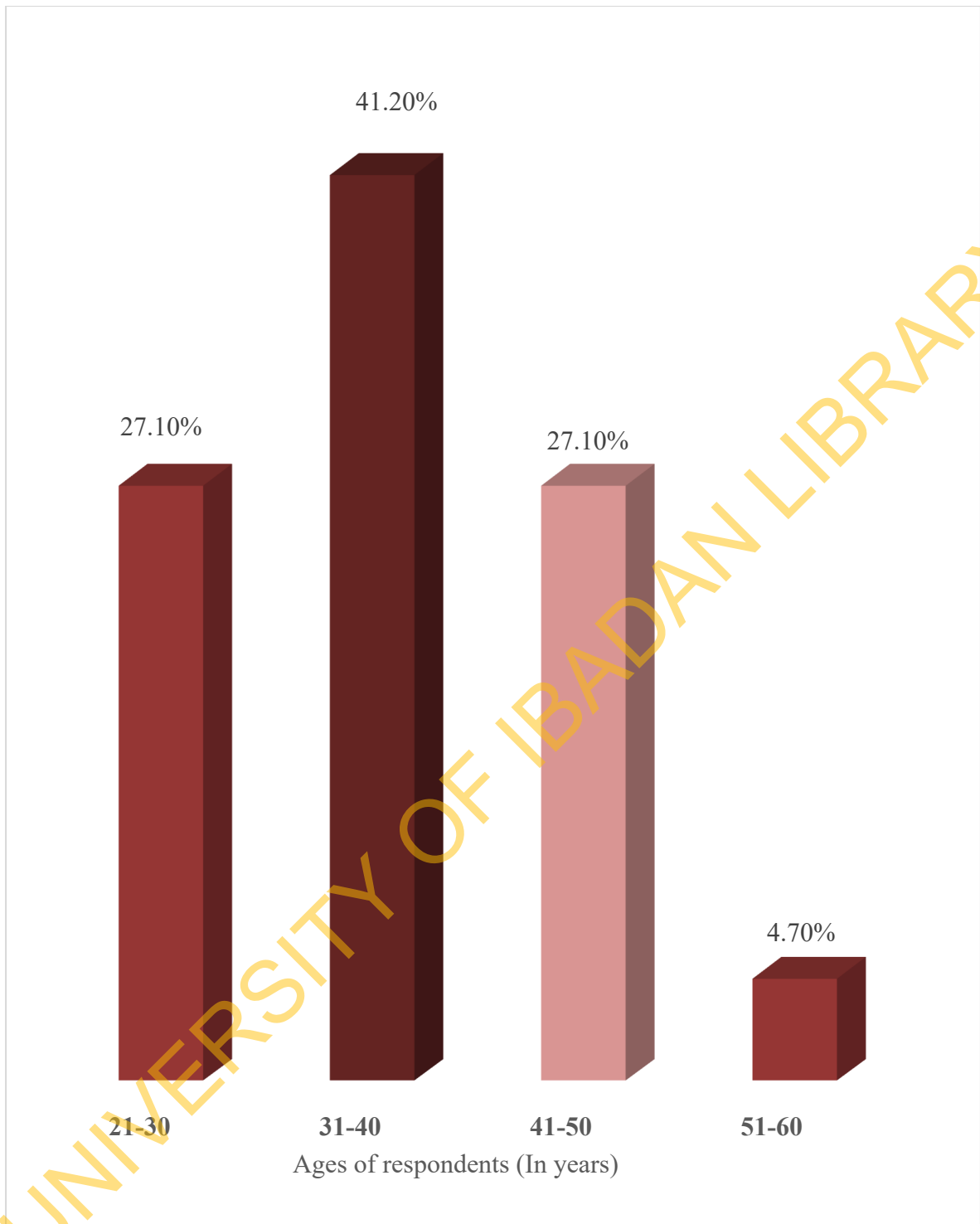


Figure 4.1: Respondents' age (In years)

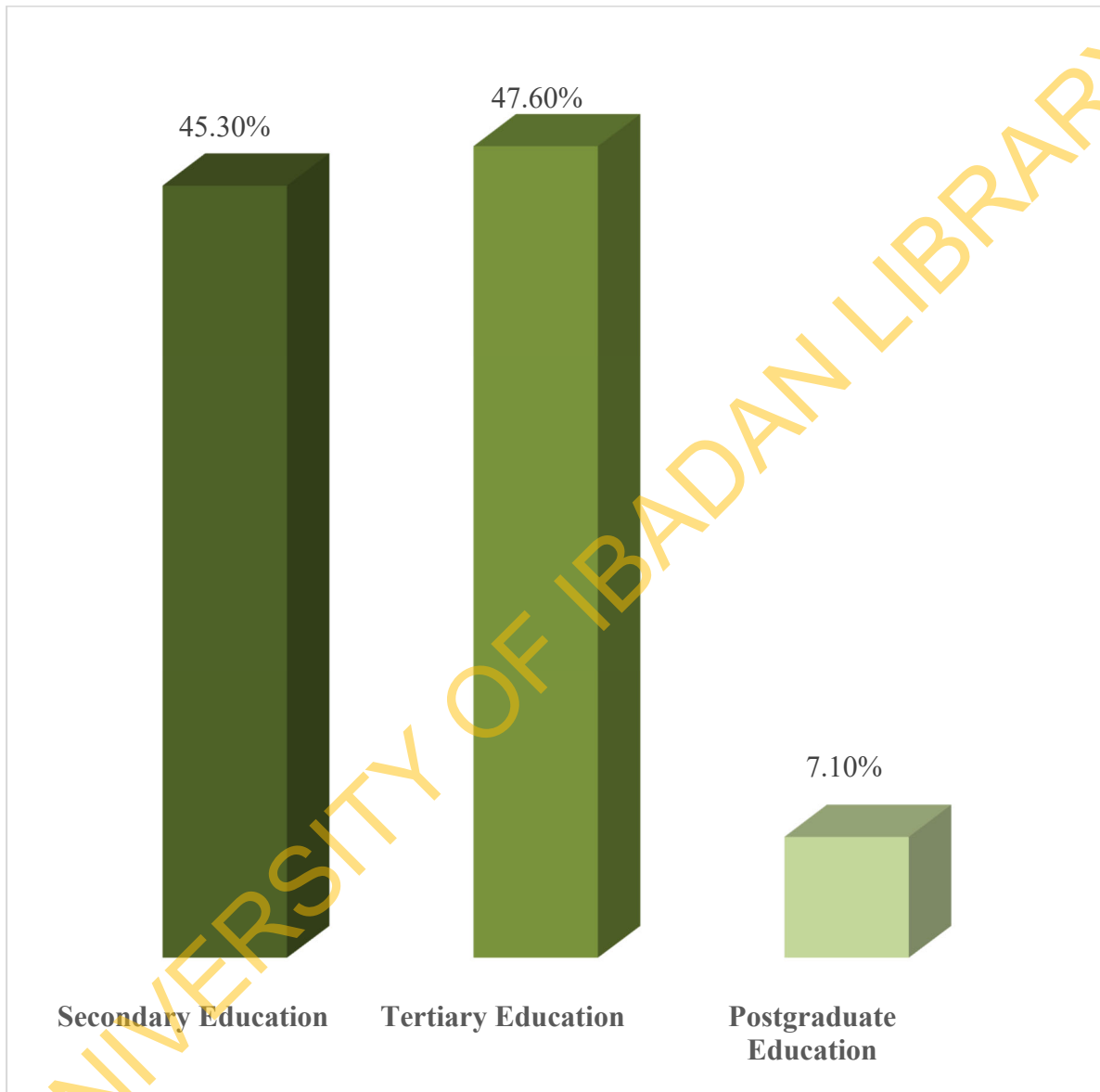


Figure 4.2: Respondents' level of education

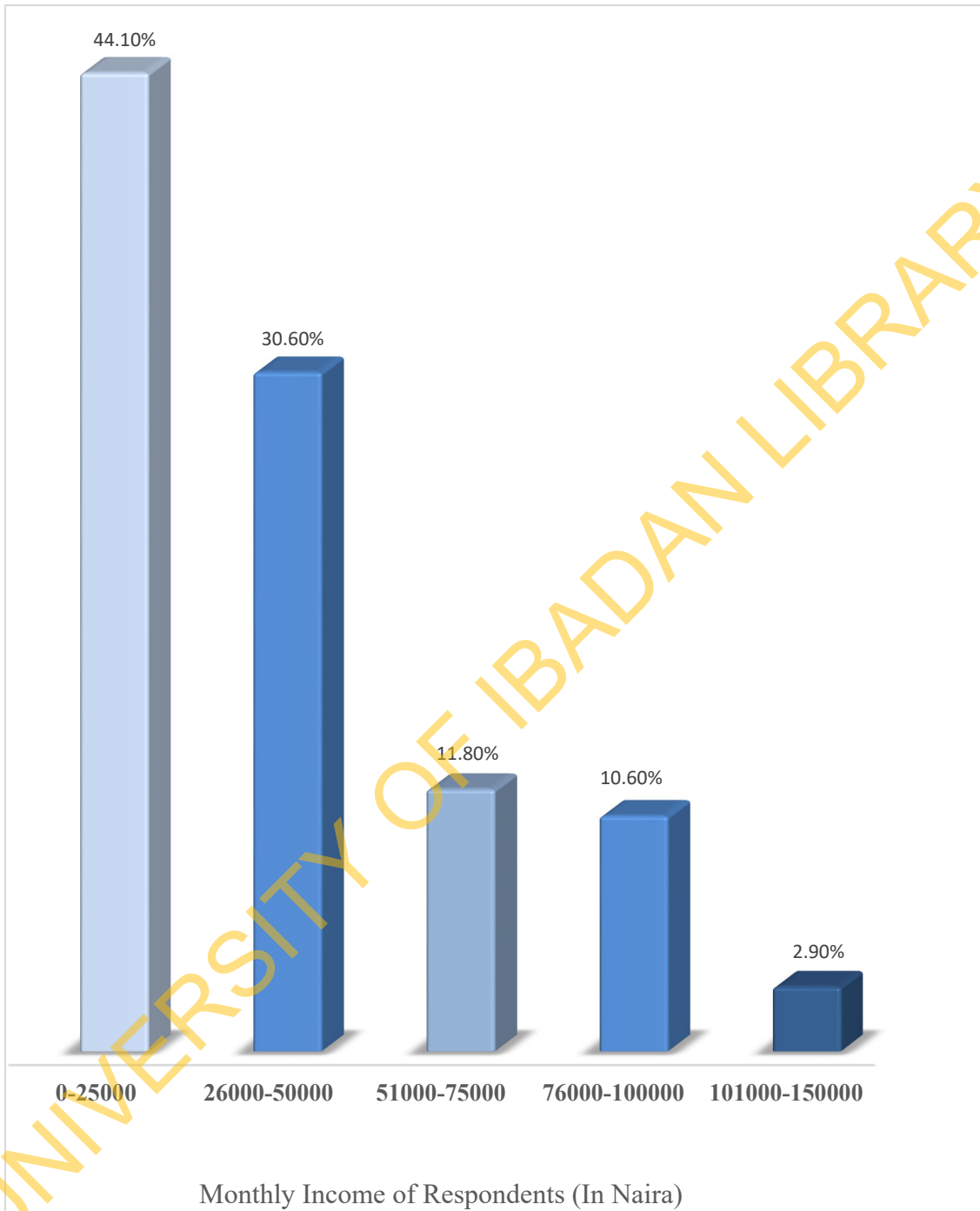


Figure 4.3: Respondents' average monthly income (In Naira)

4.1.2 Prevalence of abdominal obesity

The mean waist circumference of respondents in centimetres was 89.4 ± 11.0 with minimum and maximum waist circumference of 70 and 125 respectively. Abdominal obesity was prevalent among more than half 88(51.7%) respondents with waist circumference higher than expected measurement. About one-third 38(34.5%) of male respondents with abdominal obesity ($WC \geq 94\text{cm}$) when compared to high percentage of 50(83.3%) ($WC \geq 80\text{cm}$) in female respondents as presented in figure 4.4.

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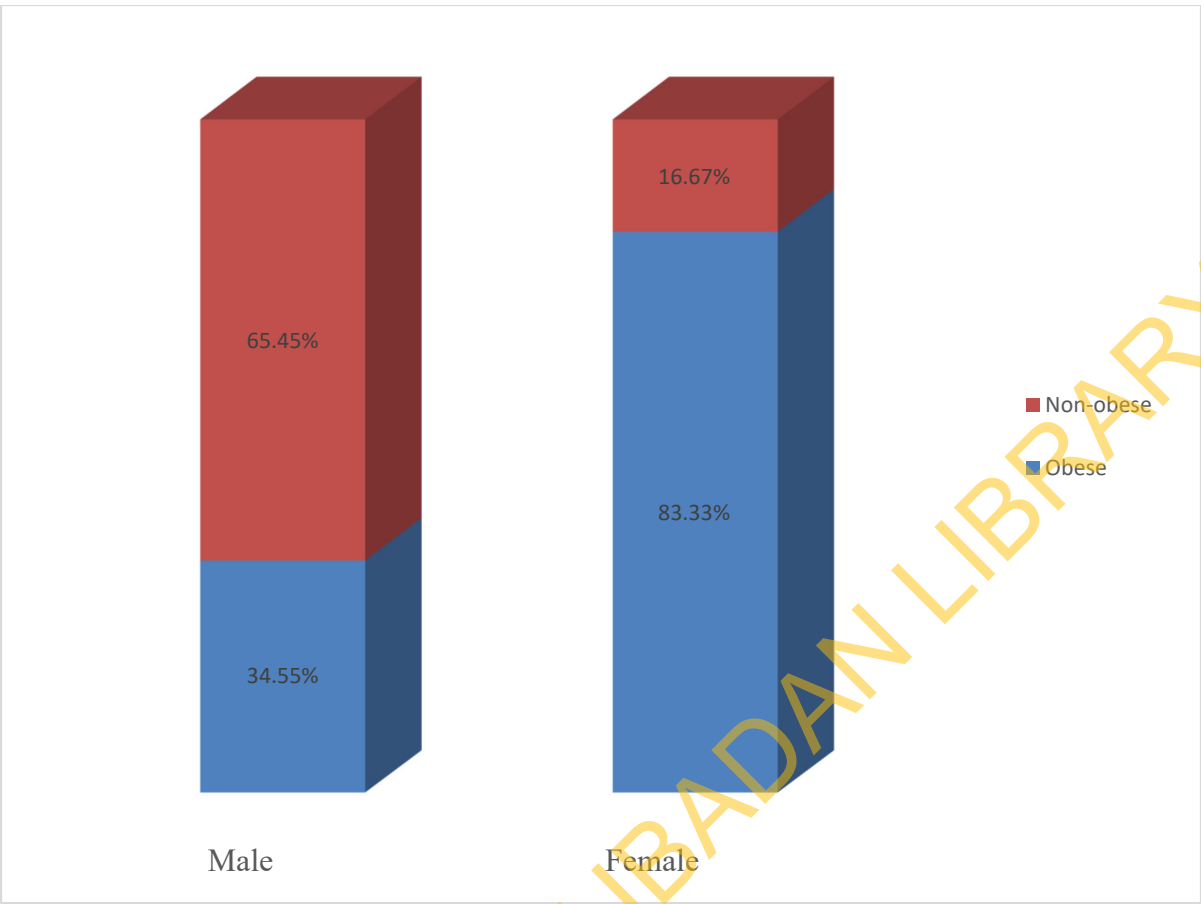


Figure 4.4: Abdominal obesity by sex of respondents

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4.2 First point prevalence of High Blood Pressure

Table 4.2 presents information on the first point prevalence of high blood pressure among the respondents. The first point prevalence of hypertension among the respondents was 17.5%. The mean systolic blood pressure (SBP) was 125.0 ± 17.9 mmHg with minimum reading of 90 mmHg and maximum reading of 204 mmHg. The mean diastolic blood pressure (DBP) was 80.8 ± 12.6 mmHg with minimum and maximum reading of 55 mmHg and 129 mmHg respectively. Majority 136 (80%) have had their blood pressure measured by a doctor or a health worker before while one-fifth 34 (20%) had their blood pressure measured for the first time ever. Of the 136 (80%) who have had their blood pressure measured before by a doctor or health worker, 57 (42%) had done that in less than four months preceding the study. 42 (30.9%) had their blood pressure measured within four to six months preceding the study, 21 (15.4%) more than 6 months, 15 (11%) more than a year ago while 1 (0.7%) cannot remember the last time the blood pressure was checked.

The first time of blood pressure check, the average reading showed that most 69 (40.5%) of the respondents had normal blood pressure reading (≤ 120 mmHg/ ≤ 80 mmHg), 66 (38.8%) are in the prehypertension stage with blood pressure reading (121-139 mmHg/81-89 mmHg), 26 (15.3%) are in the first stage of hypertension (140-159 mmHg/90-99 mmHg) while 4 (2.4%) are in the second stage of Hypertension (≥ 160 mmHg/ ≥ 100 mmHg). However, 4 (2.4%) refused to allow their blood pressure to be checked while 1 (0.6%) is in the hypotension category (< 90 mmHg/ < 60 mmHg). On second blood pressure reading for those 30 (17.7%) with high blood pressure; 24 (80%) and 5 (17%) fell within the stage 1 and stage 2 category of Hypertension respectively while 1 (3%) in the prehypertension category.

Majority 108 (63.5%) of the respondents had no immediate relative with hypertension while 36 (21.2%) reported having an immediate relative with the condition and 26 (15.3%) reported they are not aware if any immediate relative has hypertension or not.

Table 4.2: First point prevalence of Blood pressure among respondents

N=170

Variables	Responses	Number	(%)
Had blood pressure measured before by health worker?	Yes	136	80.0
	No	34	20.0
Last time you had your blood pressure measured	0-3 months ago	57	42.0
	4-6 months ago	42	30.9
	More than 6 months ago	21	15.4
	More than a year ago	15	11.0
	I cannot remember	1	0.7
Average Blood pressure reading (first visit)	Hypotension	1	0.6
	Normal	69	40.5
	Prehypertension stage	66	38.8
	Stage 1 Hypertension	26	15.3
	Stage 2 Hypertension	4	2.4
	Refusal to check BP	4	2.4
Confirmatory BP check (second visit)	Hypertensive	29	17.5
	Non-hypertensive	137	82.5
History of hypertension among immediate family	Yes	36	21.2
	No	108	63.5
	I don't know	26	15.3

4.3 Sources of information on Hypertension

The respondents' sources of information on hypertension is presented in Table 4.3. All 170(100%) the respondents have heard about a medical condition called hypertension before. Majority 111(65.2%) of the respondents have received information on hypertension before while the rest 59(34.7) said they have not received such information before. Majority 34(30.6%) of the 111(65.2%) who had received information on hypertension before had done that more than a year preceding the study; 25(22.5%) had received such information in less than four months before the study, 10(9.0%) within four to six months, 18(16.2%) in more than 6 six months, 6(5.4%) in more than five years while 18(16.2%) cannot remember the last time they received any form of information on hypertension. Majority 71(64.0%) of the respondents received information on hypertension at the work place, some 23(20.7%) received the information at the Police training College, 10(9%) from religious gatherings while only few 7(6.3%) from hospital.

Health care provider is reported by majority 152(89.4%) as source of information on hypertension. Of all the mass media, the radio is reported by most 126(74.1%) and bill boards as the least 48(28.2%) source of information to the respondents. Facebook 103(60.6%) and WhatsApp 101(59.4%) served as the most used source of information while Twitter 45(26.5%) the least used source of information of the social media. Of all the family members, the parents provided majority 97(57.1%) of respondents with information on hypertension while the children are the least 52(30.6%) source of information to the respondents. Friends of respondents provided information to some 103(60.6%) respondents on hypertension. Other sources of information to respondents were neighbours 87(51.2%), pharmacy 93(54.7%) and co-workers 101(59.4%).

Table 4.3: Respondents' sources of information on Hypertension

N=170

Sources of information variables*	Number of Yes responses	% of Yes responses
Had heard about Hypertension before	170	100.0
Had received any form of education on Hypertension	111	65.3
Sources of information:		
Health care provider	152	89.4
Mass media: Newspaper	109	64.1
Mass media: Radio	126	74.1
Mass media: Television	107	62.9
Mass media: Bill board	48	28.2
Social Media: Whatsapp	102	60.0
Social Media: Facebook	103	60.6
Social Media: Instagram	54	31.8
Social Media: Twitter	45	26.5
Parents	97	57.1
Spouse	64	37.6
Children	52	30.6
Siblings	66	38.8
Neighbours	87	51.2
Friends	103	60.6
Pharmacy	93	54.7
Co-workers	101	59.4

*Multiple responses present

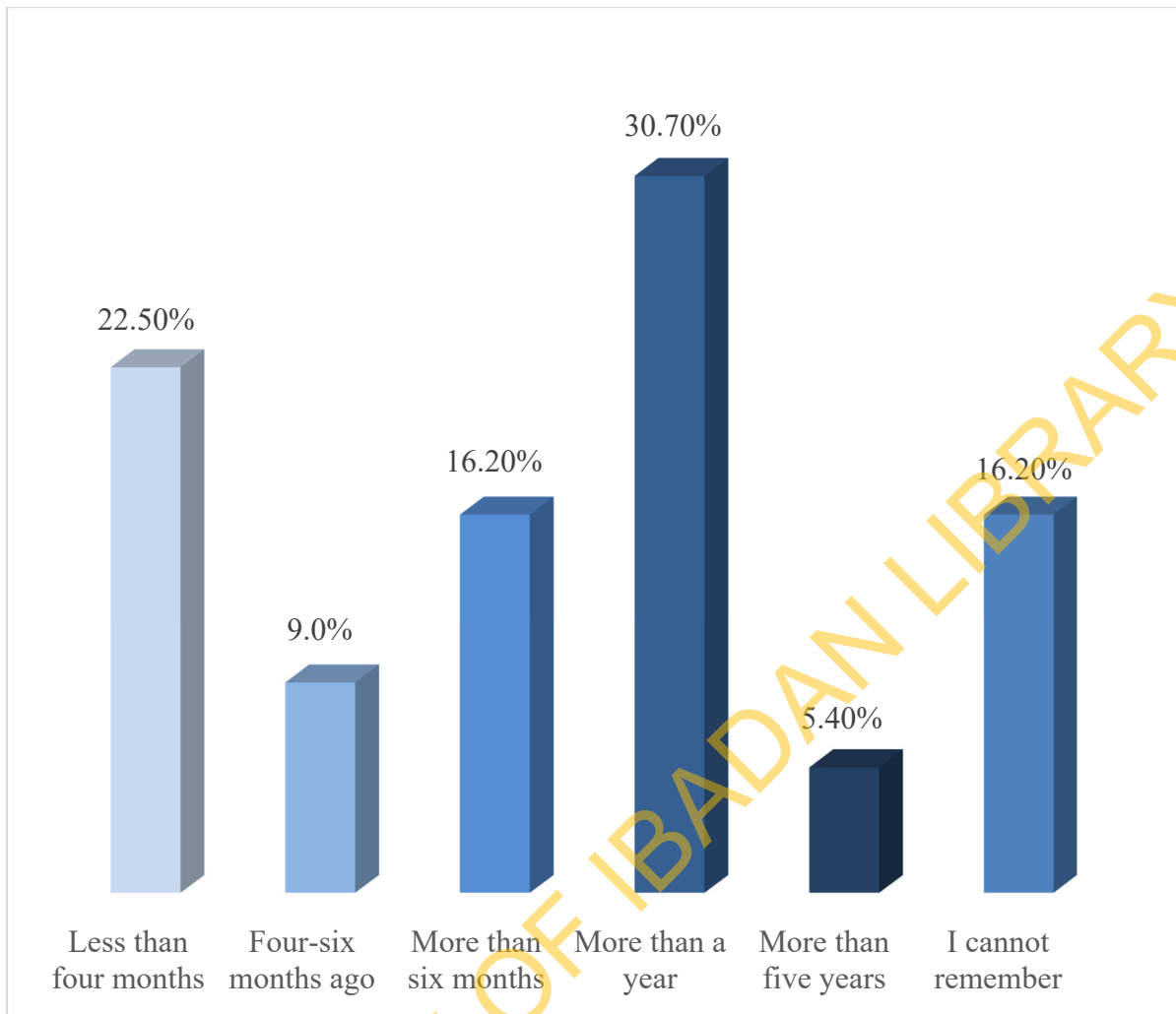
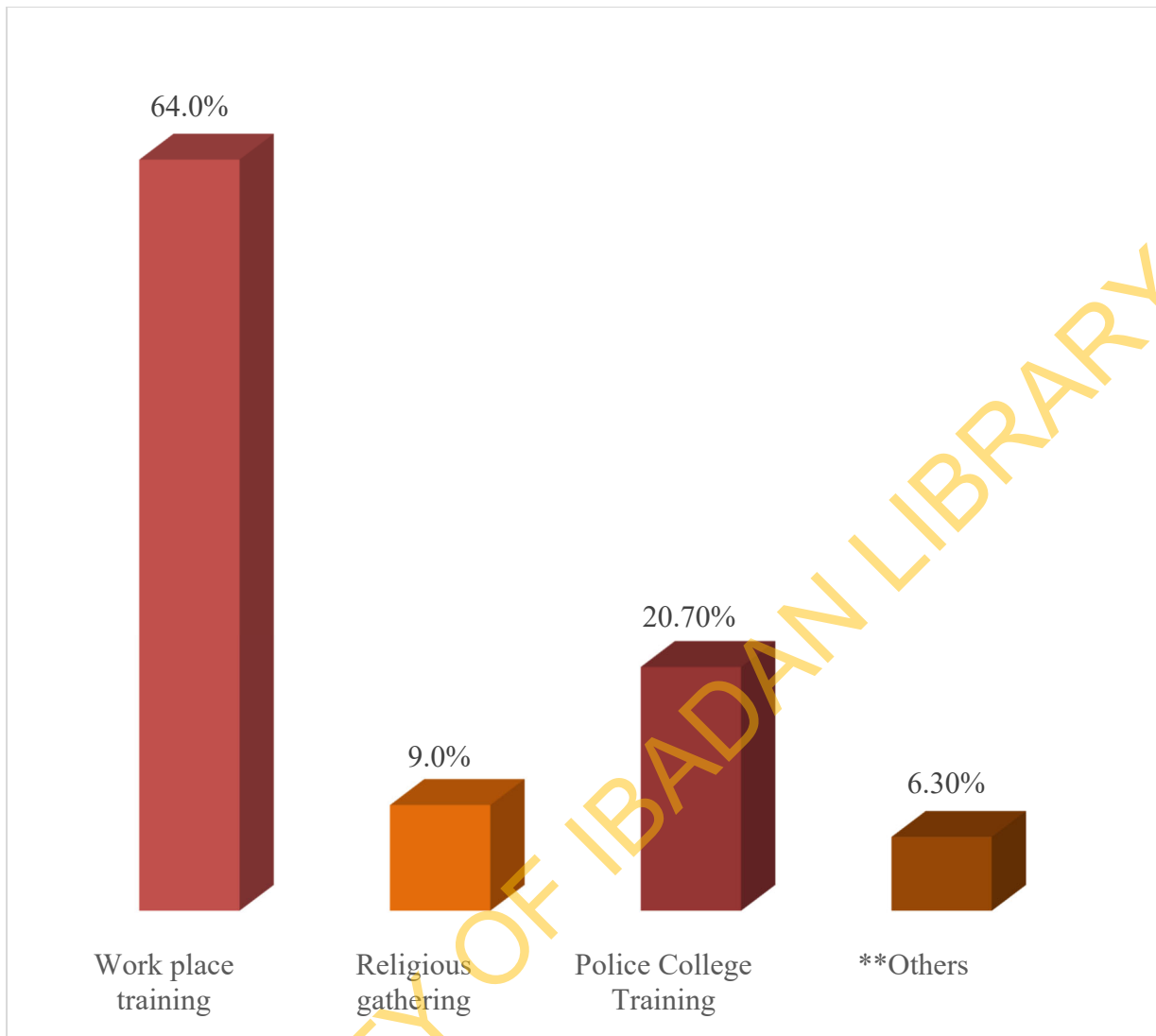


Figure 4.5: Respondents' last time of receipt of information on hypertension



**Others: Hospital

Figure 4.6: Respondents' place of receipt of information on hypertension

4.4 Knowledge of Hypertension

Table 4.4 presents information on the knowledge of hypertension among the respondents. Almost half 81(47.6%) of the respondents had fair knowledge scores, 44(25.9%) had good knowledge score while 45(26.5%) had poor knowledge score. However, the mean Knowledge Score (KS) was 14.1 ± 4.6 with minimum and maximum score of 1.0 and 24.0 respectively.

Definition of hypertension

On the definition of hypertension, majority 36(21.2%) of the respondents who gave correct responses defined hypertension as “high blood pressure” and 33(19.4%) defined it as “abnormal high blood pressure”. Other definitions of hypertension given were: “Hypertension is a medical condition in which the force of the blood against the artery wall is too high” 16(9.4%) and “Hypertension can lead to severe complications that can cause damage to the body” 8(4.7%). Overall, 93(54.7%) of the respondents gave correct responses to the definition of hypertension, 38(22.4%) gave incorrect responses while 39(22.9%) gave no response. Majority 114(67.1%) of the respondents reported true that “Increased diastolic blood pressure also indicated increased blood pressure” and 38(22.4%) said it’s false while 16(9.4%) respondents gave no response. Majority 106(62.4%) reported false for hypertension being not life-threatening while 60(35.3%) and 4(2.4%) reported true and no response respectively.

Causes of hypertension

Half 85(50%) of the respondents reported “too much stress” to be the cause of hypertension, 37(21.8%) reported excessive thinking while 33(19.4%) reported “lack of good sleep”. Other responses on the causes of hypertension include: depression, 12(7.1%); alcohol consumption, 20(11.8%); obesity, 23(13.5%); Hereditary, 11(8.2%); Old age, 4(2.4%); Tobacco consumption, 2(1.2%); lack of exercise, 3(1.8%); Regular emergency situations 1(0.6%); High salt consumption, 2(1.2%); drug abuse, 2(1.2%) and poor nutrition, 22(12.9%). Overall, 111(65.3%) of the respondents gave correct responses while 30(17.6%) and 29(17.1%) gave incorrect and no responses respectively. It was also reported by majority 119(70%) of the respondents that people who are overweight are two to six times likely to develop high blood pressure while 102(60%) of the respondents also reported that the use of certain drugs and condiments can cause hypertension.

Preventive practices against hypertension

On the preventive practices against hypertension, majority 68(40%) of the responses was “adequate rest/sleep” while other responses were: eating balanced/ adequate diet 33(19.4%), regular exercise, 24(14.1%); regular medical check-up, 24(14.1%); consumption of fruits and vegetables, 15(8.8%), and avoidance of stress, 2(1.2%). Very few of the responses were on avoiding smoking 1(0.6%) and alcohol consumption 4(2.4%). Overall, majority 103(60.5%) of the respondents gave correct responses and 34(20.1) gave incorrect responses while 33(19.4%) gave no response. It was also reported by majority 119(70%) of the respondents that individuals with increased blood pressure cannot drink alcoholic beverages.

Consequences of hypertension

About the consequences of hypertension, majority 90(52.9%) of the responses reported were death, 87(51.2%) were stroke. Only few respondents reported “heart attack”, 12(7.1%); “damage of eye blood vessels, 4(2.4%) and “kidney damage”, 1(0.6%). Overall, majority 116(68.2%) of the respondents gave correct responses and 18(10.6%) gave incorrect responses while 36(21.2%) gave no response.

Symptoms of hypertension

About two-third 113(66.5%) of the respondents reported internal heat could be a likely symptom of hypertension. Regular headache was reported by about three quarter 129(75.9%) of the respondents as a likely symptom of hypertension. Majority 114(67.1%) of the respondents reported fainting as a likely symptom of hypertension. Visual impairment was reported by about half 86(50.6%) of respondents as likely symptom of hypertension while 64(37.6%) and 20(11.8%) reported false and no response respectively. Majority 117(68.8%) of the respondents reported blood pressure increases as one gets older. Most 118(69.4%) of the respondents reported false to the statement that hypertension has no symptoms.

Treatment of Hypertension

On the treatment of hypertension; only few 28(16.5%) respondents reported false for “hypertension not having cure if detected early while 6(3.5%) gave no response. Less than half 80(47.1%) of respondents reported that drugs for increased blood pressure must be taken everyday.

“Individuals with increased blood pressure must take their medications throughout their life” was reported by more than half 88(51.8%) of respondents.

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Table 4.4 Respondents' with correct knowledge of hypertension

	N=170	
Knowledge variables*	No	%
Definition of hypertension	93	54.7
Causes of hypertension	111	65.3
Preventive practices against hypertension	103	60.5
Consequences of hypertension	116	68.2
Increased diastolic blood pressure also indicates increased high blood pressure	114	67.1
High diastolic or systolic blood pressure indicates increased blood pressure	116	68.2
Hypertension is not life threatening	106	62.4
If you are overweight, you are two to six times likely to develop high blood pressure	119	70.0
Internal heat could be a likely symptom of hypertension	113	66.5
Regular headache could be a likely symptom of high blood pressure	129	75.9
Fainting is a likely symptom of hypertension	114	67.1
Visual impairment can be a likely symptom of hypertension	86	50.6
Blood pressure increases as a person gets older	117	68.8
Hypertension has no symptoms	118	69.4
Use of certain drugs and condiments can cause hypertension	102	60.0
Hypertension has a cure if detected early	136	80.0
Individuals with increased blood pressure can drink alcoholic Beverages	119	70.0
Drugs for increased blood pressure must be taken everyday	80	47.1
Individuals with increased blood pressure must take their medications throughout their life	88	51.8

*Multiple responses present

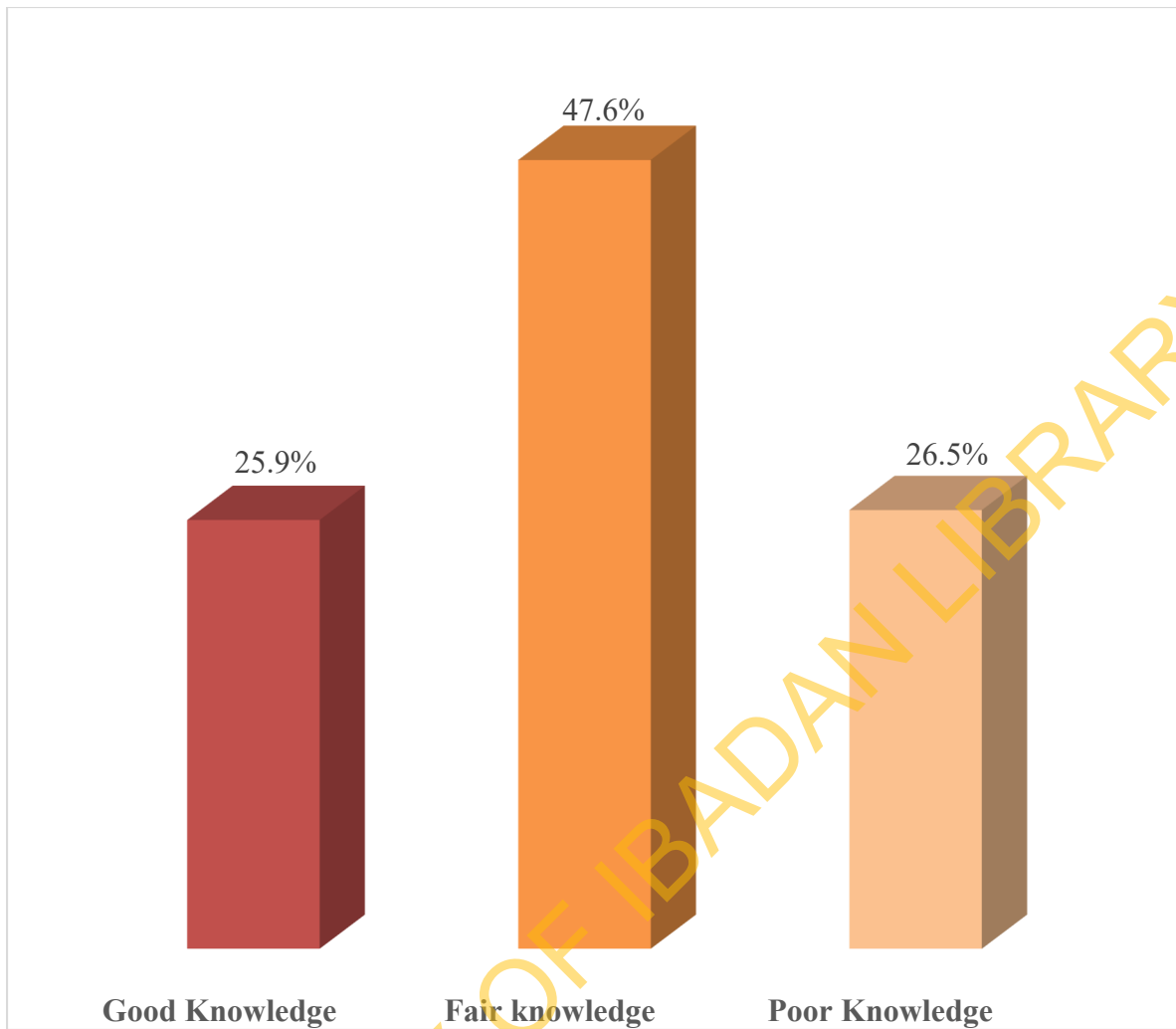


Figure 4.7: Respondents' Knowledge of Hypertension

Average Knowledge Score (KS) = 14 ± 4.6

Minimum KS= 1.0

Maximum KS= 24.0

4.5 Preventive practices against hypertension

The respondents' hypertension preventive practices are presented in Table 4.5. In the overall preventive practice of hypertension; more than two-third 116(68.2%) of the respondents had poor practice score while 54(31.8%) had good practice. The mean practice score was 7.9 ± 2.5 with minimum and maximum score of 2 and 13 respectively. In the last six months, majority 102(60%) of the respondents had gone for medical checkup; 111(65.3%) of the respondents did physical exercise in the last one month preceding the study; 104(61.2%) consumed food low in salt content. More than half 88(51.8%) of the respondents have checked their body weight in the last one month while majority 121(71.2%) and 141(82.9%) of the respondents have taken diets rich in fruits and vegetables in the last one month respectively. However, some 56(32.9%) of the respondents consumed alcoholic beverages while less than one-fifth 27(15.9%) of them smoke cigarette in the last one month. On maintenance of body weight, majority 106(62.4%) of the respondents have maintained their body weight in the last six months but more than half 92(54.1%) of the respondents get worried about issues in the last one month. About one-fifth 39(22.9%) of the respondents have taken antihypertensive drugs, more than half 94(55.3%) of the respondents avoided taking too much oil while majority 111(65.3%) of the respondents are always exposed to stress in the last one month.

Table 4.5 Respondents' with healthy hypertension preventive practices

Practice statements*	No	%
Undergone medical check in six months preceding survey	102	60.0
Done physical exercise a month preceding survey	111	65.3
Taken food low in salt content a month preceding survey	104	61.2
Checked body weight a month preceding survey	88	51.8
Taken diet rich in fruits a month preceding survey	121	71.2
Eaten vegetables a month preceding survey	141	82.9
Consumed alcoholic beverages a month preceding survey	99	58.2
Maintained my body weight six months preceding survey	106	62.4
Smoked cigarettes a month preceding survey	139	81.8
Got worried about issues a month preceding survey	60	35.3
Taken antihypertensive drugs a month preceding survey	124	72.9
Avoided taking too much oil a month preceding survey	94	55.3
Exposed to stress always a month preceding survey	49	28.8

*Multiple responses present

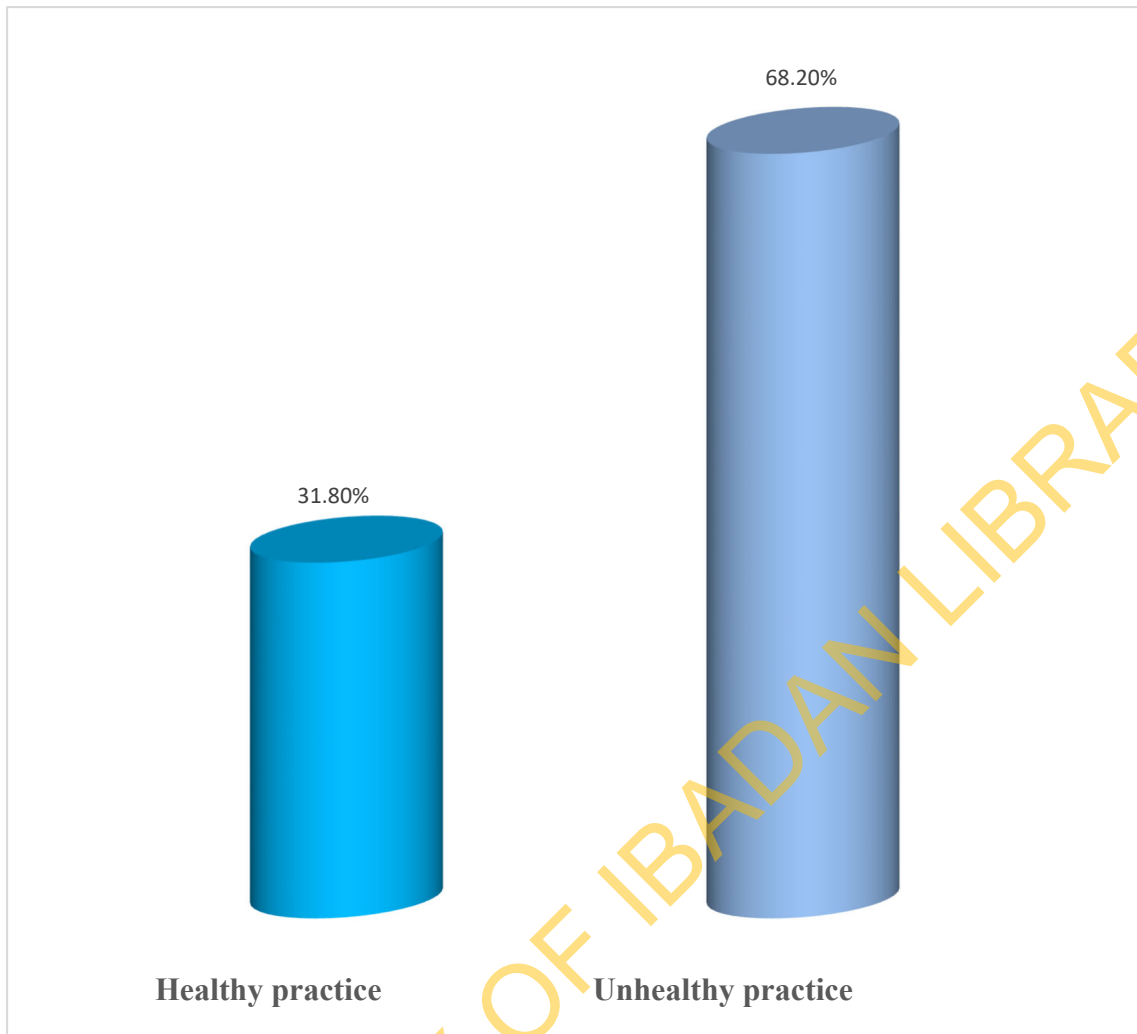


Figure 4.8: Respondents' hypertensive preventive practices

Average Practice score= 7.9 ± 2.5

Minimum Practice score= 2

Maximum practice score= 13

4.6 Statistical tests of hypotheses

Hypothesis 1: There is no significant association between socio-demographic characteristics of Police officers and prevalence of abdominal obesity in Ibadan North local government area of Oyo state.

Table 4.6.1 presents the result of the cross tabulations between respondents' socio-demographics and prevalence of abdominal obesity.

Chi square analysis revealed that there was a significant association between the sex, age and rank and the prevalence of abdominal obesity with a p-value < 0.05 . Thus, the null hypothesis that there is no significant association in respondents' socio-demographic characteristics and prevalence of abdominal obesity among Police officers in Ibadan North local government area of Oyo state was rejected but there was no significant association between marital status, level of education and average monthly income therefore we failed to reject the null hypothesis.

Table 4.6.1: Respondents' Socio-demographic Characteristics and prevalence of obesity

N=170

Variables	Prevalence of abdominal obesity		Df	X ²	p-value
	Yes (%)	No (%)			
Sex					
Male	38(34.5)	72(65.5)	1	37.010	0.000*
Female	50(83.3)	10(16.7)			
Age (years)					
21-30	14(30.4)	32(69.6)	2	15.872	0.000*
31-40	36(51.4)	34(48.6)			
Above 40	38(70.4)	16(29.6)			
Marital status					
Not currently married****	23(45.1)	28(54.9)	1	1.297	0.255
Currently Married	65(54.6)	54(45.4)			
Level of education					
Secondary	39(50.6)	38(49.4)	2	2.817	0.245
Tertiary	40(49.4)	41(50.6)			
Post graduate	9(75.0)	3(25.0)			
Rank					
Junior ranked officers**	42(44.2)	53(55.8)	1	4.921	0.027*
Senior ranked officers***	46(61.3)	29(38.7)			
Monthly income(Naira)					
0-25,000	34(45.3)	41(54.7)	4	3.638	0.457
26,000-50,000	32(61.5)	20(38.5)			
51,000-75,000	10(50)	10(50)			
76,000-100,000	10(55.5)	8(44.5)			
101,000-150,000	2(40.0)	3(60.0)			

***Significant (P<0.05)**

**Junior ranked officers: Constable, Corporal and Sergeant

***Senior ranked officer: Inspector, Assistant Superintendent of Police, Deputy Superintendent of Police, Superintendent of Police and Chief Superintendent of Police

****Not currently married: Single, divorced, widowed and separated

Hypothesis 2: There is no significant association between socio-demographics characteristics of Police officers and first point prevalence of hypertension in Ibadan North local government area of Oyo state.

Table 4.6.2 presents the result of the cross tabulations between respondents' socio-demographics and first point prevalence of hypertension.

Chi square analysis revealed that there was a significant association between the age, marital status and rank and the first point prevalence of hypertension with a p-value < 0.05 . Thus, the null hypothesis that there is no significant association in respondents' socio-demographic characteristics and first point prevalence of hypertension among Police officers in Ibadan North local government area of Oyo state was rejected but there was no significant association between sex, level of education and average monthly income therefore we failed to reject the null hypothesis.

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Table 4.6.2: Respondents' Socio-demographic Characteristics and first point prevalence of hypertension

Variables	First point prevalence of hypertension		Df	X ²	p-value
	Yes (%)	No (%)			
	N=166				
Sex					
Male	21(19.3)	88(80.7)	1	0.710	0.399
Female	8(14.0)	49(86.0)			
Age (years)					
21-30	3(6.5)	43(93.5)	2	13.027	0.001*
31-40	9(13.2)	59(86.8)			
Above 40	17(32.7)	35(67.3)			
Marital status					
Not currently married****	3(6.3)	45(93.8)	1	5.896	0.015*
Currently married	26(22.0)	92(78.0)			
Level of education					
Secondary	11(14.9)	63(85.1)	2	1.390	0.519
Tertiary	15(18.5)	66(81.5)			
Post graduate	3(37.5)	8(62.5)			
Rank					
Junior ranked officer**	10(10.9)	82(89.1)	1	6.236	0.013*
Senior ranked officer***	19(25.7)	55(74.3)			
Monthly income(Naira)#					
0-25,000	10(13.7)	63(86.3)	4	3.370	0.476
26,000-50,000	9(18.0)	41(82.0)			
51,000-75,000	4(20.0)	16(80.0)			
76,000-100,000	4(22.2)	14(87.8)			
101,000-150,000	2(40.0)	3(60.0)			

#Fisher's exact test *Significant (P<0.05)

**Junior ranked officers: Constable, Corporal and Sergeant

***Senior ranked officer: Inspector, Assistant Superintendent of Police, Deputy Superintendent of Police, Superintendent of Police and Chief Superintendent of Police

****Not currently married: Single, divorced, widowed and separated

Hypothesis 3: There is no significant association between socio-demographic characteristics of Police officers and knowledge of hypertension in Ibadan North local government area of Oyo state.

Table 4.6.3 presents the result of the cross tabulations between respondents' socio-demographics and knowledge of hypertension.

Chi square analysis revealed that there was no significant association between the sex, age, marital status, rank and monthly income and knowledge of hypertension with a p-value > 0.05 . Thus, the null hypothesis that there is no significant association in respondents' socio-demographic characteristics and prevalence of hypertension among Police officers in Ibadan North local government area of Oyo state was not rejected but there was a significant association between level of education and knowledge of hypertension therefore we rejected the null hypothesis.

Table 4.6.3: Respondents' Socio-demographic Characteristics and knowledge of hypertension

Variables	Knowledge			Df	X ²	p-value
	Poor (%)	Fair (%)	Good (%)			
N=170						
Sex						
Male	26(23.6)	56(50.9)	28(25.5)	2	1.664	0.435
Female	19(31.7)	25(41.7)	16(26.6)			
Age (years)						
21-30	11(23.9)	24(52.2)	11(23.9)	4	3.724	0.445
31-40	15(21.4)	36(51.4)	19(27.2)			
Above 40	19(35.2)	21(38.9)	14(25.9)			
Marital status						
Not currently married****	13(28.9)	22(48.9)	10(22.2)	2	0.352	0.845
Currently married	32(26.9)	55(46.2)	32(26.9)			
Level of education##						
Secondary	27(35.1)	39(50.6)	11(14.3)	2	12.079	0.013*
Tertiary	15(18.5)	37(45.7)	29(35.8)			
Post graduate	39(25.0)	5(41.7)	4(33.3)			
Rank						
Junior ranked officer**	26(27.4)	47(49.5)	22(23.2)	2	0.834	0.659
Senior ranked officer***	19(25.3)	34(45.3)	22(29.3)			
Monthly income(Naira)##						
0-25,000	27(36.0)	35(46.7)	13(17.3)	8	10.759	0.189
26,000-50,000	12(23.1)	24(46.2)	16(30.7)			
51,000-75,000	3(15.0)	11(55.0)	6(30.0)			
76,000-100,000	3(16.7)	9(50.0)	6(33.3)			
101,000-150,000	0(0.0)	2(40.0)	3(60.0)			

##Fisher's exact test *Significant (P<0.05) SP= Superintendent of Police

**Junior ranked officers: Constable, Corporal and Sergeant

***Senior ranked officer: Inspector, Assistant Superintendent of Police, Deputy Superintendent of Police, Superintendent of Police and Chief Superintendent of Police

****Not currently married: Single, divorced, widowed and separated

Hypothesis 4: There is no significant association between socio-demographics characteristics of Police officers and preventive practices against hypertension in Ibadan North local government area of Oyo state

Table 4.6.4 presents the result of the cross tabulations between respondents' socio-demographics and preventive practices against hypertension.

Chi square analysis revealed that there was no significant association between the sex, age, rank, marital status and level of education, monthly income and preventive practices against hypertension with a p-value > 0.05 . Thus, the null hypothesis that there is no significant association in respondents' socio-demographic characteristics and preventive practices against hypertension among Police officers in Ibadan North local government area of Oyo state was not rejected.

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Table 4.6.4: Respondents' Socio-demographic Characteristics and preventive practices against hypertension

Variables	Preventive practice against hypertension		Df	X ²	p-value
	Unhealthy (%)	Healthy (%)			
N=170					
Sex					
Male	75(68.2)	35(31.8)	1	0.000	0.984
Female	41(68.3)	19(31.7)			
Age (years)					
21-30	30(65.2)	16(34.8)	2	0.296	0.862
31-40	49(70.0)	21(30.0)			
Above 40	37(68.5)	17(31.5)			
Marital status					
Not currently married****	35(68.6)	16(31.4)	1	0.005	0.943
Married	81(68.1)	38(31.9)			
Level of education					
Secondary	56(72.7)	21(27.3)	2	1.340	0.512
Tertiary	52(64.2)	29(35.8)			
Post graduate	8(66.7)	4(33.3)			
Rank					
Junior ranked officer**	65(68.4)	30(31.6)	1	0.003	0.952
Senior ranked officer***	51(68.0)	24(32.0)			
Monthly income(Naira)					
0-25,000	46(61.3)	29(38.7)	4	7.306	0.121
26,000-50,000	42(80.8)	10(19.2)			
51,000-75,000	14(70.0)	6(30.0)			
76,000-100,000	12(66.7)	6(33.3)			
101,000-150,000	2(40.0)	3(60.0)			

**Junior ranked officers: Constable, Corporal and Sergeant

***Senior ranked officer: Inspector, Assistant Superintendent of Police, Deputy Superintendent of Police, Superintendent of Police and Chief Superintendent of Police

****Not currently married: Single, divorced, widowed and separated

Hypothesis 5: There is no significant relationship between preventive practices against hypertension and first point prevalence of hypertension in Ibadan North local government area of Oyo state.

The table 4.6.5 presents the result of the cross tabulations between respondents' preventive practices against hypertension and first point prevalence of hypertension.

Chi square analysis was used to test for significant relationship between these two variables and this revealed that there was no significant relationship ($p= 0.288$; $df= 1$; $\chi^2= 1.128$) between them. Thus, the null hypothesis that there is no significant relationship between preventive practices against hypertension and first point prevalence of hypertension among Police officers in Ibadan North local government area of Oyo state was not rejected.

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Table 4.6.5: Respondents' preventive practices against hypertension and first point prevalence of hypertension

N=166

Preventive practices against hypertension	First point prevalence of hypertension		Total	Df	X ²	p-value
	Yes (%)	No (%)				
Unhealthy	22(19.6)	90(80.4)	112(100)	2	1.128**	0.288*
Healthy	7(13.0)	47(87.0)	54(100)			
Total	29(17.5)	137(82.5)	166(100)			

**Chi square statistic was used

*Not Significant (p> 0.05)

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Hypothesis 6: There is no significant relationship between preventive practices against hypertension and prevalence of abdominal obesity in Ibadan North local government area of Oyo state.

The table 4.6.6 presents the result of the cross tabulations between respondents' preventive practices against hypertension and prevalence of abdominal obesity.

Chi square analysis was used to test for significant relationship between these two variables and this revealed that there was no significant relationship ($p= 0.753$; $df= 1$; $\chi^2= 0.099$) between them. Thus, the null hypothesis that there is no significant relationship between preventive practices against hypertension and prevalence of hypertension among Police officers in Ibadan North local government area of Oyo state was not rejected.

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Table 4.6.6: Respondents' preventive practices against hypertension and prevalence of abdominal obesity

N=170

Preventive practices against hypertension	Prevalence of abdominal obesity		Total	Df	X ²	p-value
	Yes (%)	No (%)				
Unhealthy	61(52.6)	55(47.4)	116(100)	1	0.099	0.753
Healthy	27(50.0)	27(50.0)	54(100)			
Total	88(51.8)	82(48.2)	170(100)			

**Chi square statistic was used

*Not Significant ($p > 0.05$)

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Hypothesis 7: There is no significant difference between respondents' preventive practices against hypertension and knowledge of hypertension.

The table 4.6.7 presents the result of the cross tabulations between respondents' preventive practices against hypertension and knowledge of hypertension.

Chi square analysis was used to test for significant relationship between these two variables and this revealed that there was no significant difference ($p= 0.469$; $df= 2$; $\chi^2= 1.516$) between them. Thus, the null hypothesis that there is no significant difference in the preventive practices against hypertension and knowledge of hypertension among Police officers in Ibadan North local government area of Oyo state was not rejected.

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Table 4.6.7: Respondents' knowledge of hypertension and hypertension preventive practices

N=170

Hypertension preventive practices	Knowledge			Total	Df	X ²	p-value
	Poor (%)	Fair (%)	Good (%)				
Unhealthy	34(29.3)	53(45.7)	29(25.0)	116(100)	2	1.516*	0.469**
Healthy	11(20.4)	28(51.9)	15(27.7)	54(100)			
Total	45(26.5)	75(47.6)	44(25.9)	170(100)			

*Chi square statistic was used

**Not significant (p> 0.05)

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Hypothesis 8: There is no significant difference between respondents' first point prevalence of hypertension and prevalence of abdominal obesity among Police officers in Ibadan North local government area of Oyo state.

The table 4.6.8 presents the result of the cross tabulations between respondents' first point prevalence of hypertension and prevalence of abdominal obesity.

Chi square analysis was used to test for significant relationship between these two variables and this revealed that there was no significant difference ($p= 0.090$; $df= 1$; $\chi^2= 2.881$) between them. Thus, the null hypothesis that there is no significant difference between respondents' first point prevalence of hypertension and prevalence of abdominal obesity among Police officers in Ibadan North local government area of Oyo state was not rejected.

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Table 4.6.8 Respondents' first point prevalence of hypertension and prevalence of abdominal obesity

N=166

First point prevalence of hypertension	Prevalence of abdominal obesity		Total	Df	X ²	p-value
	Yes (%)	No (%)				
Yes	19(65.5)	10(34.5)	29(100)	1	2.881*	0.090**
No	66(48.2)	71(51.8)	137(100)			
Total	85(51.2)	81(48.8)	166(100)			

*Chi square statistic was used

**Not significant (p> 0.05)

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4.7 Logistic Regression for Significant Associations

Table 4.7.1 shows the logistic regression analysis which establish that there was a significant association between sex, age and rank of respondents and abdominal obesity. From this analysis, female respondents are 9.5 times more likely to have abdominal obesity than male respondents (OR=9.474, 95% CI: 4.323-20.760).

Also, respondents within the age group 31-40 years are 2.4 times more likely to have abdominal obesity than respondents within the age group 21-30 years (OR=2.420, 95% CI: 1.105-5.299) and respondents in the group above age 40 years are 5.4 times more likely to have abdominal obesity than respondents within the age group 21-30 years (OR=5.429, 95% CI: 2.302-12.799).

This analysis also showed that senior ranked respondents are 2 times more likely to have abdominal obesity than junior ranked respondents (OR=2.002, 95% CI: 1.081-3.707).

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Table 4.7.1 Logistic regression analysis between respondents' sex, age and rank against prevalence of abdominal obesity

Variables	OR	95% CI OR	p-value
Sex			
Male**	9.474	4.323-20.760	0.000*
Female			
Age(years)			
21-30**			
31-40	2.420	1.105-5.299	0.027*
Above 40	5.429	2.302-12.799	0.000*
Rank			
Junior rank**	2.002	1.081-3.707	0.027*
Senior rank			

**Reference category

*Significant (P<0.05)

Table 4.7.2 shows the logistic regression analysis which showed that there was a significant association between age, rank and marital status of respondents and hypertension. From this analysis, respondents within the age group 31-40 years are 2.2 times more likely to have hypertension than respondents within the age group 21-30 years (OR=2.186, 95% CI: 0.559-8.557) and respondents in the age group above 40 years are 6.9 times more likely to have hypertension than respondents within the age group 21-30 years (OR=6.962 95% CI: 1.886-25.698).

More so, from this analysis, senior ranked respondents are 2.8 times more likely to have hypertension than junior ranked respondents (OR=2.833, 95% CI: 1.225-6.552).

Respondents who are currently married are 4.2 times more likely to have hypertension than respondents who are not currently married (OR=4.239, 95% CI: 1.218-14.754).

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Table 4.7.2 Logistic regression analysis between respondents' age, rank and marital status against first point prevalence of hypertension

Variables	OR	95% CI OR	p-value
Age			
21-30**			
31-40	2.186	0.559-8.557	0.261
Above 40	6.962	1.886-25.698	0.004*
Rank			
Junior rank**	2.833	1.225-6.552	0.015*
Senior rank			
Marital status			
Not currently married**	4.239	1.218-14.754	0.023*
Currently married			

**Reference category

*Significant (P<0.05)

Table 4.7.3 shows the logistic regression analysis which showed that there was no significant association between level of education of respondents and knowledge of hypertension. From the analysis, it showed that the odds of a respondent with secondary school education having fair knowledge of hypertension rather than poor knowledge is 1.15 times less than that of a respondent with postgraduate education (OR=0.867, 95% CI:0.191-3.935).

The odds of a respondents with tertiary education having a fair knowledge of hypertension than poor knowledge is 1.48 times greater than that of a respondent with postgraduate education (OR=1.480, 95% CI:0.313-6.987).

The odds of a respondent with secondary school education having good knowledge of hypertension rather than a poor knowledge is 3 times less than that of a respondent with postgraduate education. (OR=0.306, 95% CI: 0.059-1.596).

The odds of a respondent with tertiary education having good knowledge of hypertension rather than poor knowledge is 1.45 times greater than that of a respondent with postgraduate education (OR=1.450, 95% CI:0.287-7.338).

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Table 4.7.3 Logistic regression analysis between respondents' level of education and knowledge of hypertension

Knowledge/Level of education		OR	95% CI OR	p-value
Poor knowledge**				
Fair	Secondary	0.867	0.191-3.935	0.484*
knowledge	Tertiary	1.480	0.313-6.987	0.621*
Postgraduate**				
Good	Secondary	0.306	0.059-1.596	0.160*
Knowledge	Tertiary	1.450	0.287-7.338	0.653*
Postgraduate**				

**Reference category

*Not Significant (P>0.05)

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CHAPTER FIVE

5.0 DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Discussion

5.1.1a Socio-demographic profile of Police officers in Ibadan North local government area of Oyo state.

The data collected showed that most of the Police officers in Ibadan North Local government area of Oyo state are males; this could be due to the nature of the job which requires strength and tenacity and this is consistent with the findings of Tesfaye (2017) in a study among similar population in Ethiopia where majority (79.5%) of the respondents were males. The age range of respondents is similar to the findings Tesfaye (2017), however, majority of the respondents in this study are currently married which is in contrast with the findings of Tesfaye (2017) where majority are single. This could be as a result of majority of the respondents being in the reproductive age group.

Due to the location of the study, most of the respondents are of the Yoruba ethnic. Majority of the respondents were Christians and this could be as a result of Christianity being the predominant religion among the elites in the local government and possessed degrees from tertiary institutions. Most of the Police officers are in the sergeant rank of the Nigeria Police Force with majority earning approximately within #5000 and #25000 in a month. This could mean that they are poorly remunerated as reported in the findings of Karimu (2015) where it was stated that the present salary structure is undesirable particularly when it is related to the rate of inflation in the country. This is the more reason why relevant authorities including the Police Service Commission (PSC) should ensure that men and officers of the Nigeria Police force continue to enjoy regular increment in remuneration and salaries commensurate with inflation rate in the country.

5.1.1b Prevalence of Abdominal obesity

Abdominal obesity was prevalent among more than half of the respondents with waist circumference higher than expected; the prevalence of 51.7% from this study was lesser than what was reported (71.4%) by Aduroja et al., (2016) in a study among Osun state College of Education staff. A higher percentage of the female had abdominal obesity and this is in agreement with the

findings from Aduroja *et al.*, (2016), Raimi, Odusan and Fasanmade (2015) and Mogre, Aleyira and Nyaba (2014). There has been advocacy for the use of waist circumference in measurement of obesity (Sanya *et al.*, 2009 and Nkeh-Chungag *et al.*, 2015) but this has yet to gain root in the Nigerian health sector as waist circumference is still not in use in new and recent studies, Aduroja *et al* (2016) were able to determine that waist circumference is indeed a more accurate means of measuring obesity than BMI, as it showed a more significant association with hypertension than the latter.

There was a significant relationship between sex, age and rank with abdominal obesity among Police officers ($p= 0.000, 0.000, \text{ and } 0.027$) respectively while religion, ethnic group, level of education, marital status and average monthly income had no significant relationship with abdominal obesity with ($p>0.05$). Sex is a strong predictor of abdominal obesity as female Police officers are nine times more likely to have abdominal obesity than their male counterparts. However, this might be as a result of postpartum weight gain in women of child bearing ages and menopausal women (Gunderson, 2009 and Achie, Olorunshola, Toryila and Tende, 2012) where neck circumference may be more accurate in diagnosing obesity as it has shown significant relationship with waist circumference (Saka, Turker, Ercan, Kiziltan and Bas, 2014 and Hoebel, Swanepoel and Malan, 2014).

Age and rank were predictors of abdominal obesity among Police officers. Police officers within age group of 31-40 years are 2 times more likely to be abdominally obese than officer within ages 21-30 years while officers above 40 years of age are 5 times more likely to be abdominally obese than respondents within ages 21-30 years. Also, senior ranked Police officers are 2 times more likely to have abdominal obesity than junior ranked officers.

5.1.2 First point prevalence of hypertension

The overall first point prevalence of hypertension [systolic blood pressure (SBP) ≥ 140 mmHg, diastolic blood pressure (DBP) ≥ 90 mmHg] among Police officers in Ibadan North local government area of Oyo state was 17.5%. This is consistent with the findings of Tesfaye (2017) where 17.8% prevalence was reported. This prevalence is slightly higher than the value reported (14.9%) by Fikenzer, Koch and Falz, (2014) in a study on “The prevalence of hypertension and risk factors contributing to arterial hypertension in young Police officers in Germany”; this could be due to the fact this study was conducted among all the age groups in the Police force. In contrast

to this study were the prevalence of 9.6% reported by Douglas and Oraekesi, (2015) among firefighters who are also emergency responders in Rivers state, South- South, Nigeria; 32.5% from a study conducted by Sen et al., (2015) among Police officers in Kolkata, India and 34.5% reported by Ganesh, Naresh and Bammigati (2014) among Police personnel in urban Puducherry, India. The prevalence rate among the Police officers in Ibadan North local government area of Oyo state is close to the 22.7% reported by Adediran *et al.* (2013) on the overall prevalence of hypertension in Nigeria.

Hypertension was more prevalent among males than females with rates of 19.3% and 14.0% respectively but the difference was not statistically significant ($p= 0.399$). This is in tandem with findings from Chinyere, Mwuese, & Ara, (2015) in a study on prevalence and awareness of hypertension among staff and students of a tertiary institution in Nigeria. This is also consistent with a similar study where it was reported that men had a slightly higher prevalence of 26.6% (26.0 to 27.2) compared to 26.1% of women (25.5 to 26.6%) (Kearney et al, 2005). However, in the same report, it was projected that by 2025, women will have a 0.5% higher prevalence compared to men (Kearney et al., 2005). In another study by Ajayi and Oyeniya (2016), an overall prevalence of hypertension was reported to be 33.1% with higher prevalence rate among the male (male 36.8% and female 31.1%).

There was a significant relationship between age of Police officers and Hypertension status ($p=0.001$); the prevalence of hypertension is least among the younger Police officers aged 21-30 years and highest among officers who are above 40 years which is in agreement with finding from Sen et al., (2015) among Police officers in Kolkata, India, which revealed that the prevalence of hypertension is less among the younger Police officers aged 20–29 year as majority of them are newly appointed while reverse result was observed in Police officers aged more than 35years. A logistic regression on age as a predictor of hypertension among Police officers revealed that officers between ages 31-40 years are 2 times more likely to have hypertension than those within the ages of 21-30 years while respondents above 40 years of age are 7 times more likely to have hypertension than those within age group 21-30 years. Consistent with the findings of the this study was the report of Ajayi and Oyeniya (2016) in a study among commercial Taxi drivers in Abuja which revealed respondents aged ≥ 40 years were 3.6 times more likely to develop hypertension (OR= 3.6, 95%CI: 1.2-11.6) compared with those in younger age group. This study reveals a significant relationship between rank of Police officers and prevalence of hypertension ($p=0.013$). The percentage of Police officers with hypertension increases as the rank does; it is

obvious that, as the seniority of Police officers increases, more and more responsibilities are posed on them. Burden of these job responsibilities; addition to increased family responsibilities, increases the level of stress, resulting in higher risk of hypertension among the Police officers when compared with their other counterparts (Collins and Gibbs, 2003). It can be said that Police officers retire with some stress-related disorders, although they joined the police department in good health (Sen et al., 2015). A logistic regression analysis revealed that senior ranked officers are 3 times more likely to have hypertension than junior ranked officers.

Furthermore, persons known as Pre-hypertensive (BP= 120-139/80-89 mmHg) are more prone to develop hypertension (Kales *et al.*, 2009). This study revealed that more than one-third of the Police officers are in the pre-hypertensive stage and this could be adduced to the stress level on the job and other occupational factors which are likely to contribute to increased risk of cardiovascular diseases among emergency responders such as Police officers (Sen et al., 2015).

This study revealed that there is no significant relationship between abdominal obesity and hypertension among Police officers ($p=0.104$) which is contrary to the findings of Aduroja et al., (2016). The reason could be adduced to the difference in the occupational demands of the professions because Police officers engage more in physical activity as emergency responders. About one-fifth of the Police officers have not checked their blood pressure before by a health worker and more than half of the hypertensive had not checked their blood pressure in more than three months; this could be adduced to lack of time and the stress on the job as the little time available is used to rest or attend to other things that seem more important to them. About one-fifth of the Police officers had family history of hypertension. More than half (58.6%) of Police officers with Hypertension had a family history of hypertension hence there was a significant relationship with hypertension and history of hypertension in one's immediate family ($p=0.000$). Respondents who have history of hypertension are 9 times more likely to have hypertension than those who do not have (OR= 8.798, CI: 3.636-21.289); the odds ratio was higher than the findings of Ajayi and Oyeniya (2016) which revealed respondents with a family history of hypertension were 4 times more likely to develop hypertension (OR=4.1, 95% CI: 1.97-8.08).

Marital status had a significant relationship with hypertension ($p=0.015$) while religion, ethnic background, level of education and average monthly income has no significant association with hypertension ($p>0.005$). A logistic regression analysis revealed that Police officers who are currently married are 4 times more likely to have hypertension than those who are not. Family

responsibilities combined with the stress on the job could be a likely reason while those who are currently married are more likely to have hypertension.

5.1.3 Sources of information on hypertension

All the respondents have heard about hypertension. The major source of information to Police officers are health workers. The finding from this study corroborates the findings from the study in Seychelles Islands (Indian Ocean) which reported that the major source of information among hypertensive patients were doctors (Aubert, Bovet, Gervasoni, Rwebogora, Waeber and Paccaud, 2013). Kofi (2014) in a study reported that most of the participants had their information on high blood pressure from health care workers such as physicians, midwives, public health workers and community nurses as the leading reliable source of information which is in consonance with the findings from this study. However, this is contrary to the findings of Awosan et al., (2013), who reported health workers being the least source of information to bankers and teachers in Sokoto state on CHD.

According to “browser media” (2011), social media statistics show a huge growth in 2011. It is said that “one in every nine people on Earth is on Facebook” (Bullas, 2011), this fact shows how integrated social media has become in the lives of people today. Consistent with the statistics revealed by Statcounter Global statistics (2018) in Nigeria in a survey conducted between October 2017 and October 2018 that Facebook is used by 78.7% of individuals on social media; this study shows that Facebook is the major social medium that provided information to about two-third of Police officers on hypertension. WhatsApp which is a messaging app provided information to about two-third of the Police officers. Also, radio of all the mass media provides information to about three quarters of the Police officers on hypertension. Consistent with the findings of the study is the report of Mbuya, Fredrick and Kundi (2014) which revealed that the major source of information for diabetes and hypertension was internet and media (84% and 73.4% respectively). Other sources of information revealed were family members, co-workers, friends, neighbours and pharmacy. The reported sources of information could be effectively utilized to pass health information messages to the population and improve awareness of the Police officers on this condition.

5.1.4 Knowledge of hypertension

The study revealed the respondents level of knowledge of hypertension. Most of the respondents have fair knowledge scores while only few have poor knowledge scores. Although literature is scarce on the knowledge of hypertension among Police officers, however assessment of knowledge of hypertension among adult African-Americans by Twum (2015) revealed a lack of knowledge about hypertension and other related disease which is contrary to the findings from this study. This study revealed that the majority of Police officers have good knowledge of causes, preventive practices and consequences of hypertension which is however contrary with the study by Faida *et al.*, (2014) in Tanzania among teaching staff of higher learning institution. They found out that the majority of the teaching staff is aware of hypertension and diabetes although knowledge of the causes, signs and symptoms, risk factors and complication was not as expected. Moreover, findings from Ali and Jimoh (2011) in a study among staff of University of Ibadan found out that members of staff of university of Ibadan, Nigeria demonstrated a relatively high level of knowledge about the complications associated with hypertension which is in tandem with the findings from this study.

In responding to the causes of hypertension, some of the Police officers mentioned lack of regular exercise, alcohol consumption, obesity, tobacco consumption; this is in consonance with the report of Shaikh *et al.*, (2011) in a study conducted among entry year medical students, knowledge regarding risk factors of hypertension such as tobacco use, high cholesterol, reduced physical activity and obesity were 71.8%, 73.6%, 47.3% and 73.6% respectively. On the definition of hypertension, less than a tenth of the Police officers gave an accurate definition of hypertension as majority referred to it as “high blood pressure”. This is agreement with the findings of Al-Khashman, (2001) where about one-third of doctors knew even the definition of hypertension in Riyadh, Saudi Arabia.

Consistent with the findings of this study where majority of the respondents said stroke and death are the two major consequences of hypertension is the findings Abdulahhi and Amzat (2011) where about 84% of the respondents quite agreed that stroke is one of the complications associated with hypertension although very few respondents associated hypertension to retinal failure. About 80% agreed very much that hypertension can lead to heart attack which could eventually lead to death.

This study revealed that there was a significant relationship between level of education and rank of Police officers and their level of knowledge on hypertension ($p < 0.05$) while there was no significant relationship between sex, age, marital status and monthly income and knowledge of hypertension ($p > 0.05$). Abdulahhi and Amzat (2011) found that level of education may have positive impact on knowledge about the risk factors and complications of hypertension. However, Oliveria et al. (2005) have observed that it is possible for people to demonstrate an awareness of hypertension but not having a comprehensive understanding of the health condition. This creates an opportunity to focus on educational programmes that would have direct impact on positive health behaviours among Police officers. Information received on hypertension had a significant influence on the knowledge of Police officers ($p = 0.009$) as only a few had poor knowledge score. However, there is need to reinforce information received and also ensure its accuracy as majority of the Police officers had fair knowledge of hypertension.

5.1.5 Hypertension preventive practices

This study revealed that majority of the Police officers did not have healthy preventive practices of hypertension. It is widely accepted that the lack of regular physical exercise leads to increased risk for both excess weight gain and cardiovascular disease. In addition, sedentary persons are at increased risk for acute cardiovascular events during activities requiring considerable physical exertion (Kales et al, 2007 and Holder et al., 2006). Also, according to the Seventh Report of the Joint national Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (2003) it stated the following to be the preventive measures that can be done to mitigate the modifiable risk factors of hypertension. These preventive measures include: Reduce weight (maintain normal body weight with BMI of 18.5-24.9Kg/m²). This study however revealed that about one-third of the Police officers had not done any physical exercise and about half had not checked their body weight in the last one month preceding the study.

Police officers lead a physically inactive life and have irregular and spicy, hotel-made diet because of limited choice of food while on duty. Owing to their job condition and practice, frequent shift work is a very normal phenomenon; thereby, they suffer from sleeplessness (Vila, 2006). Significantly, increased irregular eating habit and decreased physical activity is observed among Police officers. These sedentary activities may lead to hypertension and all types of obesity in this special population, although these two factors did not contribute significant association in the

regression analysis (Sen et al., 2005). Less than two-third of the Police officers consumed foods low in salt content while about half of the them had taken food with too much oil. This is consistent with finding of Aduroja et al., 2016 which indicated that there was a poor dietary pattern among staff of Osun state College of Education, with excessive consumption of salt.

Also, according to the Seventh Report of the Joint national Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (2003) it stated the following to be the preventive measures that can be done to mitigate the modifiable risk factors of hypertension. Adopt dietary approaches to stop Hypertension (diet rich in fruit, vegetables, and low-fat dairy; reduced saturated and total fat content), Reduce dietary sodium ((2.4 g)/day), Increase physical activity (Aerobic activity >30 min/day most days of the week), Moderate alcohol consumption (Men: ≤ 2 drinks/day Women: ≤ 1 drink/day). Majority (71.2%) and (82.9%) of the respondents had taken diets rich in fruits and vegetables in the last one month respectively.

Lifestyle studies of Police officers showed very high rate of addiction to alcohol and tobacco. They work under tremendous pressure and stress, which may make them alcohol and smoking dependent (Violanti, Marshall and Howe, 1983). This combination can have a synergistic and detrimental effect on the deterioration of their health status Sen et al., (2015). However, about one-third of the Police officers consumed alcoholic beverages while less than one-fifth of them smoked cigarette in the last one month. This could be due to the fact that they had received health information on hypertension during the Police training and sometimes at their place of work. In consistent with findings of Sen et al., (2015) among Policemen in Kolkata, India; majority (65.3%) of the respondents are always exposed to stress and suffer from sleeplessness due to shift work as most of them run 24 hours shift four times in a week.

This study revealed that there was no significant relationship between socio-demographic characteristics such as sex, age, marital status, level of education, rank and monthly income and preventive practices against hypertension ($p>0.05$). More so, the study also revealed that there was no significant relationship between hypertension preventive practices with prevalence of hypertension, obesity and knowledge with ($p= 0.288, 0.469$ and 0.943) respectively. More so, information received on hypertension does not translate to healthy practices of preventing hypertension ($p=0.195$). It could be said that despite the various means of receiving information on hypertension available to Police officers, it has no effect on their hypertension preventive practices.

5.2 Implications of finding for Health Promotion and Education

The findings of the study have several implications for planning, development and implementation for health promotion and education on cardiovascular wellness programmes among Police officers. It has been deduced from the study that knowledge has a direct influence on the preventive practices against hypertension and also preventive practices against hypertension have influence on the prevalence of hypertension among Police officers. Therefore, to reduce the prevalence of hypertension, improve knowledge and preventive practices against hypertension, the following should be put in place:

Public Enlightenment

This could be in form of campaign which would be used to create awareness, increase knowledge and change behavior towards hypertension preventive practices. This has the potential of reaching out to a large number of audience. This could be done through social media as majority of the respondents use social media platforms such as Facebook and Whatsapp. Mass media such as radio will help in no small way in achieving this change. Some of the Police officers see no need for regular medical check-up. This has to be reiterated in their ears on a regular basis and the occupational risk attached to their jobs. This enlightenment programme can be done with the use of behavioural change communication materials such as posters, leaflets, jingles (Whitaker, Baker and Arias, 2007).

Policy Formulation

Occupational standards for blood pressure control for Police officers should be formulated, implemented and ensured it's updated regularly. With more than one-third of the population on the pre-hypertensive stage, there is every need to formulate and implement healthy public policies that will ensure that the Police officers go regularly for medical check-up and also the schedule of work be looked into so as to ensure there is enough time to rest. If this trend continues, there is a very high probability that the prevalence of hypertension will increase and invariably reduce the capability and strength of Police officers who doubles as our law enforcement personnel and emergency responders. Also, there is need to optimize the collective workload of Police officers by limiting the number of 24-hour shifts that a Police officer can work and recruiting more Police officers on a regular basis.

Advocacy

Advocacy on avoidance of tobacco and alcoholic beverages should be intensified as some Police officers tend to consume this excessively. This doesn't only affect their health but invariably affect their work output. Force work requires being attentive to details, ability to make quick decisions and act responsibly and an individual who is under the influence of alcohol or tobacco has his/her sense of judgment impaired. Also, the consumption of fruits, vegetables and diets low in salt content and cholesterol should be given more emphasis as poor dietary pattern has no small effect on the cardiovascular wellness of individuals.

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5.3 Conclusion

The study investigated the first point prevalence, knowledge and preventive practices against hypertension among Police officers in Ibadan North local government area of Oyo state. The first point prevalence of hypertension is remarkably high among this group of emergency responders and the level of knowledge could be concluded to be fair while the preventive practices against hypertension is unhealthy. Therefore, fair knowledge could not be said to bring about a healthy practice.

Age, abdominal obesity assessed by waist circumference, SBP, DBP, history of hypertension in the family, and consumption of alcohol, excessive stress, poor dietary pattern among others are the identified risk factors of hypertension while death, stroke, myocardial infarction (heart attack) and visual impairment are the consequences of hypertension among this group of emergency responders.

Lifestyle modifications should be used as initial therapy to control blood pressure in all individuals with pre-hypertension and hypertension. Healthy behavior such as consumption of fruits, vegetables, diets low in salt content and cholesterol, prevention of alcohol and tobacco consumption, regular physical activity, sleep and regular medical check-up would be important interventions in preventing the ongoing upswing in prevalence of hypertension.

This study therefore indicated that knowledge and preventive practices against hypertension among Police officers should be improved in order to prevent other cardiovascular diseases such as ischaemic heart disease, myocardial infarction, angina, coronary heart disease among others. There is therefore every need to address this issue at individual, family, community, institutional and policy levels.

5.4 Recommendations

Based on the findings from this study, the following recommendations are made:

1. Police officers should ensure they go for monthly medical checkup as this would help them to know the state of their health in good time and start receiving necessary medical care. More so, individuals should have digital sphygmomanometer, tape rule and weighing scale at home to measure their BP, waist circumference and weight respectively on a regular basis.
2. It is widely accepted that the job of Police officers is very stressful hence little time to rest or attend to other pertinent issues. Police officers should make use of every opportunity they have to sleep/rest in order to ensure their body receives the rest that is needed to function optimally and prevent high blood pressure
3. Police officers are encouraged to avoid alcohol and tobacco substance consumption as this increases their risk of having high blood pressure. Hence, fruits, vegetables, diets low in salt content and cholesterol should be consumed on a daily basis. Home-made foods should be consumed as much as possible as one will be able to monitor what is being consumed.
4. Police officers are encouraged to regularly get involved in physical activities as this will help reduce the risk of overweight/ obesity which is a risk factor for hypertension and other cardiovascular diseases.
5. The Nigeria Police Force should formulate and implement policies that will encourage the men and officers of the force to have sufficient time for sleep which will render them more productive and active. More so, regular training programmes should be organized to enable them have knowledge on cardiovascular diseases and other risks associated with their occupation.
6. The federal government of Nigeria through the Nigeria Police Force should employ more Police officers as this would reduce the burden of work on each Police officer. Most of the Police officers run a 24-hour shift three to four times in a week due to shortage of manpower which invariably leads to little time to sleep, take adequate diet, exercise or go for medical check-up as there are other pertinent issues calling for their attention within their free period.

REFERENCES

- Abdullahi, A. A. 2004. Knowledge, Attitude and Practice towards Hypertension among the Staff of the University of Ibadan. M.Sc Thesis. Department of Sociology, University of Ibadan, Nigeria.
- Abdullahi, A. A. and Amzat, J. 2011. Knowledge of hypertension among the staff of University of Ibadan, Nigeria. *Journal of Public Health and Epidemiology*. Vol. 3(5), pp. 204-209.
- Achie, L. N., Olorunshola, K. V., Toryila and Tende, J. A. 2012. The body mass index, waist circumference and blood pressure of postmenopausal women in Zaria, Northern Nigeria. *Current Research Journal of Biological Sciences*. 4(3):32-332.
- Adediran, O. S., Okpara, I. C., Adeniyi, O. S. and Jimoh, A. K. 2013. Hypertension prevalence in an urban and rural area of Nigeria. *Journal of medicine and medical sciences* Vol. 4. (4): 149-154.
- Adedoyin, R. A., Mbada, C. E. and Bisiriyu, L. A. 2008. Relationship of Anthropometric Indicators with Blood Pressure Levels and Risk of Hypertension in Nigerian Adults. *International Journal of General Medicine*, Vol. 1: 33-40. <http://dx.doi.org/10.2147/ijgm.s3643>
- Adedoyin, R. A., Awotidebe, T. O., Borode, A. O., Ativie, R. N., Akindele M. A., Adeyeye, V. O. et al., 2016. Comparison of blood pressure patterns of teaching and non-teaching staff of a Nigerian university. *International journal of clinical medicine* Vol. 7. 454-460
- Aduroja1, E. P., Isola, O., Akinboboye, O. and Akinboboye O. D. 2018. 'Relationship of Visceral Obesity and BMI with Blood Pressure among Osun State College of Education staff, Nigeria', doi: 10.9734/AIR/2016/27342.
- Ajayi I. O. and Oyeniyi, O. S. 2016. Prevalence of hypertension and associated factors among residents of Ibadan North local government area of Oyo state Nigeria. *Journal of cardiology* Vol. 13(1): 67-75

- Ajayi, I. O., Sowemimo, I. O., Akpa, O. N. and Ossai, N. E. 2016. Prevalence of hypertension and associated factors among residents of Ibadan north local government area of Oyo state Nigeria. *Journal of cardiology* vol. 13(1) 67-75
- Akter, R., Assadi, R., Singh, H., Abaszadhezouri, M. G., Lamichhane, S., Ahadi, S. et al. 2014. Sources of information and level of knowledge on Hypertension among entry level university students in Ajman, UAE. *American Journal of Research Communication*, 2014, 2(5): 16-27} www.usa-journals.com, ISSN: 2325-4076.
- Al-Khashman, A. S. 2001. Screening for hypertension. Assessing the knowledge, attitudes and practice of primary health care physicians in Riyadh, Saudi Arabia. *Saudi Medical Journal*. 22(12):1096-100. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/11802184>
- Ali, A. A. and Jimoh, A. 2011. Knowledge of hypertension among staff of University of Ibadan, Nigeria. *Journal of Public health and epidemiology* Vol. 3 (5): 204-209
- Attia, Z. T., Sameeh, M. A., Ahmed, G. Z., Mohammed, H. and Nada, A. H. 2004. Self-reported knowledge of School Students and their Teachers- Risks and Prevention of Coronary Heart Disease. *Bahrain Med. Bull.* 26(2):1-9.
- Aubert, L., Bovet, P., Gervasoni, J., Rwebogora, A., Waeber, B. and Paccaud, F. 2013. Knowledge, Attitudes, and Practices on Hypertension in a Country in Epidemiological Transition. *Journal of American Heart Association*. Available from: <http://hyper.ahajournals.org/content/31/5/1136>
- Awosan, K. J., Ibrahim, M. T. O., Makusidi, M. A., Essien, E. and Adeniji, A. 2013. Impact of intervention on knowledge and risk factors of coronary heart disease among teachers in Sokoto, Nigeria. *International Journal of Medicine and Medical Sciences*. Vol. 5(10), pp. 476-488
- Aysha, A., Saniya, S. G., Saima, L., Zahra, A. S., Aamir, H. K. 2012. Good knowledge about hypertension is linked to better control of hypertension; A multicentre cross sectional study in Karachi, Pakistan. *BMC Res Notes*. 5:579. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3534478/>

- BeLue, R., Okoror, T. A. and Iwelunmor, J. 2009. An Overview of Cardiovascular Risk Factor Burden in Sub-Saharan African Countries: A Socio-Cultural Perspective. *Globalization and Health*, Vol. 5: 10. <http://dx.doi.org/10.1186/1744-8603-5-10>
- Bhatt, D. L., Steg, P. G. and Ohman, E. M. 2006. International prevalence, recognition and treatment of cardiovascular risk factors in outpatients with atherothrombosis. *JAMA* 295: 180-189.
- Blumenthal, J. A., Babyak, M. A., Hinderliter, A. *et al* 2010. Effects of the DASH diet alone and in combination with Exercise and weight loss on blood pressure and cardiovascular biomarkers in men and women with high blood pressure: the ENCORE study. *Arch. Intern. Med.* 170 (2): 126–135.
- Cappucio, F. P., Micah, F. B., Emmett, L., Kerry, S. M., Antwi, S., Martin P. R, *et al*. 2004. Prevalence, Detection, Management and control of Hypertension in Ashanti, West Africa. *Hypertension*. 43.(5):1017 -1022.
- Center for Disease Control and Prevention. 2011. Morbidity and Mortality Weekly Report (MMWR) Vital Signs: Prevalence, Treatment and Control of Hypertension. United States 1999-2002 and 2005-2008 60(04):103-108.
- Chobanian, A.V., Bakris, G. L., Black, H. R., Cushman, W. C., Green, L.A, Izzo, J. L., *et al.*, 2003. The Seventh Report of the Joint national Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure. The JNC 7 Report. *JAMA* 289:2560–2572.
- Cochran, W. G. 1963. *Sampling Techniques*, Wiley, New York.
- Collins, P.A., Gibbs, A. C. 2003. Stress in police officers: a study of the origins, prevalence and severity of stress-related symptoms within a county police force. *Occup Med (Lond)*.;53(4):256–64
- Cooper, R., Rotimi, C., Ataman, S., McGee, D., Osotimehin, B., Kadir, S. *et al*. 1997. The prevalence of hypertension in seven populations of West African origin. *American Journal of Public Health*. 87:160 – 168.

- Cressman, M. D. and Gifford, R. W. 1983. Hypertension and stroke. *Journal of the American College of Cardiology*. 1:521 – 527.
- Cunha, J. P., Marks, J. W. 2011. High blood pressure (hypertension). Available: http://www.medicinenet.com/high_blood_pressure/article.htm. Accessed 27 February 2011
- Damansceno, A., Azevedo, A., Silva-Matos, C., Pista, A., Diogo, D., Lunet, N. 2009. Hypertension prevalence, awareness, treatment, and control in Mozambique. Urban/rural gap during epidemiologic transition. *Hypertension*. 54: 57 – 83.
- Davies, A., Catriona, B., Adewale, V. A. Jacqueline, Y. T. and Felix, A. O. 2014. An estimate of the prevalence of hypertension in Nigeria; a systematic review and meta-analysis. *Journal of hypertension*. Vol. 32(1): 14-21
- Delacroix, S., Chokka, R. C. and Worthley, S. G. 2014. Hypertension: Pathophysiology and Treatment. *Journal of Neurology and Neurophysiology* 5:250.
- Douglas, K. E. and Oraekesi, C. K. 2015. Prevalence of hypertension among firefighters in Rivers state, South-South, Nigeria. *Nigeria Journal of Medicine* 24(3). Pg 213-222.
- Ekwunife, O., Udeogaranya, P., Nwatu, I. 2010. Prevalence, awareness, treatment and control of hypertension in a Nigerian population. *Health*. Vol. 2: 731 – 735.
- Erhun, W. O., Olayinwola, G., Agbani, E. O., Omotosho, N. S. 2005. Prevalence of hypertension in a University Community in South West Nigeria. *Africa Journal of Microbiology Research*. 8(1):15 – 19.
- Faida, E. M. et al. 2014. Knowledge of diabetes and hypertension among members of teaching staff of higher learning institution in Dares Salam, Tanzania. *Tanzania Journal of health research* Vol, 16(2), 50-57
- Fikenzer, S., Koch, S. and Falz, R. 2014. ‘The prevalence of hypertension and risk factors contributing to arterial hypertension in young police officers’. *Journal of experimental and clinical cardiology*. Germany
- Feinstein, A. 1985. *Clinical Epidemiology: The Architecture of Clinical Research*. WB

Saunders, Philadelphia.

- Fogari, R., Zoppi, A., Corradi, L., Marasi, G., Vanasia, A. and Zanchetti A. 2001. Transient but not sustained blood pressure increments by occupational noise. An ambulatory blood pressure measurement study. *Journal of Hypertension*. 19:1021–1027.
- Ganesh, K. S., Naresh, A.G.V and Bammigati, C. 2014. Prevalence nad rsiks factors of hypertension among male Police personnel in Urban Puducherry, India. *Kathmandu University Medical Journal*. 12.48:242-246
- Glanz, K. and Rimer, B. K. 2002. Health Behaviour and Health Education: Theory, Research and Practice. Third. Jossey
- Godeliver, A. B., Kagashe, Sameera, A., Fazal. 2011. Knowledge of Hypertensive Patients with or Without HIV on Hypertension and Their Experience in Using Their Medicines in Dar es Salaam, Tanzania: The Role of the Pharmacist. *Tropical Journal of Pharmaceutical Research*. 10 (6): 825-831.
- Godfrey, B. S., Sarah, I. I. 2010. Hypertension related knowledge, attitudes and lifestyle practices among hypertensive patients in sub-urban Nigeria community. *Journal of public health and epidemiology* Vol 2(4) 71-77.
- Greenhalgh, J., Dickson, R. and Dundar, Y. 2009. The effects of biofeedback for the treatment of essential hypertension: a systematic review. *Health Technology Assess*. 13 (46): 1–104.
- Gunaranthne, A., Patel, J. V., Potluri, R., Gill, P. S., Hughes, E. A., Lip, G. Y. 2008. Secular trends in the cardiovascular risk profile and mortality of stroke admissions in an innercity, multiethnic population in the United Kingdom (1997-2005). *Journal of Human Hypertension*. 22: 18-23.
- Gunderson, E. P. 2009. Childbearing and obesity in women: Weight before, during, and after pregnancy. *Obstetrics and Gyneacology Clinics of North America*. 36(2):317- 332
- Hoebel, S., Swanepoel, M. and Malan, L. 2014. Examining waist and neck circumferences as screening tools for metabolic syndrome in a sub-Saharan cohort at three year follow-up: The SABPA prospective cohort. *JEMDSA*. 19(3):106-112.

- Holder, J.D., Stallings, L. A., Peeples L., Burress, J. W. and Kales, S.N. 2006. Firefighter heart presumption retirements in Massachusetts 1997–2004. *J Occup Environ Med.*48(10):1047–53.
- Ibhazehiebo, K., Iyawe, V. I. and Ighoroje, I. D. 2007. Epidemiologic studies of the prevalence of Arterial Hypertension among commercial Motor Bike Riders in Benin City, Nigeria. *Nigeria Journal of Health and Biomedical Science.* 6(2): 26 – 29.
- Janet, O. K. Prevention and management of hypertension: A study on knowledge and attitudes of women of childbearing age. http://www.theseus.fi/bitstream/handle/10024/41325/Kofi_Janet%20pdf.pdf?sequence=1
- Jenicek, M. and Cle'roux, R. 1982. E' pide'miologie: principes, techniques, applications. Edisem, St. Hyacinthe, Que'bec.
- Jogunola, O. O. and Awoyemi, A. O. 2010. Prevalence of sedentary lifestyle among bankers in Ilorin metropolis. *Nigeria Journal of Medical Rehabilitation.* 15 (1&2): 44-50.
- Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. *JAMA.* 2003;289:2560–72.
- Kadiri, S., Walker, O., Salako, B.L. and Akinkugbe O., 1999. Blood pressure, hypertension and correlates in urbanized workers in Ibadan, Nigeria: a revisit. *Journal of Human Hypertension* Vol.13, 23-27.
- Kales, S. N., Soteriades, E. S., Christouphi, C. A. and Christiani, D. C. 2007. Emergency duties and deaths from heart disease among firefighters in the United States. *N Engl J Med.*;356(12): 1207–15.
- Kaliyaperumal, K. 2014. Guideline for conducting a knowledge, attitude and practice (KAP) study. *Community Ophtalmol* 4(1): Pg 7-9.
- Karimu, O. O. 2015. Effects of the Nigeria Police force personnel welfare condition on performance. Center for Juvenile & Family Studies Inc. New York

- Kattelmann, K. K., 2014. Development of Young Adults Eating and Active for Health Internet-Based Intervention via a Community-Based Participatory Research Model. *Journal of Nutrition Education Behaviour*. Vol. 46(2): 10-25. doi:10.1016/j.jneb.2013.11.006.
- Kearney, P. M., Whelton, M., Reynolds K., *et al.* 2005. Global Burden of Hypertension: Analysis of Worldwide Data. *The Lancet*, 365, 217-23. [http://dx.doi.org/10.1016/S0140-6736\(05\)701513](http://dx.doi.org/10.1016/S0140-6736(05)701513)
- Kelly, B. B., Fuster, V., 2010. Promoting Cardiovascular Health in the Developing World: A Critical Challenge to Achieve Global Health. Washington, DC. National Academies Press. ISBN 0-309-14774-3.
- Kitamura, T., Onishi, K., Dohi, K., Okinaka, T., Ito, M., Isaka, N. *et al.*, 2002. Circadian rhythm of blood pressure is transformed from a dipper to a non-dipper pattern in shift workers with hypertension. *Journal Hum Hypertension* 16:193–197.
- Kofi, J. O. 2011. Prevention and management of hypertension: A study on knowledge and attitudes of women of childbearing age. Thesis Central Ostrobothnia, University of Applied Sciences. Available:www.theseus.fi/bitstream/handle/10024/41325/Kofi_Janet%20pdf.pdf
- Last, J. 1983. *A Dictionary of Epidemiology*. Oxford University Press, New York.
- Mathers, C. D. and Loncar, D. 2006. Projections of global mortality burden of diseases from 2002 to 2030. *Plosmed*.3:e442.
- Maxwell, T. A. 2015. Hypertension knowledge among adult African-American in the cape fear region of North Carolina. *America journal of hypertension research* Vol. 3(1) 1-10
- Mills, K. T, Bundy, J. D, Kelly, T. N, Reed, J. E, Kearney, P. M, Reynolds, K. *et al.* 2016. Global disparities of hypertension prevalence and control: a systematic analysis of population based studies from 90 countries. *Circulation* 2016;134:441-50

- Mogre, V., Aleyira, S. and Nyaba, R. 2014. Factors associated with central overweight and obesity in students attending the University for Development Studies in Tamale, Ghana: A cross-sectional study. *South African Journal of Clinical Nutrition.*;27(2):69-74..
- Moshki, M. and Dehnoalian, A., 2016. Effect of Precede–Proceed Model on Preventive Behaviors for Type 2 Diabetes Mellitus in High-Risk Individuals. *Clinical Nursing Research.*:1-13. doi:10.1177/1054773815621026.
- Mutunda, J., Mebrahtu, G., Usman, A, Nyarango’ P, Kosia, A, Ghebat, Y. et al. 2006. The prevalence of hypertension and its relationship with obesity: results from a national blood pressure survey in Eritrea. *Journal Human Hypertension.* 20:59 – 65.
- National Institute of Mental Health 2017. What is prevalence? The National Institute of Mental Health information resource centre.
- Nkeh-Chungag BN, Mxhosa TH, Mgoduka PN. 2015. Association of waist and hip circumferences with the presence of hypertension and pre-hypertension in young South African adults. *African Health Sciences.* 15(3):908-916.
- Nwankwo, Tatiana, M. S., Yoon, S. et al. 2013. Hypertension among Adults in the United States: National Health and Nutrition Examination Survey, 2011-2012. <http://www.cdc.gov/nchs/data/databriefs/db133.htm>.
- Ogah, O. S. 2006. Hypertension in Sub-Saharan African populations: the burden of Hypertension in Nigeria. *Ethnic Disparities.* 16(4): 765.
- Ogah, O. S., Okpechi, I., Chukwuonye, I. I., Akinyemi, J. O., Onwubere, B. J. C., Falase, A. O., Stewart, S. and Sliwa, K. (2012) Blood pressure, prevalence of hypertension and hypertension related complication in Nigeria Africans: *World J. Cardiol.* 2(12):327-340.
- Obinna, I. and Cletus, N. 2011. A meta-analysis of prevalence rate of hypertension in Nigerian populations. *Journal of Public Health and Epidemiology* Vol. 3(13), pp. 604-607,

- Ogden, C. L., Carroll, M. D., Curtin, L R., McDowell M. A., Tabak, C. J. and Flegal, K. M. 2006. Prevalence of overweight and obesity in the United States, 1999–2004. *JAMA* 295 (13): 1549–55.
- Oliveria, S. A., Chen, R. S., McCarthy, B. D., Davis, C. C. and Hill, M. N. 2005. Hypertension Knowledge, Awareness, and Attitudes in a Hypertensive Population. *J. Gen. Int. Med.*, 20(3): 219-225.
- Onwubere, B. J. and Kadiri S. 2005. Guidelines for the Management of Hypertension in Nigeria. Ezu Books Limited.
- Partinen, M. (2011) *Epidemiology of sleep disorders, Sleep Disorders*. Elsevier B.V. doi: 10.1016/B978-0-444-52006-7.00018-6.
- Persell, S. D. 2011. Prevalence of resistant hypertension in the United States, 2003–2008. *Hypertension*, 57(6), 1076-1080. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/21502568>
- Puepet, F. and Ohwovoriole, A. 2008. Prevalence of risk factors for diabetes mellitus in a non-diabetic population in Jos, Nigeria. *Nigeria Journal of Medicine*. 17(1): 71-74
- Raimi, T. H., Odusan O, Fasanmade O. 2015. High prevalence of central obesity in rural south-Western Nigeria: Need for targeted prevention. *Journal of Diabetes and Endocrinology*. 6:12-18
- Sabouhi, F., and Zade, A.H., 2011. Knowledge, awareness, attitudes and practice about hypertension in hypertensive patients referring to public health care centers in Khor & Biabanak 2009. *Iran Journal Nursing and Midwifery Research*. 16, 35-41.
- Saka, M., Turker, P., Ercan, A., Kiziltan, G. and Bas, M. 2014. Is neck circumference measurement an indicator for abdominal obesity? A pilot study on Turkish Adults. *African Health Sciences*. 14(3):570-575
- Sanya, A. O., Ogwumike, O. O., Ige, A. P. and Ayanniyi, O. A. 2009. Relationship of waist-hip ratio and body mass index to blood pressure of individuals in Ibadan North Local Government. *AJPARS*. 1(1):7-11

- Sen, A., Das, M., Basu, S. and Datta, G. 2015. Prevalence of hypertension and its associated risk factors among Kolkata-based Policemen: a sociophysiological study. *International Journal of Medical Science and Public Health* 4:225-232
- Shaikh, R. B., Mathew, E., Sreedharan, J., Muttappallymyalil, J., Sharbatti, S. A., Basha S. A. 2011. Knowledge regarding risk factors of hypertension among entry year students of a medical university. *Journal of Family and Community Medicine*. 18(3): 124–129. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3237200/>
- Slawta, J. N. and DeNeui, D. 2009. Be a Fit Kid: Nutrition and Physical Activity for the Fourth Grade. *Health Promotion Practice*. doi:10.1177/1524839908328992.
- Siyad, A. R. 2011. Hypertension report. *Hygeia J.D med* Vol. 3(1) 1-16.
- Steyn, K., Sliwa, K., Hawken, S., Commerfor, P., Onen, C., Damasceno, A. 2005. Risk factors associated with myocardial infarction in Africa: the INTERHEART Africa study. *Circ*. 112:3554–6.1
- Tate, D. F., Jackovny, E. H. and Wing, R. R. 2003. Effects of Internet behavioral counseling on weight loss in adults at risk for type 2 diabetes. *JAMA* 289:1833-6.
- Tramm, R. and McCarthy, A., 2012. Using the Precede–Proceed Model of Health Program Planning in breast cancer nursing research. *Journal of Nursing*. 68(8):1870---1880. doi:10.1111/j.1365---2648.2011.05888.x.
- Turnbull, F. 2003. Effects of different blood-pressure-lowering regimens on major cardiovascular events: results of prospectively-designed overviews of randomised trials. *Lancet* 2003; 362:1527–1535.
- Vila, B. 2006. Impact of long work hours on police officers and the communities they serve. *Am J Ind Med*.;49(11): 972–80.
- Violanti, J. M., Marshall J. R., Howe, B. 1983. Police occupational demands, psychological stress, and the coping function of alcohol. *J Occup Med*. 25(6):455–8
- Whitaker, Baker and Arias, 2007. Intervention to prevent intimate partner violence. *Handbook of injury and violence prevention*. New York springer. Pg.183-201

- Wolk, R., Gami, A. S., Garcia-Touchard, A., Somers, V. K. 2005. Sleep and cardiovascular disease. *Current Problems in Cardiology* 30:625-62.
- World Health Organization 2011. *Global Atlas on Cardiovascular Disease Prevention and Control*. Geneva
- World Health Organization. 2014. WHO/ISH Hypertension guidelines. Retrieved from http://www.who.int/cardiovascular_diseases/guidelines/hypertension/en/
- World Health Organization. 2013. *A global brief on hypertension*. Geneva WHO Press.-1-40. http://www.who.int/cardiovascular_diseases/publications/global_brief_hypertension/en/
- World Health Organization. 2002. *World Health Report. Reducing Risks, Promoting Healthy Life*. World Health Organization, 57.
- www.ibadannlga-oyo.gov.ng
- www.gsstatcounter.com/social-media-stats/all/nigeria
- www.who.int/topics/risk_factors
- Yekeen, L. A., Sanusi, R. A. and Ketiku, A. O. 2003. Prevalence of obesity and high level of cholesterol in hypertension: analysis of data from the University College Hospital, Ibadan. *African. Journal of Biomedical Research*. 6: 129- 132
- Yoon, S., Louis, V. and Carroll, M. 2012 *Hypertension among adults in the United States, 2009-2010 NCHS data brief*, No. 107. Hyattsville, MD: National Center for Health Statistics
- Yusuf, S., Hawken, S., Ounpuu S., *et al.* 2004. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study. *Lancet* 2004; 364 (9438): 937–952.

APPENDIX 1
QUESTIONNAIRE

Dear Respondent,

Good day Sir/Ma, my name is **HUSSAIN, Oluwatobi James**. I am a postgraduate student of the Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan. The aim of this study is to investigate on the **“First point prevalence, Knowledge and Preventive practices against Hypertension among Police officers in Ibadan North local government of Oyo state”**. This study will yield information that may be used in developing health intervention programs especially those related to Hypertension management and control. There are no right or wrong answers to the questions asked or the statements made, what is desired of you is your truthful and honest responses. Please note that the completion of this questionnaire is entirely voluntary. All information gathered as a result of your participation in this study will be treated with utmost confidentiality and will be used strictly for research purposes only.

Thank you.

I have read and understand the consent form and voluntarily agree/disagree to participate in the study by ticking [√] in the appropriate box below:

1. Agree [] 2. Disagree []

SECTION A: SOCIO-DEMOGRAPHIC INFORMATION

Please tick (√) any of the responses that apply to you in the options provided or complete the blank spaces provided as applicable.

1. Sex: 1. Male [] 2. Female []
2. Age (in years) at last birthday: _____
3. Religion: 1. Christianity [] 2. Islam [] 3. Traditional [] 4. Others (specify) _____
4. Marital Status: 1. Single [] 2. Married [] 3. Divorced []
 4. Widowed [] 5. Separated [] 6. Cohabiting
5. Level of Education: 1. Primary school [] 2. Secondary School [] 3. Tertiary Institution [] 4. Postgraduate degree [] 5. Others (Please specify): _____
6. Rank: _____
7. Ethnic Group: 1. Yoruba [] 2. Hausa [] 3. Igbo [] 4. Others (specify) _____
8. Average monthly income: _____.

9. Waist Circumference (in centimetres): _____

SECTION B: FIRST POINT PREVALENCE OF HIGH BLOOD PRESSURE

10. Have you ever had your blood pressure measured by a doctor or a health worker?

1. Yes [] 2. No []

11. When was the last time you had your blood pressure measured? 1. 0-3 months ago []

2. 4-6 months ago [] 3. More than 6 months ago [] 4. More than a year ago []

12 First reading: _____ Second reading: _____

Average reading: _____

13 Those with High Blood pressure (To be taken a week after)

First reading: _____ Second reading: _____

Average reading: _____

14 Does any of your immediate relative (e.g. father, mother, brother, sister etc.) ever suffered from Hypertension? 1. Yes [] 2. No [] 3. I don't know []

SECTION C: SOURCE OF INFORMATION ON HYPERTENSION

Instruction: The table below contains set of statements to identify the sources of information available for Police officers on hypertension. Please tick (✓) any of the responses that apply to you in the options provided or complete the blank spaces provided as applicable.

15 Have you heard of a medical condition called hypertension? 1. Yes [] 2. No [] (If No, kindly discontinue with the filling of the questionnaire!)

16 Have you received any form of information on hypertension before?

1. Yes [] (If yes, go to the next question) 2. No [] (If No, go to question 19)

17 When was the last time you received such information? _____

18 Where did you receive such information? 1. Work place training [] 2. Religious gatherings [] 3. College training [] 4. Others (Please specify): _____

S/N	SOURCES OF INFORMATION (You can choose more than one response).	YES	NO
19.	Health care provider (Doctor, Nurse and other health workers)		

20.	Mass media: a. Newspaper		
	b. Radio		
	c. Television		
	d. Bill Boards		
21.	Social media: a. Whatsapp		
	b. Facebook		
	c. Instagram		
	d. Twitter		
22.	Parents		
23.	Spouse		
24.	Children		
25.	Siblings		
26.	Neighbours		
27.	Friends		
28.	Pharmacy		
29.	Co-workers		
30.	Others (Please specify):		

SECTION D: KNOWLEDGE OF HYPERTENSION

Instruction: The table below contains a set of statements/questions to assess your knowledge on hypertension. Please fill in your responses.

S/N	Question	Response	Score
31	What is Hypertension?		
32	List three causes of Hypertension	1. 2. 3.	
33	Mention two preventive practices of hypertension	1. 2.	
34	Mention two consequences of hypertension	1. 2.	

S/N	Questions	True	False
35.	Increased diastolic blood pressure also indicates increased blood pressure		
36.	High diastolic or systolic blood pressure indicates increased blood pressure		
37.	Hypertension is not life-threatening		
38.	If you are overweight, you are two to six times likely to develop high blood pressure		
39.	Internal heat could be a likely symptom of hypertension		
40.	Regular headache could be a likely symptom of high blood pressure.		
41.	Fainting is a likely symptom of hypertension		
42.	Visual impairment can be a likely symptom of hypertension		
43.	Blood pressure increases as a person gets older		
44.	Hypertension has no symptoms		
45.	Use of certain drugs and condiments can cause hypertension		
46.	Hypertension has a cure if detected early		
47.	Individuals with increased blood pressure can drink alcoholic beverages		
48.	Drugs for increased blood pressure must be taken everyday		
49.	Individuals with increased blood pressure must take their medications throughout their life		

SECTION E: HYPERTENSION PREVENTIVE PRACTICES

Instruction: The table below contains a set of statements/questions to establish your practice of preventive measures against hypertension. Please read and tick (√) as appropriate

S/N	STATEMENTS	YES	NO	NOT SURE
50.	In the last six months I have gone for medical check-up.			
51.	In the last one month I have done physical exercise.			
52.	In the last one month I have taken food low in salt content			
53.	In the last one month I check for my body weight.			
54.	In the last one month I take diet rich in fruits.			
55.	In the last one month I eat vegetables			
56.	In the last one month alcohol beverages is consumed.			
57.	In the last six months I maintain my body weight.			
58.	In the last one month I smoke cigarettes.			
59.	In the last one month I get worried about issues.			
60.	In the last one month I take antihypertensive drugs.			
61.	In the last one month I avoid taking too much oil.			
62.	In the last one month I am exposed to stress always.			

Thank you for your participation.

APPENDIX 2

ALOTTED POINTS

SECTION D: KNOWLEDGE OF HYPERTENSION

Instruction: The table below contains a set of statements/questions to assess your knowledge on hypertension. Please fill in your responses.

S/N	Question	Response	Score
31	What is Hypertension?	Hypertension is a medical condition in which the force of the blood against the artery wall is too high OR It is an abnormal high blood pressure.	2 points
32	List three causes of Hypertension	<ol style="list-style-type: none"> 1. Depression 2. Lack of good sleep 3. Alcohol consumption 4. Tobacco consumption 5. Hereditary 6. Poor nutrition 7. Lack of physical exercise 8. Overweight/Obesity 	3 points
33	Mention two preventive practices of hypertension	<ol style="list-style-type: none"> 1. Consumption of adequate diet 2. Regular physical exercise 3. Avoid tobacco smoking 4. Avoid alcohol consumption 5. Adequate sleep/rest 6. Regular medical check-up 	2 points
34	Mention two consequences of hypertension	<ol style="list-style-type: none"> 1. Death 2. Stroke 3. Heart attack 4. Damage of eye blood vessels 5. Damage of the kidney 	2 points

S/N	Questions	True	False	Score
35.	Increased diastolic blood pressure also indicates increased blood pressure	True		1
36.	High diastolic or systolic blood pressure indicates increased blood pressure	True		1
37.	Hypertension is not life-threatening		False	1
38.	If you are overweight, you are two to six times likely to develop high blood pressure	True		1
39.	Internal heat could be a likely symptom of hypertension	True		1
40.	Regular headache could be a likely symptom of high blood pressure.	True		1
41.	Fainting is a likely symptom of hypertension	True		1
42.	Visual impairment can be a likely symptom of hypertension	True		1
43.	Blood pressure increases as a person gets older	True		1
44.	Hypertension has no symptoms		False	1
45.	Use of certain drugs and condiments can cause hypertension	True		1
46.	Hypertension has a cure if detected early	True		1
47.	Individuals with increased blood pressure can drink alcoholic beverages		False	1
48.	Drugs for increased blood pressure must be taken everyday	True		1
49.	Individuals with increased blood pressure must take their medications throughout their life	True		1
	Total Score obtainable			24 Points
	Code	Code 1: Score 0-11= Poor Code 2: Score 12-17= Fair Code 3: Score 18-24= Good		

SECTION E: HYPERTENSION PREVENTIVE PRACTICES

Instruction: The table below contains a set of statements/questions to establish your practice of preventive measures against hypertension. Please read and tick (√) as appropriate

S/N	STATEMENTS	YES	NO	NOT SURE	POINTS
50.	In the last six months I have gone for medical check-up.	Yes			1
51.	In the last one month I have done physical exercise.	Yes			1
52.	In the last one month I have taken food low in salt content	Yes			1
53.	In the last one month I check for my body weight.	Yes			1
54.	In the last one month I take diet rich in fruits.	Yes			1
55.	In the last one month I eat vegetables	Yes			1
56.	In the last one month alcohol beverages is consumed.		No		1
57.	In the last six months I maintain my body weight.	Yes			1
58.	In the last one month I smoke cigarettes.		No		1
59.	In the last one month I get worried about issues.		No		1
60.	In the last one month I take antihypertensive drugs.		No		1
61.	In the last one month I avoid taking too much oil.	Yes			1
62.	In the last one month I am exposed to stress always.		No		1
	Total score obtainable				13
	Code	Code 1: Score 0-9=Unhealthy practice Code 2: Score 10-13= Healthy practice			

Thank you for your participation.