THESIS ABSTRACT

Master of Public Health

Adventist University of Africa

School of Postgraduate Studies

TITLE: PREVALENCE OF HYPERTENSION AND ASSOCIATED RISKS AMONG GOSPEL WORKERS OF THE SEVENTH-DAY ADVENTIST CHURCH IN NORTHERN GHANA UNION MISSION

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Date Completed: April 2017

This study was conducted on 200 gospel workers who were mainly Seventh-day Adventists from the South Central, Ashanti South, Ashanti Central and the Central Ghana Conferences of Ghana, as means of addressing hypertension and its associated risks. It had a broad objective of determining the prevalence of hypertension and its associated risks, among Gospel workers of the Northern Ghana Union Mission (NOGH) of the Seventh-day Adventist Church, and specific objectives of firstly determining the level of knowledge on hypertension among them; secondly to identify the nature of management of hypertension among gospel workers; and lastly, to determine the risk factors associated with hypertension among the gospel workers.

The study adopted the mixed method approach by using a combination of cross-sectional, descriptive and non-experimental survey design. Data was collected by using both quantitative and qualitative approaches. These were questionnaires,

interviews, documentary analysis and field survey. The questionnaires which contributed the larger part were analyzed by using SPSS, while interviews response were interpreted as the respondents meant them. The results of the study discovered that the majority of the gospel workers had adequate knowledge about the causes and symptoms of hypertensive disease. Regardless of this high knowledge, there was a high prevalence rate (38%) of hypertension. Though some gospel workers claimed they were aware of being hypertensive and had adopted various anti-hypertension management and prevention measures, there was still a poor health behavior and lifestyle among the gospel workers leading to the prevalence of hypertension. It was therefore concluded that, in the case of Gospel workers such as pastors, elders of churches and church financial officers where most activities are taken to be more spiritual in nature, less attention is typically paid to the prevention and management of lifestyle/medical conditions like hypertension.

Based on the findings of the study and the conclusions, it is recommended that various measures, such as effective nutrition/health education on topics such as My-plate guidelines, as well as enlightenment on the causes and symptoms of hypertension, will be a step toward the reduction in the prevalence of hypertension. General improvement of the lifestyle and health behavior of gospel workers such as engaging in good dieting system, exercising regularly, and having enough rest. Part of a good prevention intervention would also include visiting the hospitals, clinics, and other health centers regularly to assess health status. Of course, it is also vital to report cases of hypertension to the health centers as another method to manage and prevent the prevalence of hypertension.

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A thesis

presented in partial fulfillment

of the requirements for the degree

Master of Public Health

by

Cecilia Amponsem-Boateng

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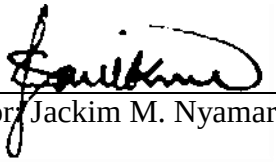
APPROVAL BY THE COMMITTEE:



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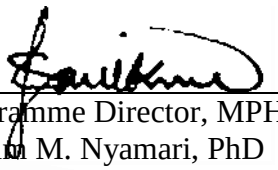

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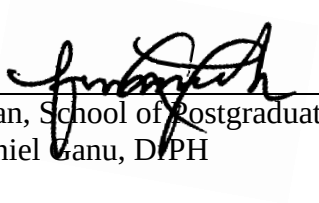

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This work is dedicated entirely to my husband Pr. Evans Amponsah-Gyan who has been of immense support and a great advisor all this while.

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CHAPTER 1

INTRODUCTION

Background of the Study

Hypertension is the leading cause of death worldwide and affects both men and women. Although 30% of the adult population suffers from blood pressure above 140/90 mmHg, a third of those who suffer it do not know they have this disease (World Health Organization: WHO, 2015). It has been found to be higher in those of South Asian and African ancestry, and in Aboriginal populations (Neumar & Shuster, 2015). Not only is hypertension one of the most important risk factors for cardiovascular disease, it is also the number one modifiable risk factor for stroke (WHO, 2008).

Hypertension is the single most important modifiable risk factor for ischemic stroke (Sacco, 2015). Though the precise causes of hypertension are usually unknown, there are several factors that have been vastly associated with the condition. They include: smoking, obesity, and diabetes, and sedentary lifestyle, lack of physical activity and high levels of salt intake (Owusu-Sekyere, Bonyah, & Ossei, 2013).

According to a research conducted, different national and regional surveys confirm that hypertension is common in developing countries, particularly in urban areas, and that rates of awareness, treatment, and control are low (Ibrahim & Damasceno, 2012). Findings from successive studies show an increasing prevalence of hypertension in developing countries, possibly caused by urbanization, aging population, changes in dietary habits, and social stress. Not only is hypertension more

prevalent in low- and middle-income countries, there are also more people affected because more people live in those countries than in high-income countries. Further, because of weak health systems, the numbers of people with hypertension who are undiagnosed, untreated and uncontrolled are also higher in low- and middle-income countries compared to high-income countries (WHO, 2013).

In developing countries like Ghana, several diseases exist but the most prevalent one over the past decade is hypertension. According to the Ghana Health Service, hypertension has become the number one killer disease with its prevalence rate estimated at 30-40% (Ministry of Health: MOH, 2011). The researcher's encounter with some Gospel workers of the Northern Ghana Union Mission hereafter referred to as (NOGH) and narratives have revealed that a number of Gospel workers of the NOGH are suffering from hypertension. Generally, hypertension has a wide range of effects. It has serious associated risk factors that affect productivity and development of a nation. Such associated factors include kidney diseases, and other complications. Being a major contributor to premature deaths, it also contributes to 51% of stroke and 45% of ischemic heart diseases (IHD), deaths that are attributed to high systolic blood pressure (Abed & Abu-Haddaf, 2013).

Despite the prevalence of hypertension and its associated risk, scholarly works examining this in connection to developing countries are limited (Owusu-Sekyere, *et al.*, 2013). But to help minimize or if possible eradicate this threat in the Ghanaian society, research on hypertension and its associated risk is warranted. Particularly, no research has been conducted to ascertain the rate of prevalence of the condition among the Gospel workers in Ghana.

Statement of the Problem

Hypertension cases have been alarming over the past decade in Ghana for example in Accra; the prevalence rate is 28.3% (crude) and 27.3% (age-standardized) (Owusu-Sekyere, *et al.*, 2013). Studies such as Appiah (2012), Owusu Sekyere *et al* (2013), the Ashanti region half year report 2010 and Bosu (2015), have all been done with respect to the causes of hypertension among Ghanaians. However, no studies have been done to assess the prevalence of the condition among Gospel workers. In addition, the researcher's encounter with and anecdotes have revealed that a number of Gospel workers in Ghana are suffering from hypertension. This has necessitated this present research (Appiah, 2012; Bosu, 2015; Owusu-Sekyere, *et al.*, 2013).

Research Questions

1. What is the level of knowledge on hypertension and its management strategies among gospel workers?
2. What are the management strategies of hypertension among gospel workers?
3. What are the risks factors associated with hypertension among gospel workers?

Objectives of the Study

Main Objective

To determine the prevalence of hypertension and its associated risks, among the Gospel workers of the Northern Ghana Union Mission (NOGH) of the Seventh-day Adventist Church.

Specific Objectives

1. To determine the level of knowledge on hypertension among gospel workers of NOGH
2. To identify the nature of management of hypertension among gospel workers
3. To determine the risk factors associated with hypertension among gospel workers.

Significance of the Study

The relevance of the present study cannot be overemphasized. First and foremost the study will create the necessary understanding of hypertension and its associated risks amongst the gospel workers. It will help policy makers of the NOGH and other gospel workers across the country to make amendments in their working policies where necessary. It will also create awareness of the importance of lifestyle modifications including good dietary practices and physical activities to help prevent hypertension.

Scope and Limitation of the Study

This study confined itself to determining the prevalence of hypertension among Gospel workers of the NOGH. In this study, the respondents consisted of both licensed and credentialed Ministers of the Gospel and non-ministerial workers of the NOGH. The NOGH comprises the Ashanti, Brong Ahafo and the three Northern Regions of Ghana.

The limitation of the study primarily lies in its sampling technique. It uses stratified sampling method. Though it gives the opportunity for proportional representation, it limits itself to only NOGH members who are only in Ashanti Region due to time and resources. Again, since most of the gospel workers of this part are mostly male, it may lack a balance in gender.

Operational Definitions

Body Mass Index (BMI): Body weight that falls within the normal range of BMI normal weight.

Complex Carbohydrates Diets: Indicate diets that are not refined or processed but contain high fiber and other nutrients.

Dietary Habit: This indicates the consumption of salty foods and high-fat diet. Excess dietary sodium in the form of high salt diet may also contribute to hypertension.

Family History Refers to the first order adult relatives i.e. (parents and siblings), within the family with a history of hypertension with greater risk than those without such history.

Fruits and Vegetables: Diets that include the normal and adequate amount of fruits and vegetables.

Gospel Workers: This refers to people such as Pastors, finance and accounting staff and others who in diverse ways work in the gospel ministry.

Hypertension: It is a medical term used to describe a blood pressure which is continuously high. A person is considered hypertensive when the blood pressure is equal to or higher than 140/90mmg.

Physical Activities: Actively involved in daily activities with frequency and duration adequate enough to maintain physical fitness.

CHAPTER 2

LITERATURE REVIEW

This chapter examines the relevant literature on the prevalence of hypertension and its associated risk factors. It will consider other works on the prevalence of hypertension among employees in organizations and how diet and physical activities affect hypertension prevalence and its management strategies.

Definition of Hypertension

Hypertension is an anatomical term in which the prefix "hyper-" means "high" or "over," and the root word "tension" refers to pressure so that the word "hypertension" refers to abnormally high blood pressure. The roots, prefixes, and suffixes are often derived from Greek or Latin, and often quite dissimilar from their English-language variants (Blandine, 1993).

According to Levine and Neary (2013), the concept behind the definition of hypertension is about the presence of a blood pressure at which a healthy person would have an increase in cardiovascular risk that could be mitigated through blood pressure-lowering treatment. Although mortality increases with blood pressure, hypertension is defined in Canada by standardized auscultatory office SBP (Systolic Blood Pressure) as equal to or exceeding 140mmHg or DBP (Diastolic Blood Pressure) equal to or exceeding 90mmHg over a number of visits for checkups in person (Levine, & Neary, 2013).

Worldwide, hypertension is the number one cause of death, and the prevalence of hypertension and cardiovascular disease increases with age. It has been found to be

higher in those of South Asian and African ancestry, and in Aboriginal populations. Not only is hypertension one of the most important risk factors for cardiovascular disease, it is also the number one modifiable risk factor for stroke.(Levine, & Neary, 2013) For example in West Africa, the crude prevalence of hypertension has increased progressively from 12.9% in studies published in the 1980s to 34.4% in those published in 2010-2014 (Bosu, 2015).

History of Hypertension

To understand the history of hypertension we must begin with the work of physician William Harvey who was a cardiologist (1578–1657), who described the circulation of blood in his book "*De Motu Cordis*". Stephen Hales an English clergyman made the first published measurement of blood pressure in 1733 (Esunge, 1991; Kotchen, 2011). Giving accounts of hypertension as a disease came among others from Young, (1808), and especially Bright in (1836) (Esunge, 1991).

It has been 101 years since a Russian surgeon first described the simple and precise way to measure blood pressure that is still in use today, and a lot have been learned since then about what influences blood pressure and about how high blood pressure can cause damage throughout the body. What we have not managed to do is get the public, and a fair number of doctors, to take high blood pressure seriously (Levine, & Neary, 2013).

Table 1. Classification of Hypertension

Category	Current national guidelines (JNC 7)	American Society of Hypertension proposal
Normal	Systolic under 120 and diastolic under 80	Normally less than 120/80 and no cardiovascular risk factors or signs of target organ damage
Pre-hypertension	Systolic 120–139 OR diastolic 80–89	
Stage 1	Systolic 140–159 OR diastolic 90–99	Blood pressure sometimes above 120/80 OR risk factors or markers suggesting early cardiovascular disease
Stage 2	Systolic 160 or higher OR diastolic 100 or higher	Blood pressure routinely above 120/80 OR signs of progressive cardiovascular disease or early target-organ damage
Stage 3		Marked and sustained high blood pressure OR signs of advanced cardiovascular disease and target-organ damage

Source: Harvard Heart Letter, Harvard Health Publications (2006).

In Sub-Saharan Africa hypertension is believed to be a problem of urban areas due to the more western lifestyle, and the most frequently observed risk factor for CVD in both urban and rural communities. Low levels of control of hypertension are alarming (Hendriks, 2012). Another study also suggests that the prevalence of hypertension is increasing rapidly in Sub-Saharan Africa generally because of increasing longevity and the continuous effect of contributing factors such as an unhealthy diet, obesity, and physical inactivity (De-Graft, 2007).

Etiology and Control of Hypertension

Hypertension is now a well-established, major cardiovascular risk factor. The relationship is direct, strong, constant, graded, consistent and independent. Mortality and morbidity double for every 20mmHg increase in systolic BP above 115mmHg and for every 10 mmHg increase in diastolic BP above 75 mmHg. The World Health Organization (WHO) reports that the number of people with hypertension worldwide

is estimated to be as many as 1 billion, with 7.1 million deaths per year attributable to hypertension. The prevalence of hypertension increases with age (Levine, & Neary, 2013).

The etiology of essential hypertension is thought to be multifactorial. Obesity, sedentary lifestyle, poor diet with an excess intake of salt and alcohol and less physical activities are major contributors. Hormonal factors contributing to the development of hypertension include increased activity of angiotensin in mineral corticoids and the sympathetic nervous system. Secondary causes of hypertension include drugs, renal and vascular disease, endocrine disorders and obstructive sleep apnea. Hypertension is more common in people of African and South Asian ancestry and in those with a family history of hypertension (Levine, & Neary, 2013).

A higher percentage of men have high BP up to the age of 45, while women overtake men after 54 years of age (Kokkinos, Demosthenes, & Polychronopoulos, 2009).Though the precise causes of high blood pressure are not known, several causes and situations may play a role in its development, including: Smoking, being overweight or obese, lack of physical activity, too much salt in the diet, too much alcohol consumption (more than 1 to 2 drinks per day), Stress, older age, genetics, family history of high blood pressure, Chronic kidney disease, Adrenal and thyroid disorders, and Sleep apnea (Klodas, 2015).

Hypertension can be controlled through lifestyle modifications and prescriptive medicine. While medications to treat hypertension are available, research has shown that modest lifestyle and dietary changes can help treat and often delay or prevent high blood pressure. In addition to healthy weight upkeep, avoiding tobacco, and limiting alcohol intake (no more than 2 drinks per day for men, and 1 drink per

day for women), adequate physical activity for 30-45 minutes on most days is also suggested (Bellows, & Moore, 2014).

The different types of work and working environment can also contribute to hypertension prevalence. Studies of different working departments revealed a prevalence of 51.6% of hypertension in Finance and Accounting staff, 45.2% of transport staff, and 29.8% of security and fire brigadiers (Kumar, Vikas, & Kosambia, 2002). This clearly suggests that the occupational environment can also be a contributing factor to the prevalence of hypertension, and this raises the question as to whether the prevalence of hypertension in gospel workers could be as a result of their occupation although there is no existing literature or data to support this argument.

Hypertension and Diet

In view of the fact that dietary habit is a contributory factor to the prevalence of hypertension and its associated risks, the American Heart Association and the National Cancer Institute came up with an eating plan known as the DASH (Dietary Approaches to Stop Hypertension) plan to guide its people as a pattern to help lower the prevalence of hypertension in the United States. It clearly indicates that the prevalence of hypertension can be reduced through the dietary intake of an individual. In the control of hypertension by diet, the DASH diet plan had a focus on eating twice the average daily amount of fruits, vegetables, complex carbohydrates and low-fat dairy products. It lowers fats, saturated fat, cholesterol, and sodium, and increases potassium, magnesium, and calcium than the typical American diet (Bellows, & Moore, 2014).

According to a study done though people prefer the DASH eating plan, others prefer to educate themselves and practice the principles for targeted nutrition improvements and in either way it is good to train oneself to make those changes.

Self-discipline then becomes a true matter of concern when it comes to issues of hypertension and diet (Bellows, & Moore, 2014).

Another study by Appel, Moore, Obarzanek, and Vollmer (1997) also suggests that eating a vegetarian diet which is relatively low in total fat and saturated fat but high in polyunsaturated fat have low mean blood pressure (BP), in contrast with omnivores, and such people have their blood pressure rising only slightly with age (Appel et al., 1997). This suggests that by reducing the quantities of carbohydrates, fats, sodium, and cholesterol-rich foods and increasing that of potassium, magnesium, and calcium in the form of fruits and vegetables, we should be on the better way of reducing the prevalence of hypertension and its associated risks.

Caloric Intake

Mostly, an increase in calorie intake demands an equal amount of physical activity done to exert the energy that is gotten from the calorie; in this case, there will be nothing like high cholesterol and fats deposits in the body. This can have a significant decrease in systolic and diastolic blood pressure levels as much as the DASH diet which may also help one regulate daily calorie consumption, and take a substantial amount of fruits and vegetables.

In the regulation of calorie intake, weight reduction and weight maintenance which may reduce the time and number of drugs necessary to control blood pressure should be the primary goal (Bellows, & Moore, 2014). A study done holds that clinically, a low fat, high carbohydrate diet is relevant since it is widely recommended to lower blood cholesterol and risk of cardiovascular disease (Sacks *et al.*, 1987). In contrast, to the above-mentioned other studies such as Najafian & Nushin, (2008) also says that caloric intake and blood pressure in obese people may be due to insulin resistance induced obesity, and so caloric intake has no significant effect on blood

pressure and on the development of hypertension when the effect of obesity is adjusted.

Sodium Diet

Wong, (2011) in his study about sodium and blood pressure recorded the prevalence of resistance hypertension to sodium intake as 19.8%. Bellows and Moore (2014) recommended that no more than 2,300 milligrams of sodium per day should be consumed by people with hypertension, with special recommendations of not more than 1500 milligrams per day for people from the African American race, middle-aged, or elderly. According to a researcher drastic reductions of sodium intake will definitely lower the blood pressure of patients with essential hypertension. Until recently, most researchers have been linking diet to hypertension as related to salt levels (Tobian, 1979).

However, recent evidence suggests that elevation of blood pressure initially attributed to salt intake may be due to other factors in the diets such as the levels and types of fats consumed. Studies in both humans and animals have suggested that blood pressure can be lowered during high intake of salt feeding by supplementing the diet with polyunsaturated fatty acids such as linoleic acids (Smith, 2015).

Potassium, Calcium, and Magnesium

There is a significant negative correlation found between dietary calcium intake and diastolic blood pressure in men and between dietary magnesium intake and systolic blood pressure in women (Joossens, & Hugo, 1988). Studies have shown that Potassium works with sodium to regulate the body's water balance, and high potassium-to-sodium intake can maintain a normal blood pressure.

The recommended intake of potassium for adults is 4.7 grams/day. However, there is nothing to support the intake of potassium supplement by people with high

blood pressure. Instead, foods that are rich in potassium like green leafy vegetables, root vegetables like potatoes and carrots, and fruit, should be eaten every day. Again, dietary intakes of potassium, calcium, and magnesium each have been inversely associated with blood pressure.

However, most clinical trials in normotensive populations have not found that dietary supplements of these minerals lowered blood pressure(Sacks *et al.,* 1987). Regular intake of calcium and magnesium can also have blood pressure lowering effects. However, studies about this are not conclusive and there are no specific recommended suggestions. Rather, it is generally recommended that Adequate Intake (AI) for calcium and the Recommended Dietary Allowance (RDA) for magnesium, through food sources instead of supplements are appropriate (Bellows, & Moore, 2014).

Dietary Fat

Eating a vegetarian diet which is relatively low in total fat and saturated fat but high in polyunsaturated fat lowers mean blood pressure (Sacks *et al.,* 1987).The underlying factor of this is to maintain a healthy weight by decreasing the intake of saturated fat and trans-fat as well as overall intake of dietary fat. Although research concerning the effects of omega-3 fatty acids has not shown any beneficial effect towards lowering blood pressure, it is still an essential fat to incorporate into one's diet (Bellows, & Moore, 2014). Blood pressure may also be due to other factors in the diets such as the levels and types of fats consumed.

Other Dietary Factors with Uncertain Effect On BP

Fish Oil Supplementation

There is believe, that fish oils can lower blood pressure. It has been documented that high doses of fish oil supplements can lower BP in hypertensive individuals and is insignificance in people without hypertension. Taking high doses of fish oil includes the effect of belching, and a fishy taste, and thus cannot be recommended as a routine supplement (Bellows, & Moore, 2014).

Fiber

Dietary fiber is the components of food that do not digest when eaten. They are gotten from plants and vegetables and are very good for free bowels which may be a contributive factor to the prevalence of hypertension. Evidence from observational studies and several clinical trials have suggested that the increased intake of fiber may reduce hypertension (Appel *et al.*, 1997). Study results indicate that increased intake of dietary fiber may reduce blood pressure in patients with hypertension and suggests a smaller, non-conclusive, reduction in normotensives (Hugo Kesteloot, 2005). An unhealthy diet is an important risk factor for hypertension and chronic diseases in itself and there are an estimated 2.7 million deaths due to low fruits and vegetable intake annually worldwide (Mandal, 2009).

Physical Activities and Hypertension

There have been a number of epidemiological and interventional studies about exercise that provides support that increased physical activity, of adequate duration, intensity and volume lower Blood Pressure significantly either alone or as an adjunct to pharmacological therapy (Kokkinos, *et al.*, 2009). Physical activities not only help control blood pressure. It also helps in the management of weight, strengthening the

heart, and management of stress. Thus a healthy weight, strong heart, and general emotional health are all good for the blood pressure American Heart Association, (2004).

In a study that was conducted found out that; Middle-aged women who were classified under moderate and high fitness, based on their peak exercise time during a treadmill test, had significantly lower diastolic BP when compared to women of low fitness level (Kokkinos, *et al.*, 2009). In addition, cross-sectional and large-scale longitudinal population studies reported that the relative risk for developing hypertension in sedentary men and women with normal BP at rest is approximately 35% to 70% higher when compared to their physically active peers. Interventional studies confirmed their epidemiological findings.

Mandal, (2009) opines that there has been a decline in physical activities since people have become worldlier and according to WHO report, an estimated 1.9 million deaths are attributed to physical inactivity annually worldwide. Approximately one-third of adults are not physically active at all and this is an important risk factor for hypertension and other diseases. Moreover, unhealthy diets along with physical in activities are two major risk factors of hypertension and other chronic diseases (Mandal, 2009).

Prevalence of Hypertension

Hypertension has been recognized as the leading risk factor for mortality worldwide and is graded third as a cause of disability-adjusted-life-years (Marleen et al, 2005). It is being recognized as the major cause of cardiovascular diseases and death and also contributing to heart and kidney diseases (Bezenjani, 2011).

A study of the prevalence of hypertension and its associated factors amongst Malaysian staff of the University of Putra in Malaysia by Benzenjani (2011) found

that from the 73.2% respondents of the overall prevalence of hypertension 34.4% was higher amongst males, the less educated, those with high family income, positive family history of hypertension and those who were obese, former smokers, and physically inactive (Bezenjani, 2011). Meaning that, while the less educated may not be aware of the diets and physical activities that will serve as a preventive measure from hypertension, those with high family income also tend to follow their appetite and thus may also not have any dietary restrictions.

Another study in South Africa also showed a lower BP levels and prevalence of hypertension among Black South Africans, than South African White people (Agyemang, 2005). So could it also be that the prevalence of hypertension can be affected by a change in an individual's original place of ancestry origin because the African ancestral people who lived their normal traditional lives showed lower BP with no rise with age and low prevalence of hypertension.

Prevalence of Hypertension in Ghana

The spread of death in hypertension is becoming rampant in the regions of Ghana, and it is estimated that the prevalence of hypertension in Accra is 28.3% (crude) and 27.3% (age-standardized). In 2011, hypertension was recorded as the second most reported medical condition in the Greater Accra Region by the Ghana Health Service and these cases could be linked to the poor lifestyles of urban dwellers in Accra. In the Volta Region of Ghana, a survey reported a frequency of 32.8% for hypertension with a percentage of male as 30.7% and that of female been39.4%.

Studies conducted by Owusu-Sekyere, *et al.*, (2013) at the Adansi South district of Ghana also revealed that 27.1% representing almost a third of the respondents were hypertensive with the largest percentage of ages between 40-59. Since 2008, hypertension has been the third most common case in the Outpatient

Department (OPD), as well as the third most common cause of death in the Ashanti Region, with the Kumasi Metropolis leading in the region (Owusu-Sekyere, *et al.*, 2013).

The Ashanti region has continuously recorded high cases of Hypertension since 2008 (Ghana Health Service (GHS), 2012). Data from the GHS indicate hypertension has been the third common OPD cases since 2008. Again the disease is the third common cause of morbidity in the Region, as seen in Table 2.

Table 2. Top Ten OPD Morbidity, 2008- 2010

	2008		2009		2010 Half Year	
	Disease	Cases	Disease	Cases	Disease	Cases
1	Malaria	814,998	Malaria	1,449,260	Malaria	797,629
2	Cough	119,490	Acute Respiratory Inf.	259,701	Acute Respiratory Inf.	148,366
3	Hypertension	80,429	Hypertension	125,453	Hypertension	66,098
4	Skin Disease	70,694	Diarrheal Disease	123,107	Diarrheal Disease	65,858
5	Diarrheal Disease	57,252	Skin Disease	115,212	Skin Disease	62,839
6	Rheumatic Conditions	42,617	Rheumatic Conditions	94,531	Rheumatic Conditions	51,229
7	Urinary Track Inf.	33,900	Urinary Tract Inf	58,324	Intestinal Worms	34,102
8	Intestinal Worms	28,258	Intestinal Worms	54,719	Urinary Tract Infection	32,300
9	Home/Occup. Injuries	26,363	Acute Eye Infection	49,509	Acute Eye Infection	26,619
10	Chicken Pox	22,552	Home/Occup. Injuries	43,820	Anemia	21,574

Source: GHS, 2012.

Of all the districts and municipal areas in the region, the Kumasi metropolis sits on top. Statistics from Internal Medicine unit of the Komfo Anokye Teaching Hospital (KATH) show a disturbing upsurge of cases of hypertension in the metropolis,(Komfo Anokye Teaching Hospital (KATH), 2012) see Table 3.

Table 3. Upsurge of Hypertension Cases (2008 to Half-Year 2010)

	2008	2009	2010 Half Year
District	Cases	Cases	Cases
Kumasi	38,388	36,605	15,721
Asante Akim North	2,092	2,855	7,581
Obuasi	20,614	26,750	7,121
AtwimaNwabiagya	3,363	7,555	4,564
EjusuJuaben	3,588	5,304	4,101
Sekyere South	2,940	5,025	3,988
Mampong Municipal	588	1,073	3,475
Sekyere East	3,672	4,389	2,734
SekyereAfram Plains	2,339	4,728	2,221

Source: GHS, 2011

The Komfo Anokye Teaching Hospital (KATH) has been seeing 120 new cases of hypertension every week. Again, 25 percent of deaths at the referral facility are attributed to the abnormally high blood pressure disease and its related infections (Komfo Anokye Teaching Hospital (KATH), 2012).

Furthermore, the statistics show that 28.7 percent of people in the Kumasi Metropolis and its outlying communities have the disease. It is one of the leading causes of premature deaths and disabilities and also accounts for 62 percent of all stroke cases. While the disease is linked to lifestyle, no studies have been done to assess the knowledge, attitude, beliefs and pre-disposing factors among Gospel workers of the Seventh-day Adventist (SDA) church in the Ashanti Conferences. This research intends to fill this knowledge gap.

Although not much study have been conducted about the prevalence of hypertension and its associated risk in Ghana, the little that has been done has not dealt with the reasons behind this. None of these studies conducted in Ghana has been able to take into consideration the gospel worker as far as hypertension is concerned,

the risks associated with hypertension among them and their existing management strategies and these are what this research seeks to find and do.

Conceptual Framework

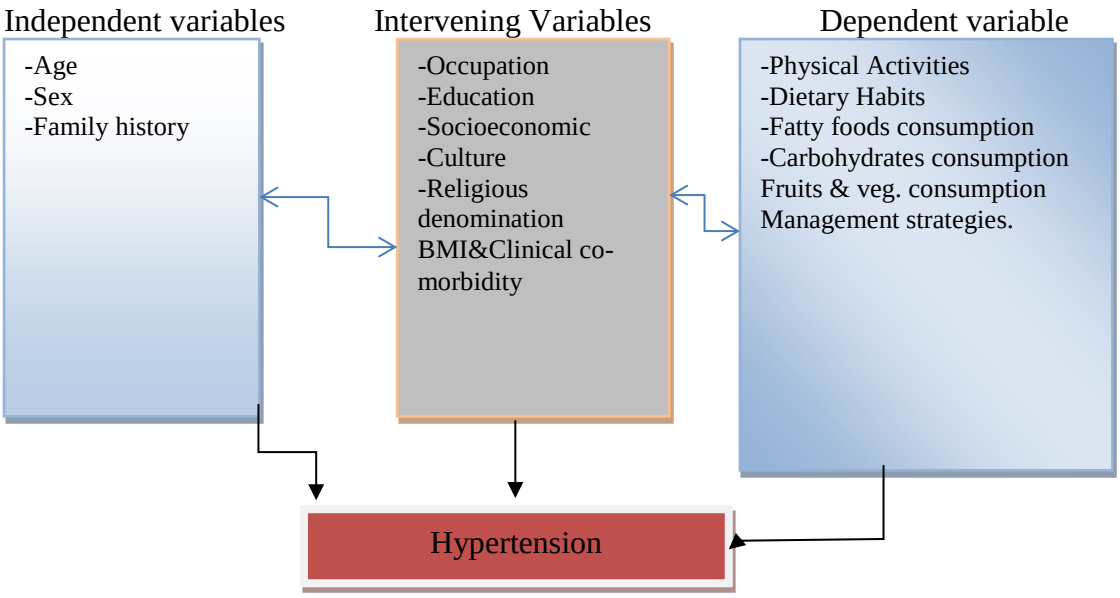


Figure 1. Conceptual Framework (Causes of Hypertension)
Source: Author's construct

Independent Variables: they are variables that stand alone and are unaffected by the other variables we are trying to measure and are also not affected by anything that a researcher does.

Dependent Variables: these are variables that can be changed by outside factors.

Intervening Variables: these are mediating variables they are used to explain causal links between other variables and cannot be observed. Figure 1 is a conceptual framework which comprises of the independent variables, intervening variables, and dependent variables. All of these can cause hypertension. Independent Variables and

intervening variables can influence each other in the causes of hypertension while intervening and the dependent variables also interlink and can both cause and prevent hypertension.

Summary

The chapter brought to light the definition of hypertension, history, classification, etiology and controls and deliberated on diet and hypertension prevalence, physical activities and the prevalence of hypertension as far as Ghana is concerned and narrowed the discussion to the various variables that are dependent and independent.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter is divided into two sections; the first section provides the profile of the study area, while the second section describes the methodology that was used for this study and the procedures that were followed to collect data from the field which includes the study design, the study area, the study population (i.e. the respondents) and sampling technique, sample size, the inclusion and exclusion criteria, data collection tools, and how structured questionnaires were been used as the tool.

Study Design

This study adopted cross-sectional, descriptive and non-experimental survey design. It is cross-sectional because it spanned a short period of time in data collection and analyses. Descriptive and non-experimental survey designs because it involves soliciting large volumes of information from respondents to answer research questions. Descombe, (2000) observes that the notion of a survey suggests that the researcher intends to get information "straight from the horse's own mouth" and is purposeful and structured. He maintains that surveys are associated with large-scale research covering many people. In support of the usefulness of the design, Gay, Mills, and Airasian (1987) intimate that the descriptive survey is an attempt to collect data from members in a population in order to determine the current status of that population with respect to one or more variables.

The descriptive survey was therefore employed to help produce a good amount of responses from a wide range of people since it is associated with large-scale research, covering many people or events.

In order to reduce the effects of the weaknesses associated with the use of design, the questionnaire was pilot tested. This offered the researcher the opportunity to reframe and sharpen ambiguous items. Further, respondents were assured of their anonymity and the confidentiality of responses provided which enabled them to respond frankly and dispassionately. Also, after administering the instrument, the researcher waited for respondents to fill in their responses and collect them and this increased the retrieval rate. The choice of the mixed methods approach was informed by a number of reasons. First, it was meant to achieve the logic of triangulation since no single method (such as questionnaire, interviewing of documentary analysis) could completely capture all the relevant features of any study (Denzin, 1989).

Furthermore, the combination of qualitative and quantitative methods enabled the researcher to crosscheck the data gathered by different methods, thereby, making the results of the study valid and credible. As observed by Bryman, (2006) combining different methodologies in a single study enhances the researcher's claim for the validity of his or her conclusions if they can be shown to provide mutual confirmation. The decision to combine quantitative and qualitative methods in this study could also be justified on the grounds that it made it possible for the researcher to explore the research questions from different perspectives which lead to broader understanding of the issues connected to the topic.

Study Area

Location and Physical Characteristics

Kumasi is located in the transitional forest zone and is about 270km north of the national capital, Accra. It is between latitude 6.35º – 6.40º and longitude 1.30º – 1.35º (see Appendix Av) an elevation which ranges between 250 – 300 meters above sea level with an area of about 254 square kilometers. The unique centrality of the city as a traversing point from all parts of the country makes it a special place for many to migrate to.

The Metropolis falls within the wet sub-equatorial type. The average minimum temperature is about 21.5ºc and a maximum average temperature of 30.7ºc. The average humidity is about 84.16 percent at 0900 GMT and 60 percent at 1500 GMT. The moderate temperature and humidity and the double maxima rainfall regime (214.3mm in June and 165.2mm in September) have a direct effect on population growth and the environment as it has precipitated the influx of people from every part of the country and beyond its frontiers to the metropolis. This is chiefly because the climatic conditions are not harsh.

The Kumasi Metropolis lies within the plateau of the South–West physical region which ranges from 250-300 meters above sea level. The topography is undulating. The city is traversed by major rivers and streams, which include the Subin, Wiwi, Sisai, Owabi, Aboabo, Nsuben among others. However, biotic activity in terms of estate development and indiscriminate waste disposal practices have impacted negatively on the drainage system and have consequently brought these water bodies to the brink of extinction.

Population Size and Growth Rates

The study was undertaken in Kumasi, the second largest city in Ghana after the capital, Accra. It recorded a population figure of 2,022,919, by the end of 2010 (Ghana Statistical Service, 2012). Based on a growth rate of 5.47 percent per annum Kumasi has attracted such a large population partly because it is the regional capital, and also the most commercialized center in the region. Other reasons include the centrality of Kumasi as a nodal city with major arterial routes linking it to other parts of the country and also the fact that it is an educational center with two state universities, private universities, a polytechnic, two teacher training colleges, senior high schools and a host of basic schools.

A high population growth has serious environmental consequences if it is not accompanied by good and technology oriented infrastructure and service provision. Rapid population growth means a high rate of waste generation, overcrowding, and pressure on existing environmental sanitation infrastructure and sanitation service. When such a high population is anticipated there is the need for planning for new infrastructure and maintenance of existing ones to prevent them from running down as a result of excessive pressure.

Health Care

The Metropolitan Health Services are organized around five (5) Sub Metro Health Teams; namely, Bantama, Asokwa, Manhyia North, Manhyia South and Subin. The Metro Health Team is led by its Director of Health Services who has the overall responsibility for planning, monitoring and evaluating the performance of the Health Sector in the metropolis. The city has a number of health facilities in both the public and private sectors. Notable among them are the Komfo Anokye Teaching Hospital (KATH), which is one of the two (2) national autonomous hospitals, four (4)

quasi-health institutions, five (5) health Care Centers owned by the Church of Christ and the Seventh-day Adventist Church. In addition, there are over two hundred (200) known private health institutions and 13 Industrial Clinics in the metropolis.

There are also 54 trained Traditional Birth Attendants (TBAs), nine (9) Maternal and Child Health (MCH) points and 119-outreach sites. These facilities are evenly distributed in space. Table 9 shows categories of Health Facilities in Kumasi. A cursory glance at the indicators reveals that the number of infants who die per 1,000 live births each year continues to grow. It increased from 21 in 2003 to 29 in 2004 and 36 in 2005 representing an increase in the percentage of 27.6 and 19.4 respectively.

The implication for development is that the population will not be replacing itself and the result will be an aging population with a low human resource base. It will also impinge on productivity and the overall development of the metropolis. The common diseases in the Metropolis include; malaria, diarrhea, hypertension, diabetes mellitus, septic abortion and road traffic accident among others. As the third OPD morbidity, hypertension cases recorded 80,429 in 2012 (Ghana Health Service (GHS), 2012).

Sample Size Determination

The study adopted a multistage sampling technique to select the sample size. As of the time of carrying out the research, the Ashanti Region had four Conferences with four hundred (400) church workers (Table 4).

Table 4. Sampling Frame

Ashanti conferences	Total number of workers
South Central Ghana	120
Ashanti Central Ghana	60
Ashanti South Ghana	60
Central Ghana	160
Total	400

Source: NOGH, 2016.

At the first stage, a sample size of 200 was drawn from the sample frame of 400 at a confidence level of 95 percent. The estimation of the total sample size was derived from the Yamane (1967.886) formula:

$$n = \frac{N}{1 + N(e)2}$$

Where: e =Level of Precision

N = sample frame

N= sample size

Therefore, the sample size was determined as follows:

$$\text{n} = \frac{400}{1+400*(0.05)2} = 200$$

The second stage of the sampling involved the proportional stratification of respondents according to the percentage share of each conference (Table 5).

Table 5. Proportionate Assignment of Sample Size

Conference	Sample frame	Sample size
South Central Ghana	120	60
Ashanti Central Ghana	60	30
Ashanti South Ghana	60	30
Central Ghana	160	80
Total	400	200

Source: Field Survey, 2016.

In the third stage, having determined the sample size from the sample frame, simple random sampling was used to select the participants for the study using the lottery method since the sample size was manageable and participants were in each conference were not too scattered. To elicit objective and unconstrained responses from all participants, efforts were made to make all participants comfortable and able to participate fully. The meetings, therefore, were prepared with humorous stories, brief relaxation periods, and refreshments at strategic intervals.

Types and Sources of Data

Basically, primary sources of data were used.

Primary Data Sources

Primary data comprised of the responses and opinions gathered from the respondents using both quantitative and qualitative data collection methods like interviews and questionnaires to improve the quality or validity of the data.

Data Collection Methods And Tools

The various data collection methods employed in the study are described below.

Questionnaire Survey

A questionnaire survey was carried out in all the selected Ashanti conferences. The questionnaire was pre-coded with a few open-ended questions that required information on perceptions and attitudes. Local church members who were trained by the researcher undertook the questionnaire survey. The questionnaire is one of the most widely used instruments for collecting data in survey research. The questionnaire was divided into three sections. Refer to Appendix AI for details of the questionnaire.

Expert Interviews

Detailed interviews were held with two (2) dieticians on what constitute good dietary habit, balance diet, and exercise among others. There were three (3) in-depth interviews with professional health workers from the Kwadaso SDA hospital on causes and management of Hypertension as well as some of the pre-conditions that should be avoided. Interviewing is a useful way of collecting qualitative data because the technique is 'introspective' and allows respondents to report on themselves, their views, their beliefs, practices, interactions, and concerns (Freebody, 2003). Besides, most people are more willing to talk in an interview than the case would be if they were asked to write or fill out a questionnaire (Robson, 1993).

Sampling Techniques

Various sampling techniques which comprised both probability and non-probability sampling techniques were adopted in selecting the study respondents. The various sampling techniques are discussed below.

Purposive Sampling

This was a non-probability sampling technique adopted by the researcher to specifically select Gospel workers in the Northern Ghana Mission of the Seventh-day Adventist church of Ghana. The study respondents were mainly gospel workers who were purposely selected for this study.

Stratified Sampling

This probability sampling technique was also adopted since the study was conducted across four different sub-areas within the larger study area. Respondents were selected from the four areas namely South Central Ghana Conference, Ashanti Central Ghana Conference, Ashanti South Ghana Conference and Central Conference. The selection of the respondents from these four areas was done using a statistical approach by selecting respondents based on the population of the sub-areas and the proportion of the sub-areas' population in the total study population of the entire study area. This is clearly demonstrated in the sample determination section of this chapter.

Pre-tests

Research instruments were pre-tested among five gospel workers at Konongo SDA church to fine tune and determine the feasibility of the structured questionnaire. Gospel workers at Konongo SDA church were chosen for the pre-test because their work schedule and conditions are very similar to those of the selected conferences.

Data Analysis Techniques

The completed questionnaires were first edited for consistency. For the open-ended items, a short list was prepared from a master list of responses in order to get the key responses given by respondents. All the responses ticked on the questionnaire

were recorded on a broadsheet before being fed into the computer for computer analysis, using the Statistical Package for Social Sciences (SPSS), version 20. To enhance scoring and analysis of the data, the various categories of the data and the various categories on the questionnaire were coded accordingly.

The descriptive nature of the study demanded both inferential and descriptive statistical tools to be used in the analysis of the data. The data was put into tables of frequencies and critically interpreted to answer the research questions whiles the data from the interviews were transcribed verbatim. Themes reflecting the richness of the participants' experiences were created. These themes were then connected to each other based on similarities and apparent interrelationships. For the purposes of clarity, the themes were checked with the transcripts to ensure that the connections worked for the primary source material. Once a coherent list of related themes was finalized, extracts representing themes were selected and were presented as direct narratives.

Ethical Principles

Scientific research requires that researchers conduct themselves according to ethical principles. The relation between the researcher and the informants is very important in scientific research because the informants can be affected by the research in several ways. Ethical considerations of informed consent, confidentiality and consequences were therefore carefully adhered to during the research. Consent was obtained from the Northern Ghana Union Mission workers and all the leaders of the Ashanti conferences to carry out the research in the metropolis.

Permission was also sought from the Metropolitan Health Department to carry out the study in the selected health center chosen for the study. The purpose of the study was explained to each participant and their consent sought before they were

recruited into the study. Respondents were also assured of strict confidentiality and data collected have been handled as such.

CHAPTER 4

RESULTS

This chapter comprises the analysis of responses and discussion of the research findings in relation to the objectives of the study. Qualitative and in some cases quantitative research study was adopted with the primary aim of linking the responses of participants to the objectives of the study.

The purpose of this study was to determine the prevalence of hypertension and its associated risks, amongst the Gospel workers of the Northern Ghana Union Mission (NOGH) of the Seventh-day Adventist Church, with specific objectives of firstly, determining the level of knowledge, its management, perceived causes and symptoms of hypertension amongst gospel workers, and finally to determine the risks factors associated with hypertension amongst gospel workers. This chapter will, therefore, focus on the results obtained in the study, based on socio-demographic characteristics and questionnaires distributed and analysed in relation to the set objectives.

Bio-Data of Respondents

The first aspect of the data collection method was to find out the background information about the study respondents. In this regard, the data collected from the respondents included the sex distribution, age distribution and educational qualification, and occupation of the respondents.

Table 6. Socio-Demographic Characteristics

Characteristics	Category	Frequency	Percentage
Sex	Male	182	91
	Female	18	9
Age	25-34	35	17.5
	35-44	41	20.5
	45-54	80	40
	55-64	44	22
Occupation	Pastor	159	79.5
	Finance	27	13.5
	Clerks	14	7
Education	First Degree and Above	168	84
	Diploma	32	16

Source: Field Survey, 2016.

From a total of 200 respondents selected for this study, there were 182 males (91%), and 18 females (9%). Males were predominant in the sample largely because they are mostly selected as pastors in this area of study and a pastor can as well be an accounting and finance staff. A large percentage (79.5%) of the respondents was pastors, (13.5%) were finance and accounting staff and (7%) were church clerks. This information is represented in Table 6 above. All the respondents that were selected for the study were basically above twenty-four years of age. This research selected older respondents who are church workers of the Seventh-day Adventist Church in the NOGH. As such they may have much knowledge about the perceived causes, management practices and the subsequent risks of hypertension among gospel workers. Table 6 presents the socio-demographic characteristics of the study respondents. Results indicate that the majority (40%) of the respondents were between 45-54 years old, with a mean average age of 45.4 years (SD: 9.90).

Age Distribution of the Respondents

Motlagh, (2015) indicated straight impact on the frequency of hypertension and old age which suggested higher hypertension risk with elders. Results from the present study conveyed that hypertension is mostly common with people within the age groups of 45 to 54 (40%) and seem to differ a bit from some studies on hypertension where it was more common in people over the age of 60. It was also realized that the pattern of hypertension and age is changing due to poor dietary practices among the age groups specify for the study. The distribution of the respondents is also presented in the above table.

Occupational Distribution of the Respondents in the NOGH

All the respondents that were selected for the study were basically gospel workers in the NOGH. This research selected older respondents who had much knowledge about the prevalence of hypertension among them. A total of 159 respondents implying 79.5 % of the respondents were Pastors, 27 respondents representing 13.5% were working with the finance, clerks had 14 which constituted 7%. Pastors, however, were dominating because they were the people among the 200 respondents with busy schedules and as a result, may be more likely to develop hypertension.

This is presented in Table 6. The last aspect of the respondents' bio-data was on their educational background. The majority of the respondents (168) representing 84% had either a first degree or higher certificate whilst 32 representing 16% had diploma certificates. This was because the NOGH had a benchmark of selecting it workers and one need to have a minimum tertiary certificate.

Anthropometric Characteristics of Respondents

Another crucial aspect of the respondents' background information was to obtain their anthropometric information which comprised the weight, height and their mean BP. Information on these are presented in Table 7.

Table 7. Weight, and Height of Respondents

Characteristic	Category	Frequency	Percent
Weight (kg)	46-55	45	22.5
	56-65	61	30.5
	66-75	49	24.4
	76-85	45	22.5
Height (cm)	69-100	39	32.5
	101-130	27	22.5
	131-160	24	20
	161-190	30	25

Source: Field Survey, 2016.

Appel *et al.* (1997), indicated that weight is directly associated with blood pressure (BP). The importance of this relationship is evident by the increasing prevalence of overweight and obesity among the Seventh-day Adventist church workers in the NOGH. This presents the study on the subject's human body measurements, especially on a comparative basis. Whilst the weight is measured in kilograms, the height was measured in centimeters. The results in table 4.3 indicate that the majority of the respondents weighed between (56-65 kg) thus 30.5 percent of the respondents with a mean weight of 66.84. Additionally, the majority of the respondent had height of 69-100cm with an average mean of 130.25cm

However, the weight and the height of the respondents are necessary for determining the Body Mass Index which may be a determinant of blood pressure and the risk for hypertension. The Results also indicate that the respondents had average

mean BP of 135/95 mm hg with the majority (30.5%) and the remaining between 120/80 and 90 mm hg respectively.

Table 8. Systolic and Diastolic Reading of Respondents

Readings	Parameters	Frequency	Percentage
Last Systolic Reading	110	34	17
	120	54	27
	130	48	24
	135	23	11.5
	140	20	10
	145	13	6.5
	170	5	2.5
	180	3	1.5
	Total	200	100
Diastolic	70	34	17
	72	54	27
	80	48	24
	85	23	11.5
	90	20	10
	95	13	6.5
	100	8	2.5
	110	3	1.5
	Total	200	100

Source: Field Survey, 2016

Levine and Neary (2013), signposted that the concept behind the definition of hypertension is about the presence of blood pressure, the study, however, embarked the systolic and diastolic readings using some benchmarks of the American Heart Association (AHA) in the determination of blood pressure among the respondent in the NOGH. While systolic reading is the amount of pressure in your arteries during contraction of the heart with normal readings between 90-120, diastolic reading is a blood pressure when your heart muscles are between beats with the normal readings between 60-80.

More than half (56%, 112/ 200) of the respondents had it clear using the AHA standard to measure their systolic and diastolic reading. Out of those who had greater systolic and diastolic readings, 24% had 130/80 mm hg, 11.5% had 135/85 mm hg, 10% had 140/90 mm hg, and 6.5%, 2.5%, 1.5% of 145/95 mm hg, 170/100 mm hg and 180/110 mm hg respectively. It was comprehended from the result that, the current hospital records indicated 130- 180 and 80-110 (mm hg) as systolic and diastolic reading.

While elevated blood pressure (BP) is defined as a systolic blood pressure (SBP) > 110/120 mm Hg or diastolic blood pressure (DBP) > 90 mm Hg or both. The matured church workers in the NOGH were dominating because the majority of the church pastors were aged 7 to 9 years to go on pension hence blood pressure prevalence was among them because of the nature of the work and how long they have been in the service. As such some aged people had normal readings and were among the young pastors and healthy ones who were hypertension free and constituted 44% (88/200) of the respondents. They indicated that; rest, regular exercises, good eating habits, consistent checking up of blood pressure was a good practice they observed throughout their work in the ministry which has eventually helped them to overcome the disease associated with their work and age.

On asking some nurses who happened to be observing the health status of respondents privately on the screening for blood pressure they indicated that to ensure standardized technique in measuring a respondent's blood pressure, their patients was seated in a position, one arm was selected and computerized equipment was used to record the blood readings. They further revealed that a programmed office BP measuring electronic device was an alternative to manual office BP technique. In all it was released that, it was helping to deal with errors due to improper technique,

avoiding an overestimation of BP values (white-coat HTN) or underestimation of BP values (masked HTN).

Table 9. Perceived Causes of Hypertension

Respondents occupation	Dietary factors	Lack of Physical exercise	Stress & Eating late
	Yes	Yes	Yes
Pastor	88	31	40
Church Clerk	6	3	5
Finance	14	5	8

Source: Field Survey, 2016

Though, dietary changes can serve as initial therapy before the start of blood pressure medication. It was clear among the respondents that, a good balance diet is a necessary condition to prevent all kinds of diseases associated with the heart. Among hypertensive Individuals who are already taking medication, dietary changes can further lower BP and facilitate step down of drug therapy. But, on testing their knowledge on the causes of hypertension, out of 159 pastors who were dominating had 88 of the respondents believing that hypertension is mostly caused by dietary factors, as against (31) and (40) who also believed that is mostly caused by lack of physical exercises and stress as well as eating late.

Finance and the clerk workers in the NOGH who happened to be 27 and 14 respectively indicated the same pattern of the causes in accordance with their population as shown in table 4.8. Respondents who mentioned dietary factors were 54% representing 108 of the entire population for the study. While proper dieting was a therapy, it was also revealed vastly as number one cause of hypertension. It was unveiled that they were those with specially recommended diets from their private doctors or nurses which were geared promoting good health and to prevent hypertension most likely among them. Nineteen percent of the study population

indicated a lack of physical exercises causes hypertension hence a drug-free way of controlling and preventing hypertension is preferred.

Addition of Salt to Cooked Meals

It has been shown that increasing dietary salt causes a progressive rise in blood pressure (BP) in rats (COT, 1959). On average, as salt (sodium chloride) intake increases, blood pressure (BP) increases and subsequently brings about hypertension though there are some major factors that bring about hypertension such as alcoholism, smoking, stress, hereditary and others .On being asked as to whether they add salt to cooked meals 43% of respondents said yes. Though 55.5% said no those that do practice that habit is quite substantial.

While it was possible to identify subgroups that benefit more from salt reduction, there was a considerable overlap within subgroups. The extent of BP reduction from potassium depends on concurrent levels of salt intake. Conversely, a reduced salt intake lowers BP to a greater extent when potassium intake is low rather than high. Intersalt Cooperative Research Group 1988, indicated massive study also found that BP rose with age in every human population studied except four groups that added very little or no salt to their food.

Table 10. Addition of Salt to Meals

	Frequency	Percent
Yes	86	43%
No	114	57%
Total	200	100%

Source: Field Survey 2016

Knowledge of the Symptoms of Hypertension

The first objective of the study talks about the level of knowledge and management practices of hypertension among the gospel workers in the NGUM. The study discovered that most of the respondents who were pastors did know the prevalence of the disease but fail to frequently check up on themselves. As such, they mentioned some feelings which were decoded into meaningful health language.

The majority of the respondents who are pastors (158) had a different view on symptoms they experienced example Blur Vision of the eyesight, chest pain, dizziness, headaches, none which represent 13, 39, 26, 75 respectively whiles other symptoms had 5 when it comes to palpitation. 75 and 39 pastors were of the view that, they experience a headache and chest pain. The pastors were, however, dominating because they are largely affected by some hypertension causes such as stress.

However, church finance workers also explained that they had headaches and represented 10 out of the respondents. John, (2016) showed that signs are uncommon with basic hypertension, but, the following may happen when blood pressure is seriously high: Headaches, Dizziness or ringing in the ears, Palpitations, Nosebleeds, Numbness or tingling in the hands or feet and Drowsiness or confusion. Pastors seem to have more of those symptoms than the other workers according to this present studies information.

Table 11. Knowledge of Hypertension Symptoms among Respondents

	Blurred vision	Chest pains	Dizziness	Headaches	Others
	Yes	Yes	Yes	Yes	Palpitation
Pastors	13	39	26	75	5
Church clerk		2	3	3	2
Finance	12	0	5	10	6

Source: Field Survey, 2016

Diagnosis of Hypertension among Respondents and Attendance of Hospital for High BP

As part of the study, efforts were made to enquire from the respondents whether they had ever experienced hypertension before and whether they have ever attended hospital or clinics due to high BP. Information on these is summarized in Table 12.

Table 12. Responses to Questions on Hypertension

Queries	Parameters	Frequency	Percent%
Have you ever been Diagnosed with Hypertension?	No	124	62
	Yes	76	38
	Total	200	100
Have you been to the Hospital in the last 6 months for high BP?	No	143	71.5
	Yes	43	21.5
	I don't Know	14	7
	Total	200	100

Source: Field Survey, 2016

Table 12 above indicates the various responses respondents gave with regards to the question asked; **have you ever been Diagnosed with Hypertension?** 124 out of the 200 respondents said No representing 62% while 72 said Yes implying 38% of the population. But one of the respondents who said no indicated that, ***'hypertension is a disease that becomes common with age hence since he is 32 years and he can exercise (playing ball, walk, tidy around), and have many times with his newly***

wedded wife and eat a good food, hypertension cannot come near him and his family in Jesus name.')

It can be deduced from his opinion that some practices can help control the disease among church workers. It is, therefore, clearer from him that regular exercising; eating a well-balanced diet on time and having enough rest can be good management practices. When asked if they have visited the hospital for the last six (6) months to check their BP, majority (71.5%) of the respondents said No.

It was unveiled by them that inadequate time in the ministry was a greater factor and could even end up in a year without them going for a medical check not alone for hypertension checkup.

To them and this is serious. They do not visit the hospital at all than to even check their blood pressure. Forty-three percent indicated 'Yes' to the question asked. It was realized that their ages were a bit up thus between 48- 64 who thought the disease is prevalent with respect to age. Fourteen (14) respondent representing 7% indicated don't know, however, but considering their educational background it seems they were not willing to disclose that part of information and upon verbal interview they said that ***'God created man in his own image and any bad sickness which may cause a death of Gods servant shall be cancelled'***.

It was clear that their belief and faith were making them not to accept the danger associated with the disease among them.

Management and Prevention of Hypertension among Respondents

The study again sought to identify the various measures which were usually adopted by the various gospel workers (respondents) as means of managing hypertension when they are affected. Also, the various strategies adopted by the

gospel workers or respondents as means of preventing hypertension were identified. Table 10 below provides full details of the information on the above.

Table 13. Management and Prevention of Hypertension among Gospel Workers

Respondent's occupation in the Church	On hypertensive drugs		Control eating habits	Drink herbal tea	Medication	On medication	On pills	Through diet. Exercise and avoiding stress	
	Yes	No							
Pastor	51	61	5	20	5	4	3	5	5
Church Clerk	3	6	0	0	0	3	0	0	2
Finance	5	22	0	2	0	0	0	3	0
Total	148								

Source: Field Survey, 2016

On how hypertension is being managed by respondents, fifty-nine (59) with majority being pastors who are on hypertensive drugs and (128) also believe that by controlling their diets and exercises, they will achieve a normal blood pressure. Therefore, the careful thought of screening and increasing public knowledge on hypertension and its symptoms is warranted. However, a large number of respondents as per the symptoms normally experienced also show that they may be probable candidates for hypertension.

On the subject of knowledge on managing hypertension amongst gospel workers, in his study of the prevalence, awareness, and control of hypertension among workers in West Africa; Bosu, (2015) opines that normally sedentary workers were at high risk and there is a high occurrence of hypertension amongst West Africa's workers, of which a substantial percentage is undiagnosed, severe or complex. Out of the 200 respondents (59) comprising mostly pastors and finance and accounting staff were either on hypertensive drugs or pills, (32) were controlling hypertension either through the use of herbal teas, dieting and through both diet and exercise were also recognized.

Activities adopted for Control and Prevention of Hypertension among Gospel Workers

Various activities had been adopted by the various respondents or gospel workers as means of preventing hypertension. Such activities included eating a balanced diet, exercising regularly, reducing stress, cut back on salt, maintain a healthy weight, and monitoring of blood pressure. The results from this are summarized in table 11 below.

Table 14. Activities to Control and Prevent Hypertension among Gospel Workers

	Activities					
Respondent's occupation in the Church	Eat a balanced diet	Exercising regularly	Reducing stress	Cut back on salt	Maintain a healthy weight	Monitor your blood pressure
Pastor	58	45	23	15	10	8
Church Clerk	5	3	3	0	2	1
Finance	9	8	0	5	0	5
Total	72	56	26	20	12	14

Field Survey, 2016

In general, the respondents unveil that, there were some other major ways through which the management of hypertension could be done and could help prevent or control the disease among the church workers as well as its risk. It was revealed that 72 out of 200 representing 36% respondents suggested that eating a good balance diet is a management way of controlling and preventing the associated risk of hypertension. Whiles a good balance diet keeps the body's blood pressure under control, they emphasized on the eating of fruit and vegetables, and the limit of the intake of calories, fats, and sugar.

On exercising, 28% of the total number of respondents proposed it as a management strategy among church workers in the NGUM. One pastor explained that ***'Physical activity is of a great importance to the human body, the more exercise you get the better, the small you can do can control your BP".*** He further indicated that training every weekend can also help that is in cases there isn't enough time for his colleague pastors. It was observed from the time I had to interview them that, church workers in the NGUM had no time for themselves than to talk of rest, as such 13% of the respondent indicated stress reduction as key components in preventing and controlling hypertension among church workers.

On the issue of salt intake, 10% of the respondents who happen to be seeking health advice from their church members who are health workers know that there is the need to cut back on salt intake. Seven percent (6%) and 7% had it that maintenance of body weight and constant checking of blood pressure respectively is a good practice of one controlling his or her blood pressure and avoiding the common risk associated with hypertension.

Type of Diet Followed by Gospel Workers in Managing and Preventing Hypertension

The kinds of diet that were usually taken by respondents as means of managing, preventing or controlling hypertension among the gospel workers were also identified. This is presented in the table below.

Table 15. Diets followed by Gospel Workers to Manage and Prevent Hypertension

	Type of Diet being followed					
Respondents Occupation in Church	Low Carbohydrate/Sugar Low/ Cholesterol	Low Salt Renal (Low Protein/ Low Salt)	Adequate fruit intake	Vegetarian (vegetables and dry beans to diet)	No special Diet	Don't Know
Pastor	30	34	28	10	41	16
Church Clerk	0	4	5	1	4	0
Finance	0	0	0	5	17	5

It was found that 62 out of the 200 respondents representing 31% were not following any special diet. They indicated that as for them, ‘anything goes in’, however when the Dietary Approach to Stop Hypertension (DASH) foods are not taken into consideration as indicated by this section of the respondents, their rate of becoming prone to diseases and worse of it all hypertension is high. Out of 200 respondents, 10.5% did not know the kind of diets they are following hence they fall

directly to the effects of those respondents who do not follow any DASH food which is aimed at controlling and preventing hypertension. The study also revealed that (15%), (19%), (16.5%) and (8%) are following low carbohydrates/sugar/ low cholesterol, Low Salt Renal (Low Protein/ Low Salt), adequate fruit intake and vegetarianism respectively. It was realized that Immunity to hypertension and rising BP with age is also common in respondents groups that consume high-carbohydrate diets, high salt and others hence those respondents following certain DASH diet are on the verge of controlling and preventing the disease.

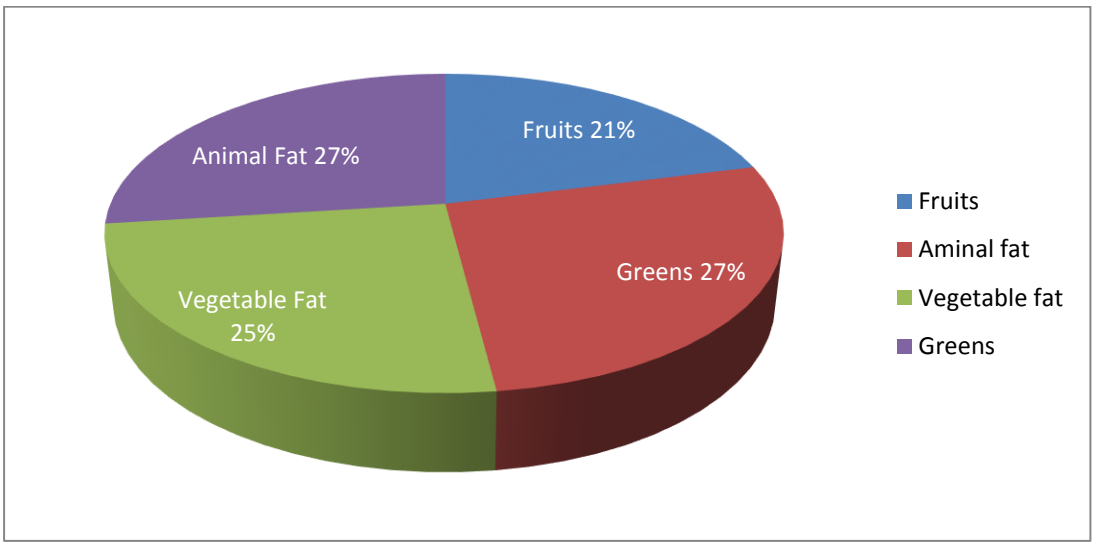


Figure 2. Diet of Gospel Workers
Source: Field Survey, 2016.

To conclude on the risk factor associated with hypertension amongst gospel workers' information on their dietary intake was gathered and figure 2 gives the details of how respondents answered the questions. According to the diagram, 25% (50 respondents) indicated vegetable fat, 27 % (54 respondents) animal fat 21 % (42 respondent) said that fruits were ideal to help their health status, 27 % (54 respondents) outlined greens.

It was further deduced that little did the respondents know about ‘My Plate’ according to their nutritional intake by their ages. Ideally, according to my-plate guide of food intake, carbohydrates, vegetables, fruits, and proteins should all cover a quarter each on an individual’s plate with just a little portion outside the plate as its fat content. However, the plate of the gospel worker as depicted above rather have more than half of it as its fat content and this may contribute to their high prevalence of the disease. Though DASH is a flexible and balanced eating idea that helps create a heart-healthy eating style for life introduced by American Heart Association, it requires no special foods and quantities and instead provides nutritional goals of people and to prevent any BP rise among people. This plan recommends: Eating vegetables, fruits, and whole grains, Including fat-free or low-fat dairy products, fish, poultry, beans, nuts, and vegetable oils, Limiting foods that are high in saturated fat, such as fatty meats, full-fat dairy products, and tropical oils such as coconut, palm kernel, and palm oils, Limiting sugar-sweetened beverages and sweets.

Meanwhile, the Seventh-day Adventists’ have a ‘health message’ ‘that runs in the blood of the Adventist church and has been all over for practically as long as the church itself. According to Ellen G. White, there should be a progressive reform on the diet of the Adventists, where they are taught on the use of fats (White, 1880). In addition, it stated that ‘ there is great need of instruction in regard to dietetic reforms of the church taking into account wrong habits of eating and the use of unhealthful food are in no small degree responsible for the intemperance, crime and wretchedness that curse the world’. This disparity of the diet of the gospel worker today, therefore, raises a question as to what actually influences the diet of the gospel worker, is it culture, geographical location (proximity), economic or false information/influence, which may be an area of further research.

Duration of Physical Activities Adopted by Gospel Workers in Managing and Preventing Hypertension

Cole, Smith, Hart and Cupples (2011), point out that, diet, exercise, psychological, educational and other factors are interventions for the prevention of cardiovascular diseases. The study, however, outlines some important physical activities respondents unveiled as indicated in figure 3 as a way of controlling the risk associated with hypertension among the NGUM workers. The respondents indicated that the average duration of physical activities was also a necessary 'vitamin 'to put their bodies in good shape and to prevent or control hypertension.

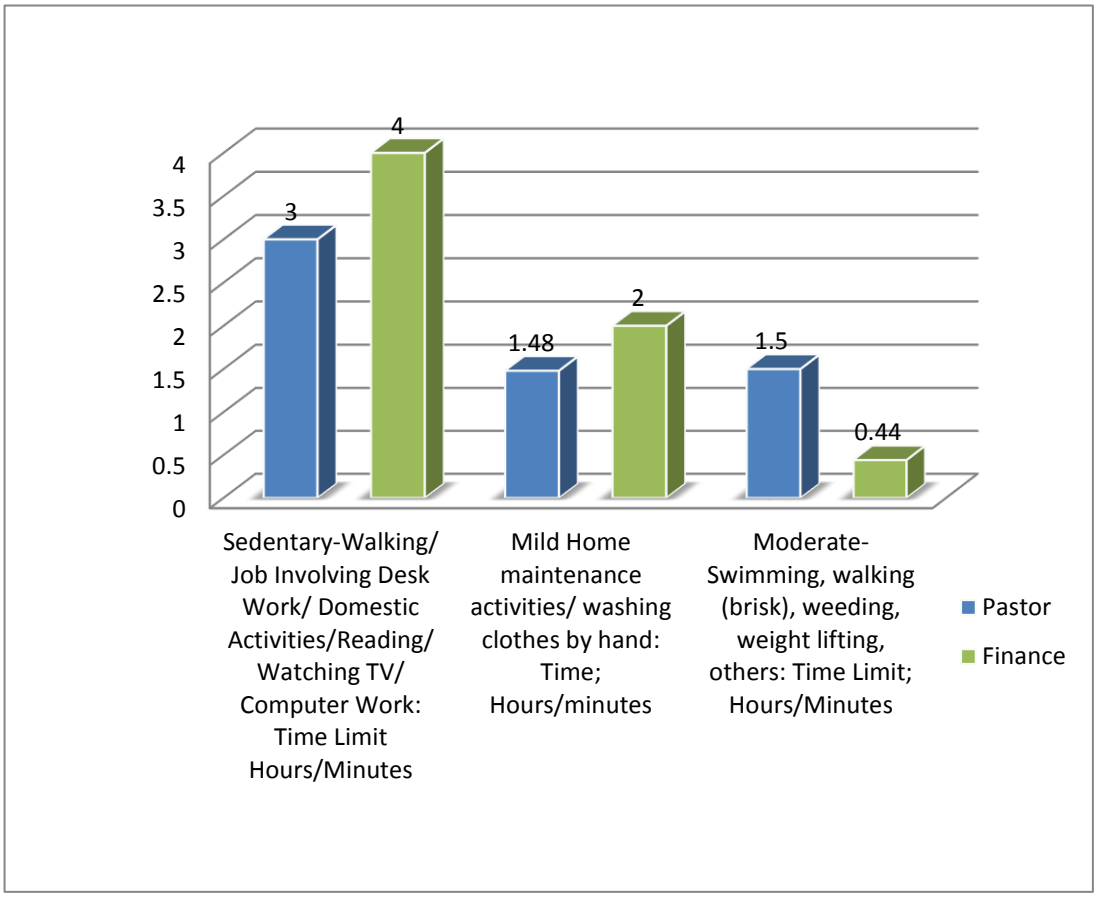


Figure 3. Average Duration of Physical Activities of the Respondents

The results as shown in figure 3 revealed that a maximum mean of four (4) hours for finance workers and three (3) hours of pastors are used daily in doing sedentary exercises which does not involve many physical activities.

It was unearthed by the pastors that, they have busy schedules to be engaged in certain kinds of exercises. It was established that, mild work (Household chores, such as mowing the lawn, raking leaves, gardening or scrubbing the floor) at home is a form of activity busy schedule workers like pastors, finance workers, clerks and others engaged in as a way of making use of their body in other to regulate the body joints to aid the prevention of disease.

According to the study, 1.48 hours and 2 hours for pastors and finance workers respectively were for mild home activities. While pastors had to sit back in their chair to read the bible and books to prepare for the next ministration, it compounds and reduces their mild work at home thus registering low compared to finance workers in the NOGH who indicated more time at home because their work ends in the church. A mean of 1.5 hours for pastors and 0.44 hours for finance workers are used to do physical activities within one week. It was observed that pastors understand how stressful, tedious their work was and how prone they are to hypertension hence they have enough body exercises instrument and tools to help them exercise.

However, a section of the pastors wished that active sports, such as basketball or tennis, Climbing stairs, Jogging, Bicycling is a good exercise they could embark on as a way of putting their body in a good shape to prevent and control hypertension mostly common among them.

CHAPTER 5

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter deals with the summary of findings, conclusions, and recommendations being made with regards to the results gathered from the field. The findings from the field were informed by the research questions and objectives outlined in the study.

Summary of Findings

Various key findings were identified in the research and they really suited the objectives of the study. The major keys finding are summarized below:

1. The study was basically conducted on 200 gospel workers who were predominantly Adventists. The majority of the respondents were males (182) and all of them were highly educated since all the 200 respondents had attained tertiary education.

2. The major perceived causes of hypertension among the selected gospel workers were identified as dietary factors (106 respondents, thus 53%), stress and eating late (53 respondents, thus 26.5%), lack of physical exercise (38 respondents, thus 18%), the other factors constituted only 2.5% of the causes.

3. Studies from Intersalt Cooperative Research Group 1988 and other institution and scholars stated that much salt intake has the tendency of causing hypertension among certain groups. Due to this, the salt intake among the gospel workers was identified. In all, 86 gospel workers representing 43 percent claimed that they add salt to their cooked meals before eating whilst 114 (thus, 57%) indicated that they do not add salt to the cooked meals before eating.

4. All the respondents had much knowledge about the perceived symptoms of hypertension such as blurry vision, chest pains, dizziness, headaches, and palpitation.

5. The commonest symptoms of hypertension identified by the respondents or gospel workers were headache (44 percent), chest pains (20 percent), dizziness (16.5 percent), blurry vision (14.5 percent), palpitation (2.5 percent) and other causes.

6. There was a high prevalence of hypertension among the gospel workers. This is because 76 gospel workers representing 38 percent had ever been diagnosed with hypertension. Though 124 gospel workers meaning 62 percent had never been diagnosed with hypertension, the 36 percent prevalence rate is still considered high.

7. The study identified that 43 gospel workers (21.5 percent) had once or more attended the hospital in the last six months for high BP. Whilst 143 respondents (71.5 percent) had never been to the hospital or clinic for a high BP in the last six months. On the other side, 14 respondents (7 percent) didn't know whether they had been to the hospital in the last six months for high BP. But considering their educational background it seems they were not willing to disclose that part of information.

8. From a total of 200 respondents, 59 respondents (29.5 percent) indicated that they were on hypertension drugs whilst 89 respondents (44.5 percent) were not on hypertension drugs. The remaining 52 respondents did not indicate whether they are on hypertension drugs or not.

9. The major measures adopted by the hypertension patient among the health workers were control of eating habits or dieting habit, taking or drinking of herbal tea, taking of pills and other drugs, through regular exercises and avoiding stress.

10. The main activities and measures adopted by the gospel workers as means of preventing and controlling hypertension among the respondents or health workers were identified as: eating balanced diets, exercising regularly, reducing stress, cut back on salt, maintaining a healthy weight and monitoring of blood pressure.

11. The nature of dieting plans followed by the church workers as means of managing or preventing hypertension were: No special diet (29 percent), low salt renal-low salt/protein (19 percent), low carbohydrate/sugar/cholesterol (15 percent), vegetarian-vegetables and dry beans (7.5 percent). On the other side, 10.5 percent of respondents claimed they don't know of any dieting plan whilst 5 respondents (2.5 percent) didn't answer this question.

12. The major diets taken by the gospel workers were animal fats (27 percent), greens (27 percent), vegetable fat (25 percent), and fruits (21 percent)

13. The main physical activities engaged by the gospel workers in order to manage and managing hypertension were sedentary walking, swimming, soccer, mild household work and office work.

Conclusion

Hypertension remains one of the most deadly diseases which claim the lives of many people across the world, especially in Ghana. The disease remains the third commonest disease report to the various hospitals according to the Ghana Health

Service in 2012. In the case of Gospel workers like pastors, elders of churches and church financial officers where most activities are spiritual, less attention is paid to the prevention and management of medical conditions like hypertension. On the first objective of determining the level of knowledge on hypertension amongst gospel workers of NOGH, Majority of the Gospel workers had adequate knowledge about hypertension and its symptoms, causes and risk factors since most of them had an adequate education. Nevertheless, there was a high prevalence of hypertension among the gospel workers of NOGH of the Seventh-day Adventists since most of the respondents were aged and had poor dieting measures as well as engage in less physical exercise.

On the second objective of identifying the nature of management of hypertension amongst the gospel workers, this study identified that, the hypertensive patients amongst the gospel workers of NOGH were managing the disease by controlling their eating or dieting habit, taking or drinking of herbal tea, taking of pills and other drugs, exercising regularly and avoiding stress, and the main activities and measures adopted by them were identified as: eating balanced diets, exercising regularly, reducing stress, cut back on salt, maintaining healthy weight and monitoring of blood pressure. The nature of dieting plans followed by the gospel workers as means of managing or preventing hypertension were: No special diet (29 percent), low salt renal-low salt/protein (19 percent), low carbohydrate/sugar/cholesterol (15 percent), vegetarian-vegetables and dry beans (7.5 percent).

On the third objective of determining the risk factors associated with hypertension amongst the gospel workers, the major perceived causes of hypertension among the selected gospel workers were identified as dietary factors (106

respondents, thus 53%), stress and eating late (53 respondents, thus 26.5%), lack of physical exercise (38 respondents, thus (19%), the other factors constituted only 2.5% of the causes. There were also poor health behaviors among gospel workers leading to the prevalence of hypertension among them. Based on the conclusions and the findings of the study, various recommendations are made.

Recommendation

Due to the findings of the study, the following recommendations are made:

With reference to objective one of this study on determining the level of knowledge:

1. There must be effective nutrition/health education for Gospel workers in order to enlighten them on the real causes and symptoms of hypertension.
2. A good knowledge of My-plate guidelines for adults and that of the aged will also be necessary for them to know which nutrients are needed for their bodies per their ages as well as the quantities needed at a meal sitting.
3. Gospel workers must also be made aware of the fact that hypertension is a physical lifestyle disease which may be prevented by an individual's lifestyle more than a spiritual thing.

With reference to objective two on the nature of management of hypertension, it is further recommended that:

1. Gospel workers must improve their general lifestyle by engaging in good dieting system, exercising regularly, and having enough rest to prevent hypertension, as well as be encouraged to take their prescribed medications.
2. Gospel workers must improve their health behavior by visiting the hospitals, clinics, and other health centers regularly in order to know their health status to identify whether they have hypertension or not because the symptoms of hypertension do not show earlier.
3. Cases of hypertension should also be reported to hospitals as early as possible to prevent subsequent complications.

Finally, on determining the risk factors associated with hypertension amongst gospel workers, it is recommended that:

1. Gospel workers avoid late eating and reduce fat intake as much as possible since the nature of their work encourages less physical activities.

2. Though age was a contributing factor, dietary habits contributed more and this draws the attention of the fact that the gospel worker really needs to be educated on this as indicated in the objective one above.

3. The gospel worker must also be encouraged to exercise at least thirty minutes a day, and also create a stress- reduced environment by engaging in other extra-curricular activities.

APPENDICES

APPENDIX A

INFORMED CONSENT

Good morning/Afternoon: My name is **Cecilia Amponsem-Boateng.**
I am very pleased that you have agreed to participate in this study.
We are here to measure your blood pressures and also give you questionnaires to answer on hypertension and its associated risks and how they are managed. This is because of a study that I am doing about hypertension and its associated risks among Seventh-day Adventist gospel workers in Northern Ghana. At the end, the outcome of the study will help policy makers of the NOGH. It will also help in the identification of risk factors associated with hypertension amongst gospel workers.
Please be assured that all information given will be private and used only for the purpose of this study. You, therefore, do not need to include your names on the questionnaire and you are also free to opt out of the study at any point in time.
Thank You.

APPENDIX B

QUESTIONNAIRE

Weight…….kg
Height……..cm
BP……mmHg

Part 1

1.1 Age……years
1.2 Gender……
1.3 Occupation in the church
Pastor □ Church clerk □ finance □ Book Shop □ others please specify……
Educational Background
1.4 Primary □ Secondary □ Tertiary, please specify…….
1.5 Does anyone in your family have hypertension? Yes □ No□ Don't Know □
1.6 If yes Please specify, Parent □ Sibling□ Grandparent □

Part II Hypertension and its Management

2.1 Have you been diagnosed with hypertension? Yes □ No □
2.2 If yes was it done by a medical professional? Yes □ No □
2.3 Have you ever been diagnosed of any of these conditions?
1. High cholesterol □ 2. heart disease 3. Diabetes □ 4.others please specify……..
2.5 Are you on hypertensive drugs? Yes □ No □
2.6 If you are hypertensive how do you manage it?
Please explain…….....
2.7 In your understanding what do you think are the causes of hypertension?
2.8 Dietary factors □ Lack of Physical activities □ Stress and eating late □ all of them
□ 4.4 In the last 6 months, have you been to the hospital for high blood pressure?
Yes□ No □ Don't know □ If yes, how many times? _____
2.9 What are your health goals and interests? Eating better□ Exercising□ Reducing stress□ Aging well □ Losing weight□ Other □ please specify…….
2.10 Has your doctor told you that you have High Blood Pressure? Yes□ No□ Don't know □
2.11 How often do you see your doctor for blood pressure checkups?
Monthly □ every 3-4 Months□ every 6 months□ once a year□
2.11 What was your last systolic blood pressure reading? (top number) _____ Don't know□
Your last diastolic blood pressure reading? (bottom number) _____ Don't know□
2.12 Have you had a blood pressure reading of 140/90 or less in the last year? Yes□ No□ Don't know□
2.13 Do you measure your blood pressure at home? Yes□ No □
What was the last reading? _____ Date : _____ Don't know□

2.14 Which of the following symptoms have you had? Blurry Vision □ Chest Pain □ Dizziness □ Headaches□ None□
Other_____
2.15 Does high blood pressure affect the ability to perform your usual daily activities? Yes □No□ Don't know□
If yes, how? _____
2.16 Select the type of diet you are following. Diabetic □ Low Carbohydrate / Sugar Low□ Cholesterol□ Low Salt Renal (Low Protein/Low Salt) □ Weight Reduction□ Vegetarian□
No Special Diet □ Don't know □
2.17 Do you add salt to cooked foods Yes □ No □
2.18 Have you been told you have high cholesterol? Yes□ No□ Don't know□
2.19 If yes, have you seen a nutritionist? _____

Part III Working Conditions

1.1.1 How would you describe your work? Stressful □ Easy □ Not stressful □ Frustrating □
1.1.2 Does your work permit you to eat at the right time? Yes □ No □
1.1.3 Does your work permit you to have exercise regularly? Yes □ No □
1.1.4 Are you insured by your employer? Yes □ No
1.1.5 How often are you required to check your blood pressure by your employers? Monthly □ Every two months □ quarterly□ Don't know □ Never □
1.1.6 Does your employer have a copy of your medical records? Yes □ No □

Part IV Physical Activities and Dietary habits

Which type of physical exercises do you do?

SN	Type of exercises	Frequency Days/Per week	Time Limit Hours/minutes	Never
4.1.1	Sedentary- Walking/ job involving desk work/ Domestic activities/ reading /watching TV/ computer work.			
4.1.2	Mild- Home maintenance activities/ Washing clothes by hand.			
4.1.3	Moderate- Swimming, walking (brisk), weeding, weight lifting, others please specify			

Which foods do you prefer, and how often do you take them?

SN	Food type	Frequency/ Days per week	Times/ per day	Never
4.2.1 fatty diets	Animal fats: Eggs, margarine, butter/cheese, meat, and fish			
4.2.2	Vegetable fats: Groundnuts, Mustard, sesame Other sources; cereals pulses nuts			
4.2.3 Fruits	Apples, Oranges, Bananas, Mango, Melon, Lemon and others.			
4.2.4 vegetables	Green leafy like Kontomire, lettuce, cauliflowers, Ayoyo, Garlic, Peppers, onions etc.			
4.2.4 Salty foods	Salted fish, salted eggs, salted meat, spicy foods, tinned fish/ beef.			

Thank you for answering the questions

Partly Sourced From: Community Health Plan of Washington, 2009

APPENDIX C

CLINICAL TEST FORM FOR HYPERTENSION

Criterion 1	If clinic blood pressure is 140/90 mmHg or higher, 24-hour ambulatory blood pressure monitoring (ABPM) is offered to confirm the diagnosis of hypertension.
Exceptions	A – The person is unable to tolerate ABPM and home blood pressure monitoring (HBPM) is used as a suitable alternative to confirm the diagnosis.
Criterion 2	If the person has severe hypertension, an immediate start on antihypertensive drug treatment is considered, without waiting for the results of ABPM or HBPM.
Definitions	Severe hypertension is defined as clinic systolic blood pressure of 180 mmHg or higher or clinic diastolic blood pressure of 110 mmHg or higher. NICE recommends that practitioners should consider starting antihypertensive drug treatment immediately. An audit that examines whether drug treatment was started immediately will provide information in respect of this criterion. However, it would also be beneficial for the practitioner to be actively involved in the audit. If drug treatment is not prescribed immediately, they may be able to provide additional information about whether this was considered.
Definitions	Left ventricular hypertrophy, chronic kidney disease, and hypertensive retinopathy are target organ damage. When undertaking investigations: • test for the presence of protein in the urine by sending a urine sample for estimation of the albumin:creatinine ratio and test for haematuria using a reagent strip • take a blood sample to measure plasma glucose, electrolytes, creatinine, estimated glomerular filtration rate, serum total cholesterol and HDL cholesterol • examine the fundi for the presence of hypertensive retinopathy • arrange for a 12-lead electrocardiograph to be performed. Cardiovascular risk should be estimated in line with the recommendations on Identification and assessment of CVD risk in 'Lipid modification' (NICE clinical guideline 67). This guideline recommends that risk equations should be used to assess cardiovascular disease risk. It also states that

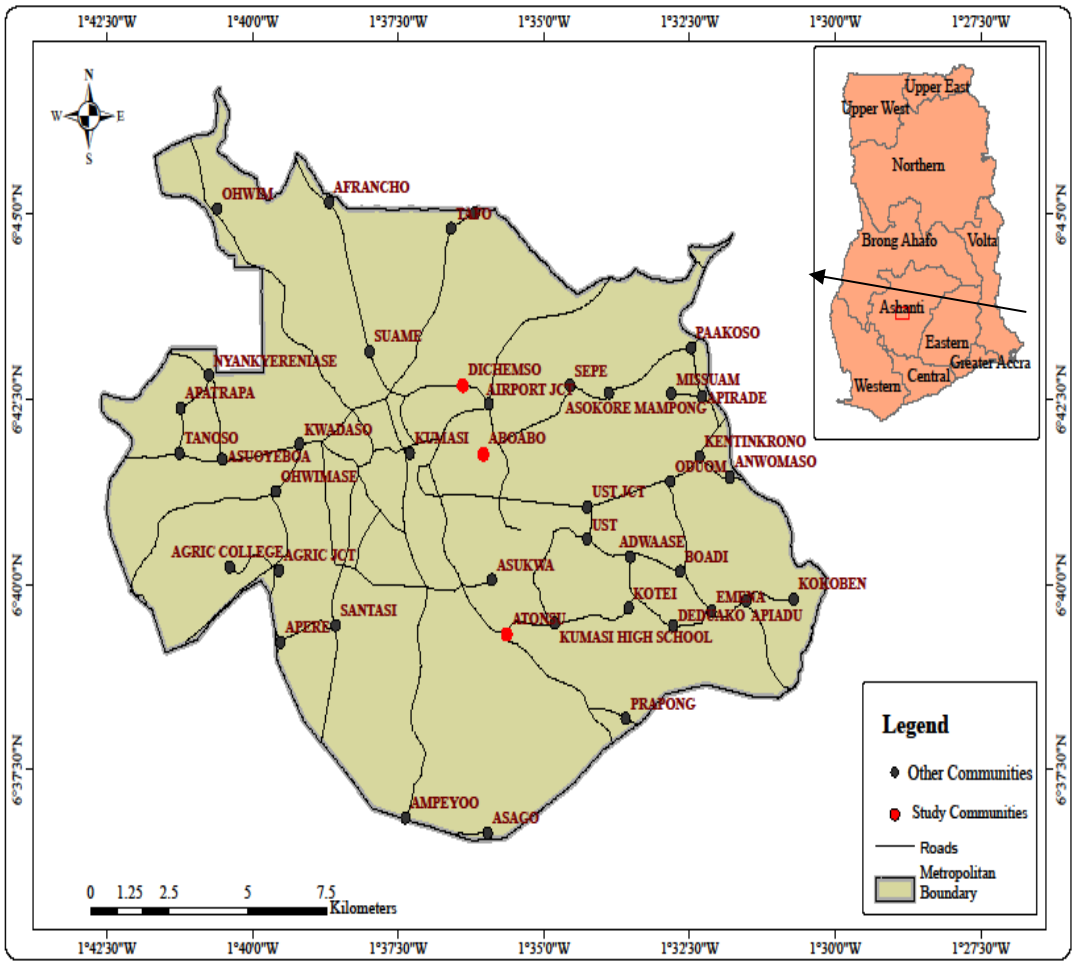
	these should not be used if the person has pre-existing coronary heart disease, angina, stroke, transient ischemic attack or peripheral vascular disease or if the person is already considered high risk because of familial hypercholesterolemia, other monogenic disorders of lipid metabolism or diabetes. This investigation/assessment should take place when waiting for the results of ABPM, or HBPM if the person is unable to tolerate ABPM.
Criterion 4	When using ABPM to confirm a diagnosis of hypertension, at least two measurements per hour are taken during the person's usual waking hours. The average value of at least 14 measurements taken during the person's usual waking hours is used to confirm a diagnosis of hypertension.
Definitions	An example of a person's usual waking hours is between 08.00 and 22.00.
Criterion 5	When using HBPM to confirm a diagnosis of hypertension: • for each blood pressure recording two consecutive measurements are taken, at least 1 minute apart and • blood pressure is recorded twice daily, ideally in the morning and evening, and • blood pressure recording continues for at least 4 days, ideally for 7 days. Measurements taken on the first day are discarded and the average value of all the remaining measurements is used to confirm a diagnosis of hypertension.
Definitions	Each blood pressure recording should be taken with the person seated. Because the position of the person may not be documented, this has not been included in the audit support.
Definitions	Accelerated hypertension is blood pressure usually higher than 180/110 mmHg with signs of papilloedema and/or retinal hemorrhage. Symptoms that may lead a practitioner to suspect phaeochromocytoma are labile or postural hypotension, headache, palpitations, pallor, and diaphoresis.

Source Extracted from National Institute for health and clinical Excellence 2013.

APPENDIX D

1 MAP OF GHANA SHOWING KUMASI,

THE STUDY AREA



Source: Owusu-Sekyere, 2016.

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VITA

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Date	**Education**
2014-2017	Master of Public Health Nutrition (Candidate), AUA.
2011-2013	BSc Hospitality Management**,** University of Cape Coast, Ghana.
2003-2004	Access Nursing, Highbury College, Portsmouth, UK
1998-2001	HND, Hotel, Catering and Institutional Management, Kumasi Polytechnic, Ghana.
1994-1997	SSSCE, Kumasi Academy, Ghana

Work Experience

Date	**Place**	**Position**
2011-Present	Manso Adubia SHS,	Principal Domestic Bursar
2006-2011	Kumasi Academy	Senior Domestic Bursar