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SOCIO-ECONOMIC DIFFERENCES IN THE QUALITY OF LIFE OF ADULT HYPERTENSIVES ATTENDING THE OUT PATIENT CLINIC AT THE EASTERN REGIONAL HOSPITAL

BY

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DECLARATION

I, Daniel Jnr Nana Yaw Abankwah, do hereby declare that except for references made to other people's work which I have duly acknowledged, this dissertation is the result of my own research done under supervision and that it has neither in part nor in whole or concurrently been presented for another degree elsewhere.

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(Supervisor)	Signature	Date

DEDICATION

I dedicate this study to my mother, Mrs. Grace Akua Adofoa Adjei for her unconditional support, encouragement and prayers throughout the course of my study. I most of all dedicate this work to my family.

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I am most grateful to the Almighty God, for his abundant grace and direction throughout my programme. I forever grateful to my supervisor, Professor Moses Aikins for his encouragement, patience, commitment, guidance and constructive comments which has guided me to the successful completion of this dissertation.

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Finally to my friends and loved one Angela Abroso, I salute you all.

LIST OF ABBREVIATIONS

CHAG	Christian Health Association of Ghana
CVD	Cardiovascular disease
DPB	Diastolic Blood Pressure
ERH	Eastern Regional Hospital
ERHD	Eastern Regional Health Directorate
GBD	Global Burden of Disease
GHS	Ghana Health Service
HPT	Hypertension
HRQOL	Health Related Quality of Life
ISH	International Society of Hypertension
LMICs	Low and Middle Income Countries
MOH	Ministry of Health
NCD	Non-communicable disease
NHIS	National Health Insurance Scheme
PCA	Principal Component Analysis
QOL	Quality of Life
SBP	Systolic Blood Pressure
SEP	Socio-economic position
SES	Socio-economic status
SF 36	Short Form 36 Items Health Survey
SSA	Sub-Saharan Africa
SWI	Simple Wealth Index

UN	United Nations
WHO	World Health Organization
WHOQOL	World Health Organization Quality of Life
WHOQOL-BREF	World Health Organization Quality of Life – 26 Items
WHOQOL-100	World Health Organization Quality of Life – 100 Items

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ABSTRACT

Background: Hypertension now largely affects low and middle income countries with a higher prevalence of 46% in African adults of 25 years and above. In Ghana the prevalence of hypertension ranges between 19% and 54% which is higher than the African regional average and this has been consistent and high in the urban areas than rural mostly due to urbanization. The increase in the prevalence rates reported is mostly thought to be attributable to certain unhealthy lifestyles and behaviours such as smoking, excessive alcohol intake. Hence with the current spate of urbanization, the burden of hypertension is expected to be high in Ghana as life expectancy increases. This study aims to determine the quality of life among adult hypertensives and factors determining the quality of life and reasons for these differences.

Methods: The study was a cross-sectional quality of life (QOL) survey relying on quantitative data. Three hundred and fifty two diagnosed hypertensive patients aged 18 years and above and attending the Eastern Regional Hospital were recruited using simple random sampling technique. Participants were interviewed using a structured questionnaire adapted from the Ghana Demographic Health Survey and the World Health Organization Quality of Life - BREF (26 items) tools. Descriptive statistics were used to examine patients' demographic characteristics and social factors (education and occupation) of SES. Economic factors (wealth status) of SES was determined from household assets using the principal component analysis. Mean scores were reported for the quality of life and categorized into domains of four (physical and psychological health, social relationships and environment). Non parametric two sampled Wilcoxon rank-sum and Kruskal-Wallis equality-of-populations rank test, were used to measure the relationship between QOL domains and demographic, wealth status and health behaviours of participants. Chi square tests were done to know the relationship between the SES and demographic variables. Spearman

correlation was used to measure the strength and direction of association between SES and QOL. Data was entered in Epi Info, exported to Microsoft Excel and analyzed in STATA MP Version 13.

Results: Patients mean age was (61.2, SD (12.4)) with majority being females (78%). SES status of patients was generally low. Majority of patients had lower levels of education (77.5% - no education to primary education) and this was related to higher prevalence of hypertension. Out of the number of employed patients' (88.8%) were in the informal sector of the economy engaged in trading and farming. Education, wealth and employment status were found to be significant SES indicators of QOL ($P<0.01$). Patients' quality of life was found to be generally moderate (3.3, SD (0.96)) in all four domains ranging from (51.3, SD (24.4) – 67.6, SD (18.7)) with the environment domain having the highest satisfaction score and the social relationships having the lowest satisfaction score. Spearman's rank correlation co-efficient revealed that education and wealth ($P<0.05$), high levels of fruits intake, moderate to high physical activity levels and the absence of comorbidities were positively associated with patients' QOL in physical, psychological and environment domains whereas presence of co-morbidity and old age were negatively associated with QOL in the physical domain.

Conclusion: The results revealed lower SES and lower QOL in social relationships domain compared to other domains and differences in QOL across patients' background characteristics health behaviours. Given the results, engaging more in physical activities, more fruits intake and enhancing adherence to treatment should be considered to improve patients' QOL. Interventions to improve QOL among hypertensives and targeted towards women, older patients, lowly educated and married and widowed patients are needed.

Keywords: Hypertension, Quality of life, Wealth, WHOQOL-BREF, SES, Adult Hypertensives, Ghana

CHAPTER ONE

1.0 INTRODUCTION TO STUDY

1.1 Background

Today, human beings live in an environment that is rapidly changing. Rapid urbanization, demographic ageing, and the globalization of unhealthy lifestyles are the current powerful forces shaping the human health throughout the world. Strikingly, the rich and poor countries currently face the same health problems. An example is the shift in the world's leading cause of mortality from communicable/infectious diseases to non-communicable diseases such as cancer, chronic lung, diabetes and cardiovascular disease (WHO, 2013).

Non-communicable diseases (NCDs) also referred to as chronic diseases, kills thirty-eight million people each year and more than 80% of these deaths occur in low and middle-income countries (LMICs). Sixteen million NCD deaths occur before the age of 70; 82% of these "premature" deaths occur in LMICs (WHO, 2015). By 2030, it is expected that NCDs will increase more quickly in these regions as its economies and populations grow and will account for three quarters of the global disease burden and eight times more deaths than higher income countries (Irina, 2011). According to a report by the World Economic Forum (WEF - 2011), half of chronic NCDs deaths are people in the prime of their active and productive years, and thus, the disability imposed and the lives lost across borders are also endangering industry competitiveness.

Currently cardiovascular diseases (CVDs) account for most NCD deaths and its contribution to the disease burden will to a greater extent be determined by the risk factors associated with hypertension and diabetes (WHO, 2013). CVDs are common in West Africa now occurring in

younger ones (Mensah, 2008). At this rate of increase in morbidity and mortality, it is clear that NCDs are a threat not only to human health, but also to development and economic growth.

Hypertension (HPT), is a non-communicable disease and a leading risk factor for cardiovascular disease (CVD) morbidity and mortality worldwide (Lozano, 2012). According to Centre for Disease Control (2015) 1.1 billion people in the world have high blood pressure and nearly half of this number do not know they have the condition. Also referred to as raised blood pressure, HPT is a common health problem globally; with decreasing life expectancy and an increasing prevalence of risk factors, the disease is fast becoming a public health epidemic. In 2010, increased blood pressure caused an estimated 9.4 million deaths and 162 million years of life lost worldwide. Fifty percent of all heart diseases, stroke and heart failure is attributable to hypertension (ISH, 2014). The burden of the disease excessively affect LMICs as over 70% of people living with HPT are in these regions especially the economically developing ones. According to the ranking of disease burdens in the Global Burden of Disease (GBD) report, hypertension is currently third from fourth as the leading risk factor for deaths in West Africa from 1990 to 2010. According to Bosu (2015), the prevalence of hypertension in West Africa ranged from 12% to 69%.

Till date, the cause(s) of hypertension is not known (WHO, 2013). However, there are well documented known risk factors and behaviours associated with the incidence of the disease. The main risk factors include ethnicity, obesity, heredity, age, deskbound lifestyles, use of contraceptives, alcohol consumption, stress, and high sodium intake (W. K. Bosu, 2015; Phaswana-Mafuya, Peltzer, Chirinda, Musekiwa, & Kose, 2013; Pimenta, 2012). There are also other social, economic and physical risk factors which are often linked directly or indirectly with

high levels of cholesterol and the subsequent development of the disease (Arslantas, Ayranci, Unsal, & Tozun, 2008). These indicate closer ties of hypertension with lifestyle. As such adopting healthier life style can prevent or help in the management of the disease.

Advances in knowledge, technology and the transformation of medicinal therapies has increased population life expectancy (Carvalho, Siqueira, Sousa, & Jardim, 2013). It is therefore important for the individual to maintain his/her health with this increase in longevity. This is particularly necessary especially where aging has been proven to increase the risk of chronic diseases such as CVDs. Knowing the factors affecting this high prevalence of HPT is important for strategic policy directives and help in treatment outcomes.

1.2 Problem Statement

In Ghana, approximately 86,200 deaths out of total deaths per year can be attributed to non-communicable diseases such as Hypertension. Over half of these deaths occurs in persons aged less than 70 years. In 2008, NCDs made up for 34% of deaths and 31% of disease burden in the country, and about 69% of these deaths occurred in males and 59% in females (WHO; 2011).

Hypertension is fast becoming common and a leading risk factor for mortality in adults and its beginning to be recognized as an important public health problem. It is one of the major causes of admissions in Ghana and the main complications are strokes, heart attack and kidney failure (Bosu 2010). It is also a major threat to the health of women as there is a rising level of obesity and hypertension in adult women over age 45 (J. Addo et al., 2012).

Among the top ten outpatient morbidity causes in Ghana, it has often ranked high accounting for 3% - 5% of all new outpatient diseases. In 2010, the total number and proportion of outpatient cases due to hypertension and its related cardiovascular diseases increased 11 fold from 60,000 in 1990 to about 700,000 in 2010 (MOH, 2014). The regional dynamics show Greater Accra, Eastern and Volta regions as having the highest hypertension new outpatient cases. In 2007, Eastern region alone recorded the highest number and proportion of outpatient cases due to hypertension recording 107, 701 cases representing 34.8% (GHS, 2007).

Over the last 30 years, reported rates of the disease in Ghana has been consistently increasing ranging from 19% to 48% and high in the urban areas than rural mostly due to urbanization. The increase in the prevalence rates reported is mostly thought to be attributable to certain unhealthy lifestyles and behaviours (Addo, 2012; Bosu, 2010; Henkle *et al* 2010).

To determine an effective outcome of a hypertensive treatment, quality of life is an important indicator. Socio-economic status of the individual is also a good predictor of the quality of life of the hypertensive (Ha, 2014). Little is understood on the quality of life of people living with hypertension in Ghana and the study area in particular. However, there has been a study in Ghana showing the association between socio-economic position and hypertension but none on the socio-economic differentials in the quality of life of the hypertensive patient in Ghana and the Eastern region.

As such to respond to the rapid growth in prevalence of hypertension in Ghana, it is important to have an in-depth understanding about the differences in the quality of life (QOL) among people

living with hypertension and to know if these differences could be explained by the socio-economic status and other related factors affecting the individual. This study therefore aims to determine the quality of life among people living with hypertension and their socio-economic characteristics and other related factors of the hypertensive patient.

1.3 Objectives

1.3.1 General Objective

The study is to determine the socio-economic differences in the quality of life among adult hypertensives attending the OPD at the Eastern Regional Hospital.

1.3.2 Specific Objectives

The specific objectives are to;

1. determine the socio-economic status of the adult hypertensive patient
2. assess the quality of life of the adult hypertensive
3. determine differences in quality of life by the socio-economic status of the adult hypertensive
4. ascertain the reasons for differences in quality of life by the socio-economic status of the adult hypertensive

1.4 Conceptual Framework

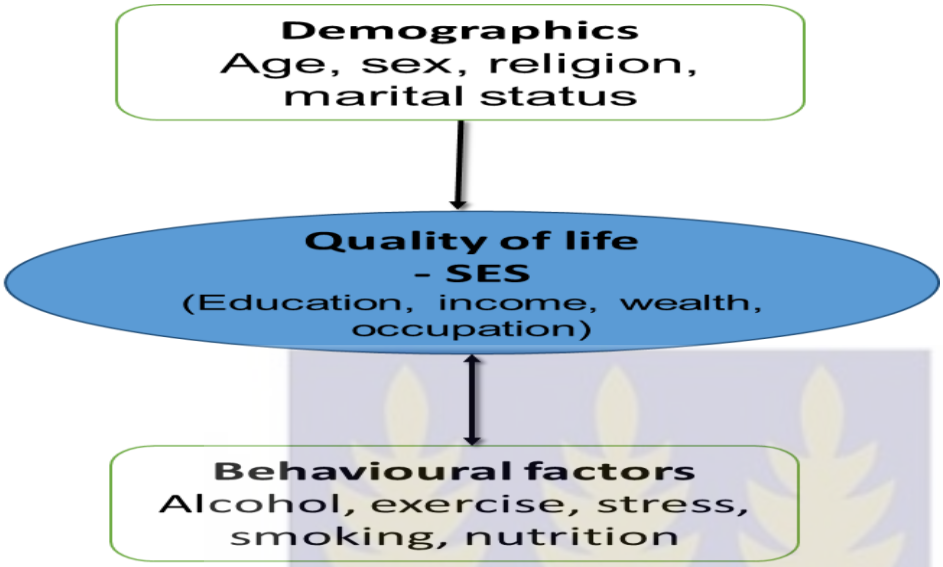
Figure 1 shows the explanatory relationship between the quality of life of the adult hypertensive and factors affecting the quality of life (QOL) of individuals with the condition. The framework is based on the QOL concept developed by the WHO (1999). From literature the factors that

influence quality of life of the adult hypertensive can be grouped into individual behavioural, demographic, socio-economic, physical functioning and drug side effects.

Behavioural factors such as excessive alcohol intake, physical inactivity, obesity, salt intake, not eating enough fruits and vegetables, family, work and emotional related stress negatively affects the disease status of the hypertensive patients. As the status worsens, the quality of life lived by the individual also worsens. Factors such as age, sex, religion, marital status interact independently to affect the hypertensives physical function which also affects the quality of life of an individual. Decision to seek or not to seek timely healthcare services and adherence to treatment regimens directly affects the hypertensive patients' disease status which leads to a lower quality of life.

A hypertensive patients' educational status, the level of income and the type of work he/she does can also impact on the disease status in terms of physical functioning. The socio-economic condition of the individual can negatively or positively affect the quality of life of the adult hypertensive. Most at times, there are side effects associated with the drugs given for the treatment of hypertension. These side effects negatively affects the physical functioning capabilities of the hypertensive hence influencing the quality of life. All these factors either positively or negatively impacts on the quality of life lived by the hypertensive patient.

Figure 1: Conceptual framework of factors influencing quality of life of the adult hypertensive



1.5 Justification

Understanding the quality of life lived by the adult hypertensive is important in addressing the challenges hypertension poses to the general health of the population. Varied factors have been associated with the differences in the quality of life amongst which is the person's socioeconomic standing. Knowing the dynamics in these differentials is important for treatment outcomes. Thus it is essential to identify such factors and develop strategies to improve quality of life. In improving a patient quality of life, initiatives are needed in the factors affecting quality of life to help ensure maximum compliance. The purpose of this study therefore will determine the quality of life lived by hypertensive patients in the study area and to also know the socioeconomic status of the hypertensive patient. The study will ascertain any differences accounted for by these factors and what are the reasons for the differences. Such information will be beneficial to the adult hypertensive in living a higher quality of life which could eventually reduce the high risk of mortality associated with the condition. It may also assist health care professionals in managing

hypertension through education and treatment and help policy formulators in developing relevant and context specific policies capable of improving quality of life

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Hypertension

Hypertension, is a condition that is caused when the blood vessels have persistently raised pressure. The higher the pressure in blood vessels the harder the heart has to work in order to pump blood (WHO, 2013). It is defined as an elevated systolic blood pressure (SBP), diastolic blood pressure (DBP) or as BP in excess of 140/90 mm Hg or a systolic blood pressure equal to or above 140 mm Hg and/or diastolic blood pressure equal to or above 90 mm Hg (WHO, 2014)..

2.1.1 Measurement of Blood Pressure

Measurement of blood pressure is in millimetres of mercury (mm Hg) and recorded as two numbers usually written one above the other. The number above is the systolic blood pressure - the highest pressure in blood vessels and happens when the heart contracts, or beats. The number below is the diastolic blood pressure - the lowest pressure in blood vessels in between heartbeats when the heart muscle relaxes (WHO, 2013).

2.1.2 Classification of Hypertension

Normal adult blood pressure is defined as a systolic blood pressure of less or equal to 120 mm Hg and a diastolic blood pressure of 80 mm Hg. It is important for individuals to have normal blood pressure for the efficient function of vital organs such as the brain, kidneys, and heart and for overall health and wellbeing. **High-normal** is not necessarily a disease condition but important to let the individual know that he/she is at a high risk of developing hypertension so they can practice lifestyle modifications. It is classified as a systolic blood pressure between 130 -139 mm

Hg and a diastolic blood pressure of 80 – 89 mm Hg. The condition develops into Hypertension from Grade 1 through to Grade 3 category if the individual fails to adhere to these life style modifications. These categories are classified as **Grade 1 (mild) hypertension** (systolic blood pressure between 140 -159 mm Hg and a diastolic blood pressure of 90 – 99 mm Hg. **Grade 2 (moderate) hypertension** (systolic blood pressure between 160 -179 mm Hg and a diastolic blood pressure of 100 – 109 mm Hg and **Grade 3 (severe) hypertension** (systolic blood pressure greater or equal to 180 mm Hg and a diastolic blood pressure greater or equal to 110 mm Hg. At these stages and if left uncontrolled, HPT can lead to a heart attack, an enlargement of the heart and eventually heart failure. Blood vessels may develop bulges (aneurysms) and weak spots due to high pressure, making them more likely to clog and burst. As a result of the pressure in the blood vessels, blood can leak out into the brain and this can cause a stroke. Hypertension can also lead to rupture of blood vessels, blindness, kidney failure and cognitive impairment (Heart Foundation, 2008).

2.1.3 Cause(s) of Hypertension

The cause of the disease still remains mysterious as there is no single attributable cause(s), however there are many behavioural risk, genetic and social/environmental factors that can potentially lead to the development of the disease. These include; behavioural (highly influenced by peoples working and living conditions); unhealthy diet (too much salt and fat intake, and eating less of fruits and vegetables); excessive alcohol intake; tobacco use; poor stress management; physical inactivity and lack of exercise. Studies have also shown that having a family history of hypertension makes you susceptible to developing the condition if positive lifestyle modifications are not done. Therefore the disease can be developed genetically (Padmanabhan, Newton-Cheh,

& Dominiczak, 2012). Social and environmental factors such as globalization, urbanization, income, education and housing are risks factors to developing hypertension.

2.1.4 Risk factors for hypertension

Hypertension is mainly associated with lifestyle factors and environmental rather than genetics. It is strongly associated with five particular behaviors: excessive use of alcohol, tobacco use, unhealthy diet (high salt intake and, having less of fruits and vegetable consumption), physical inactivity, and obesity. Risk factors leading to hypertension can be modifiable, non- modifiable, or associated with other predisposing disorders

Tobacco Use: Smoking tobacco is a well-known risk factor that increases the development of HPT and CVDs like thrombosis, heart attack and stroke. Smoking causes an immediate increase in blood pressure resulting in higher ambulatory blood pressure levels for smokers than for non-smokers. Smoking cessation is known to reduce the overall risk of cardiovascular diseases (Sansom, Rogers, & Wood, 2004). To reduce smoking at the level of the population, it is important to implement interventions that are multi-sectorial in nature such as banning of tobacco adverts, increasing taxes on tobacco products and ban on smoking in public spaces (Beaglehole et al., 2011).

The prevalence of tobacco smoking varied widely in the 2003 World Health Survey (WHS). According to the survey, men smokes more than women in Africa, with the largest disparities observed in Central and Western Africa. Southern Africa had the highest prevalence of men who smoke followed by Eastern Africa. Interestingly, smoking was more prevalent in rural than in

urban areas in most countries. However, smoking levels were found to be higher among the urban than rural populations in countries such as Mauritania, Kenya, South Africa and Senegal.

Alcohol Consumption: Consumption of alcohol and alcoholic beverages is relatively frequent in Africa (Ezzati, Lopez, Rodgers, Vander Hoorn, & Murray, 2002). There is a direct effect between high levels and specific patterns of alcohol consumption (such as binge drinking) and rising risk of hypertension. The influence of heavy drinking, on increasing blood pressure levels has been described in Nigeria (Lawoyin et al., 2002). According to Briasoulis (2012) low to moderate levels of alcohol intake also leads to an increasing trend in developing HPT and this is no different amongst gender. In order to limit alcohol use, interventions should be introduced in a multi-sectorial manner and adapted to the local situation. Just as in the case of reducing tobacco, such interventions could include banning alcohol advertising especially to young people and increasing taxes on alcohol (Beaglehole, 2011).

Inadequate Physical Activity: Adequate physical activity has been proven to have far reaching health-promoting effects and has an independent and direct role in reducing hypertension (McBride, 1992; Haskell, 1992: Fernandez, 2010; Rossi, 2012). The low levels of chronic diseases found in Africa was traditionally explained in part to be as a result of the high level of physical activity in the region. However, this is currently not the situation. Increasing rates of urbanization occurring across the continent has resulted in deceasing amounts of physical activity. (Gersh, 2010).

High Salt Intake: In Africa, a high sodium intake is very common, mostly from salt used to preserve food or to make it tastier (Cappuccio et al., 2006). Also, salt is added to already-prepared food by the consumer, as processed food is rare. Aside reducing blood pressure and related CVD risk, decreased salt intake has other beneficial cardiovascular effects that are independent of and additive to its effect on blood pressure ((Brown, Tzoulaki, Candeias, & Elliott, 2009); Law 1991). According to Beaglehole (2011) cutting down on salt intake has been reported to have a direct effect on reducing aortic left ventricular hypertrophy, stiffness, stroke, and chronic kidney disease and proteinuria. On this basis, it is possible to reasonably infer that the total impact of reducing salt intake on cardiovascular outcomes could be greater than those expected from reduction in blood pressure only.

Insufficient Fruit and Vegetable Consumption: Consumption of fruits and vegetables is one important element of a healthy diet and this varies considerably among countries, reflecting cultural, economic and agricultural production environments (Dauchet, Amouyel, & Dallongeville, 2009). Most of the benefits of fruits and vegetables are in the form of reduction in CVDs particularly hypertension and other associated risk factors. In addition to a high salt intake, many people in Africa often do not eat enough fruits and vegetables, resulting in low potassium intake and this in turn is associated with raised blood pressure in some patients. A potassium intake of 90 mmol/day is mostly recommended (Popkin, 2007; Kwon 2015).

Obesity: The World Health Organization (WHO) defines obesity as a condition in which excess body fat has accumulated to such an extent that health may be adversely affected. The degree of body weight is usually expressed as a Body Mass Index; this is the ratio of weight in kilograms to

the square of height in meters and is used to classify a person's body weight as underweight (BMI less than 18.5), normal weight (BMI 18.5-24.9), overweight (BMI 25-29.9), or obese (BMI greater than 30). Obesity greatly increases the risk for hypertension and has also been shown to be associated with coronary artery disease and some cancers, and to reduce life expectancy (Chan & Woo, 2010). As obesity is rapidly rising in different countries in the world, it will be important to share best practices such as good diet and engaging in physical activities to reduce this trend (Gersh, Sliwa, Mayosi, & Yusuf, 2010).

Stress: Stress has become a prevalent part of people's lives and its effect on blood pressure is of great public health importance. Although it does not directly cause hypertension, it can lead to repeated blood pressure elevations which finally lead to hypertension (Briones & Touyz, 2010). Stress can cause hypertension through repeated blood pressure elevations and also by stimulation of the nervous system to produce large amounts of vasoconstriction hormones that will increase blood pressure. There is emerging evidence that the various risk factors for hypertension do not work in isolation but tend to interact in clusters (Harrison & Gongora, 2009). So exposure to stress will not only increase BP levels but will also lead to increased alcohol and fat intake. A final common pathway for many of these risk factors is the sympathetic nervous system which is involved in the development of essential hypertension in its early stages and in the hypertensive effects of salt, obesity, and possibly stress as well (Myers, 2007).

2.1.5 Complications of Hypertension

Complications of hypertension are mostly related to the cardiovascular, cerebrovascular, renal, vasculature and ocular systems (Cheplick, Kwon, Bhowmik, & Shetty, 2010). Cerebrovascular complications are more closely related with systolic than diastolic blood pressure. Stroke happens

when an atherosclerotic plaque breaks off inside the artery or the blood vessel ruptures to form a blood clot within the artery. If this blocks blood flow to the brain it can lead to a stroke. If it blocks blood flow to the heart it can result in a heart attack. Effective management and adherence can modify the risk or rate of progression. Occurrence of ischemic heart disease is reduced by 50% with antihypertensive therapy. Left ventricular hypertrophy may cause or facilitate many cardiac complications of hypertension including congestive heart failure, ventricular arrhythmias, myocardial ischemia and sudden death. Left ventricular diastolic dysfunction which may present like congestive heart failure is common in patients who have had hypertension for many years.

High blood pressure damages the small blood vessels in the kidney and affects its ability to excrete waste properly which leads to chronic kidney disease. This leads to tiredness, water retention leading to swollen ankles, feet or hands. It also leads to shortness of breath and itchy skin. By placing added stress on the blood vessels hypertension can result in a buildup of cholesterol and fatty substances on the inside walls of the blood vessels causing atherosclerosis (WHO, 2015). The narrowed arteries limit or block the flow of blood to the heart muscle which deprives the heart of oxygen. Hypertension can damage the small blood vessels in the retina which can lead to shortage of oxygen to the eye tissue resulting in eye disease and sometimes loss of vision.

2.2 Epidemiology of Hypertension

Global Perspective

Globally, the number of people living with the disease considerably increased from about 4.5% (nearly 1 billion adults) in 2000 (Kearney, 2005) to 7% in 2010 (Lim, 2010). According to Centre

for Disease Control (CDC) report (2015), 1.1 billion people in the world have high blood pressure and nearly half of this number do not know they have the condition. Increased blood pressure caused an estimated 9.4 million deaths and 162 million years of life lost worldwide in 2010 (ISH, 2014). This makes hypertension a common health problem worldwide and the single most important cause of morbidity and mortality globally and highlights the urgent need of action to address the problem (Beaglehole et al., 2008)

Hypertension in Low- and Middle-income Countries

In contrast to what was earlier known as the disease of the affluent which affects the very developed countries, Hypertension in recent times has been the bane of low and middle income countries (LMICs) as these economies struggle to deal with the increasing emergence of the disease. This in increasing trends in the prevalence of the disease in LMICs (where health infrastructure and resources are scarce and over-stretched, a high burden of infectious diseases such as HIV, malaria and tuberculosis, and where awareness and treatment levels on hypertension control are still very low is worrying (Ibrahim & Damasceno, 2012). The World Hypertension League and International Society of Hypertension (WHL & ISH) in their 2014 report, showed that currently, the worldwide burden of hypertension is greatest in LMICs as two thirds of the adult population with hypertension are in these regions and this is projected to increase. In fact by 2025, almost 3 out of every 4 people with hypertension will be living in LMICs. The total number of people affected by hypertension in LMICs are therefore significantly higher and are likely to increase as population increase with globalization and economic advancement leading to urbanization and longer life expectancy in these countries (Opie et al., 2005; Irina 2011).

Hypertension in Africa

The situation in Africa is not so different from other LMICs. Before, it was the convention that in Africa, the burden of morbidity and mortality was largely attributable to communicable diseases and other causes of morbidity and mortality such as maternal, perinatal and nutritional (Lopez, 2006). One of the most striking examples of this rapidly changing environments human beings live in, is the very fast shift of the burden of infectious disease towards chronic non- communicable diseases, and by extension CVDs in Africa and this is what most studies term as a "double burden of disease" (WHO, 2013; Bygbjerg, 2012; (Agyei-Mensah & Aikins, 2010). Particularly in West Africa, CVDs and NCDs have been on the sharp rise in over three decades (Boutayeb, 2006; Dalal et al., 2011).

In the first half of the twentieth century, HPT was almost non-existent in African societies. Estimates of high blood pressure now shows that in some settings in the continent, more than 40 percent of adults have hypertension (Juliet Addo, Smeeth, & Leon, 2009; Mittal & Singh, 2010). According to a report by Imperial College in London (2013), the prevalence of the disease has been consistently on the rise in the last two or three decades. In ten (10) years from now (2025), projections based on current epidemiological data suggests that 150 million adults in Sub-Saharan Africa will live with hypertension; this will be a very sharp increase in that of year 2000 which had about 80 million adults with hypertension (Opie, 2005). Studies by WHL & ISH (2014); Mensah (2008) and Walker (2000) show that hypertension and its related complications in particular stroke and heart failure are fast becoming more common in the African region and most of these complications occur in younger ones. These trends have been strongly linked with changes in individual and societal lifestyle such as an increase in excessive alcohol consumption, reduced

physical activity, tobacco use, and adoption of "Western" diets that are high in salt, refined sugar and unhealthy fats and oils (WHO, 2013). Not only is the effects of hypertension and its related complications dire on the morbidity and mortality on the continent of Africa but economically, the disease puts a lot of strain on the already scarce resources of the region. According to Gaziano in (2009), in 2001 the direct healthcare costs attributable to high blood pressure in sub-Saharan Africa was estimated at 2 billion US dollars.

Hypertension in Ghana

As an economically developing country, Ghana is not an exception in terms of the impact of the disease burden on its citizenry. William K Bosu (2010) in a systematic review of studies found out that prevalence of hypertension in Ghana (BP ≥ 140/90 mmHg ± antihypertensive treatment) ranged from 19% to 48% between studies. Differences in males and females were generally minimal whereas urban populations tended to have higher prevalence of the disease than rural population in studies with mixed population types. Alcohol consumption, older age group and over nutrition were independent factors associated with hypertension. From 1972 to about 2005, there has been a trend towards improved awareness, treatment and control for better health outcomes. The review again found out that, less than one-third of adult hypertensive patients were aware they had hypertension and less than one-tenth had their blood pressures controlled in most studies.

On the impact of the burden of the disease, Addo (2012) suggests that the country should expect an increased burden of the hypertension disease with the rapid growth of urbanization and as life expectancy increases. Without adequate detection and control and a deliberate and conscious

efforts at reducing the impact of the disease, it will translate into a higher incidence of stroke and other adverse health outcomes for which hypertension is an established risk factor.

2.3 Quality of life

Constanza et al., (2008) mentioned that while Quality of Life (QOL) has long been an explicit or implicit policy goal, adequate definition and measurement have been elusive. Diverse "objective" and "subjective" indicators across a range of disciplines and scales, and recent work on subjective well-being (SWB) surveys and the psychology of happiness have spurred renewed interest. Within the field of healthcare, quality of life is often regarded in terms of how a certain ailment affects a patient on an individual level. This may be a debilitating weakness that is not life-threatening; life-threatening illness that is not terminal; terminal illness; the predictable, natural decline in the health of an elder; an unforeseen mental/physical decline of a loved one; or chronic, end-stage disease processes. However efforts have been made by organizations and individuals in comprehensively defining quality of life. The World Health Organization defines quality of life as "individuals' perceptions of their position in life in the context of the culture and value system in which they live and in relation to their goals, expectations, standards and concerns". Guyatt (1993) also defined Quality of life (QoL) as representing the sum of subjective sensations related to the state of well-being. According to the Centre for Disease Control, health related quality of life is an individual's or a group's perceived physical and mental health over time. There are various measures used in assessing health related quality of life of individuals for various disease conditions. The World Health Organization Quality of Life assessment (WHOQOL) tool (100 items) and the short for known as the WHOQOL – BREF tool (26 items): position paper from the

World Health Organization" 1995), is the most widely used tool. Others include the Short Form 12 and 36, Health Related Quality of Life tool etc.

2.4 Quality of Life and Hypertension

Kumar (2014), Using the Short Form 36 Item tool for the measurement of quality of life, studies done by (Ritu K. Soni, Anna C. Porter, James P. Lash, & Mark L. Unruh, 2010; Wang et al. (2009)) indicates that Hypertension significantly impairs quality of life in terms of the mental and physical well-being of the individual. The health related quality of life (HRQOL) among people with hypertension is further worsened where there is the existence of comorbidity such as diabetes and other cardiovascular diseases especially in adults 45 and above. The most pronounced effect was noted in the physical function domains of HRQOL as reported by studies done by Sazlina (2012); Buane, 2006; and Soni, 2010. Ha (2014) indicated a moderate quality of life among hypertensive patients living in a rural areas of Vietnam crossing all domains, except for psychological health, which was fairly low.

2.4.1 Demographics and its effect on Quality of Life

On the factors affecting the quality of life of the adult hypertensive, a study by Youssef et al. (2005) suggests that some of the major factors that impact on the quality of life of hypertensive patients are target organ complications and adverse effects of antihypertensive medications. Physical activities and marital status were important independent factors affecting quality of life. Older age was associated with lower quality of life in both physical and psychological health. Women with hypertension had lower satisfaction rating in psychological health than men. Using the WHOQOL-BREF Ha (2014) found the average scores of all the domains of quality of life with

the highest average score of satisfaction found in the Social relationship (64.1, (SD 14.1)), while the lowest average score were found in the Psychological category (49.4, (SD 12.7)). Furthermore, a recent systematic reviews of 20 studies indicated that hypertensive patients had a lower quality of life compared with normotensive people (Trevisol, 2011).

Klocek & Kawecka-Jaszcz, (2003) found that quality of life in patients with essential hypertension in general was significantly lower than that in age-matched normotensives. Also the study showed that in terms of sex, the quality of life in men was higher than that in women irrespective of the presence of arterial hypertension. Again from the study, as age was increasing, the quality of life was decreasing both in hypertensive and normotensives; however in hypertensive women there was a trend towards deteriorating quality of life above 65 years of age and this was in sharp contrast to age-matched men in whom the quality of life improved. In terms of health seeking behaviours, the study found that the quality of life in treated healthy hypertensives was far higher than that in age-matched untreated subjects, but until 40 years of age was higher than in treated age-matched hypertensives. The level of education, employment and familial history of hypertension was related to the quality of life lived.

Patients with coronary heart disease and diabetes (presence of comorbidities) observed a lower quality of life as compared to patients without comorbidities. Multiple regression analysis done by the Klocek study revealed that the quality of life lived by the hypertensive are independently affected by these socio-demographic factors – age, gender, education, and familial hypertension. These factors accounted for 32.7% of the observed variance of quality of life. However gender,

age, education and employment - accounting for 65.8% of variance of quality of life – were independent factors in normotensives subjects (Klocek et al., 2003).

A lot of studies (Ha 2014; Klocek 2003) have been done in the area of the quality of life live by the adult hypertensive. However very few of these studies have been done in the LMICs such as Ghana and the continent of Africa in general. There are also few studies on other socio-economic variables such as occupation and its association with quality of life lived by the adult hypertensive.

2.5 Socioeconomic Position and Hypertension

Williams (1990) said that the social structure and personality perspective provide a theoretical and analytical framework for understanding the persisting association between socioeconomic status (SES) and health outcomes. In the developed countries, there exist fairly good amount of evidence suggesting an inverse relationship between individual socioeconomic status with cardiovascular disease morbidity, mortality and risk factors including hypertension (Seeman, 2008). However, studies done in sub-Saharan Africa have found inconsistent findings with some reporting inverse association (Gupta, 1994; Bovet, 2002) and others reporting positive associations (Signh, 1997; Periera, 1998). Sherman et al., (2006) found out that low childhood socioeconomic position (SEP) was associated with a 60% greater odds of hypertension, and low adulthood SEP was associated with a 2-fold greater odds of hypertension. Compared with men of high SEP in both childhood and adulthood, the odds of hypertension were 7 times greater for low/low SEP men, 4 times greater for low/high SEP men, and 6 times greater for high/low SEP men. Various indicators of socioeconomic status have been used in health research. These include occupation, employment status, employment grade, housing tenure, housing conditions and amenities, income, education, wealth and societal class (Galobardes 2006). According to Ploubidis et al., (2013), in a study done

in sub saharan Africa indicated that the wealth of an individual is positively related to the incidence and prevalence of hypertension.

2.6 Demographics and Hypertension

2.6.1 Age

The results of a study show that increased age is associated with a significant increase in the prevalence of hypertension and especially of systolic hypertension after age 60 years. Increased obesity between ages 30-50 years is associated with significant increases in diastolic blood pressure and this trend is also seen in African-Americans who are heavier than whites. Increased age is associated with an increased prevalence of secondary forms of hypertension including atherosclerotic renovascular hypertension, renal insufficiency and primary hypothyroidism (Toth et al., 2013).

2.6.2 Marital Status

Lipowicz and Lopuszanska (2005), found that never married had a higher risk of hypertension when compared to married men, even when adjusted for different demographic, socio-economic, life-style variables, and even that never married men had lower BMI than married subjects. Differences between a married man and a woman due to prolonged stress and low social support, unhealthy dietary intake (mainly sodium and potassium intake) and economic aspects of living alone are suggested as factors, which might explain at least partly the marital diversity in blood pressure and the risk of hypertension in men.

2.6.3 Education

Wang et al., (2006) found that the level of education attained by an individual significantly affects the level of blood pressure and this was in contrast to earlier studies by (Xu et al., 1997) that reported o association between and individuals level of education and his/her blood pressure. In treatment and preventive healthcare, Tedesco et al., (2001) in discussing education as a risk factor found that, people with low levels of education have known very little about the risk factors to developing hypertension.

2.7 Principal Component Analysis

Principal component analysis (PCA) is a multivariate technique that analyzes a data table in which observations are described by several inter-correlated quantitative dependent variables. Its goal is to extract the important information from the table, to represent it as a set of new orthogonal variables called principal components, and to display the pattern of similarity of the observations and of the variables as points in maps. In order to achieve these goals, pca computes new variables called principal components which are obtained as linear combinations of the original variables. The first principal component is required to have the largest possible variance (i.e., inertia and therefore this component will \explain" or \extract" the largest part of the inertia of the data table). The second component is computed under the constraint of being orthogonal to the first component and to have the largest possible inertia. The values of these new variables for the observations are called factor scores, these factors scores can be interpreted geometrically as the projections of the observations onto the principal components.

Even though self-reported individual income data was collected, it was not used as an SES indicator. This is because evidence in Ghana suggest that self-reported income levels of individuals are not too accurate as many people either fail to report their income or under estimate it (Novignon, 2012). As such the study adapting the Simple Wealth Index tool which gives information on the assets of the individual will conduct principal component analysis (PCA) to estimate the relative wealth of respondents as a measure of some level of accuracy for income (Bourassa, Hoesli, & Sun, 2006).

2.8 Conclusion

From the literature review, it can be observed that positive life style modifications can impact positively on the disease status of the hypertensive. This can affect the health related quality of life lived by the adult hypertensive. Most studies done on the quality of life of adult hypertensives has been done in the developed countries with very little in the developing countries. It is apparent that the dire consequences that hypertension and its accompanying complications place on people living with the disease cannot be underestimated. The disease places a lot of burden on individuals and affects their quality of life. This study therefore becomes relevant as it will not only bridge the knowledge gap in the area but also provide useful information on the quality of life lived by hypertensives in Ghana for individuals and policy makers in the health sector. The Ghana Non-communicable Disease Control Programme (NCDCP) has confirmed the need for this study.

CHAPTER THREE

3.0 STUDY METHODOLOGY

3.1 Introduction

This chapter outlines the methods used in the process of gathering data for the study, the rationale for the choice and the techniques used in answering the information collected. It covers the research design, study area, population, variables, sampling techniques, data collection, quality control measures, data management and analysis and ethical considerations. Figure 2 shows a diagrammatic representation of study design.

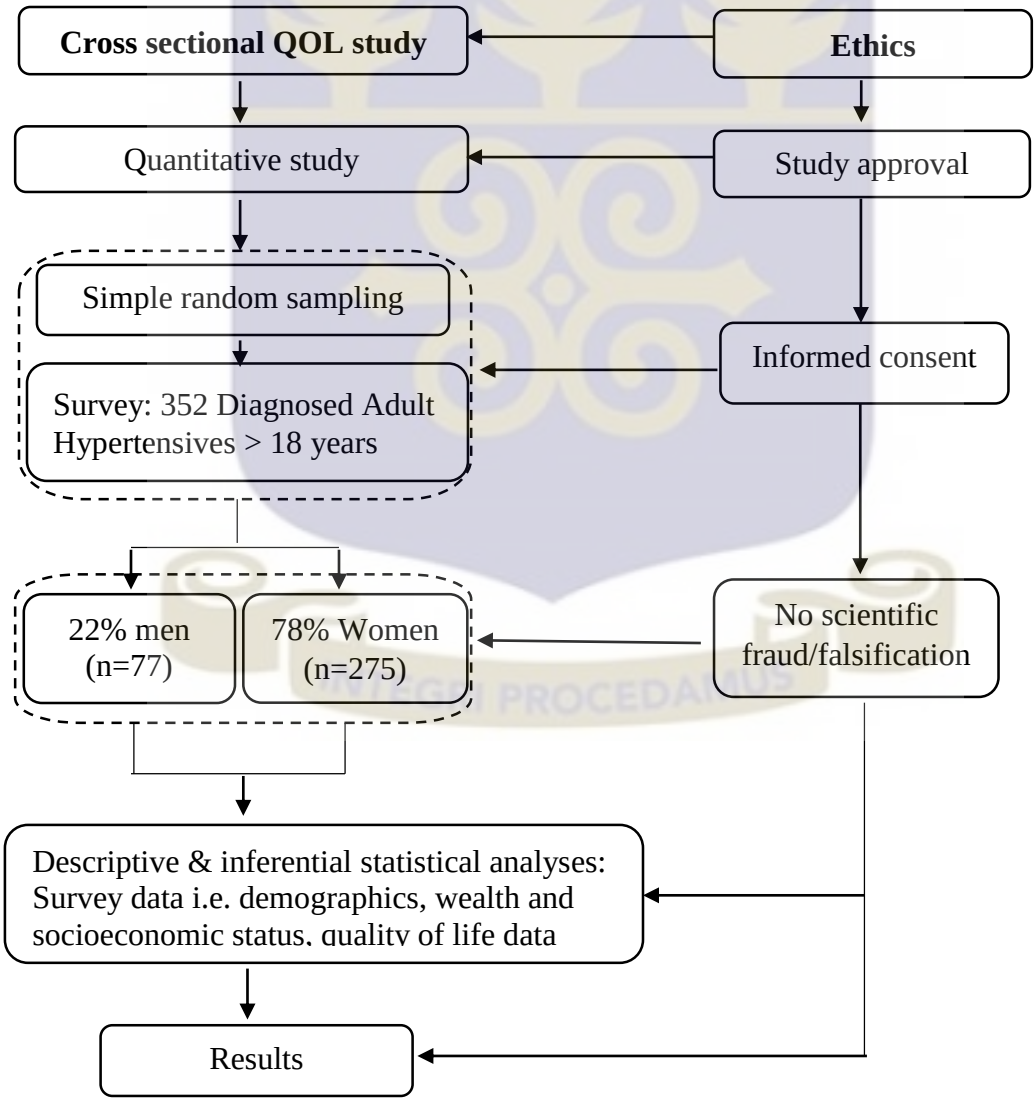


Figure 2: Summary of study design of quality of life lived by adult hypertensives

3.2 Study Design

The research design was a cross sectional study of adult hypertensives attending the Eastern Regional Hospitals' hypertensive clinic. Quantitative methods were used to determine the quality of life of the adult hypertensive and factors affecting it amongst patients. The study was conducted in the months of May through to July 2016.

3.3 Study Area

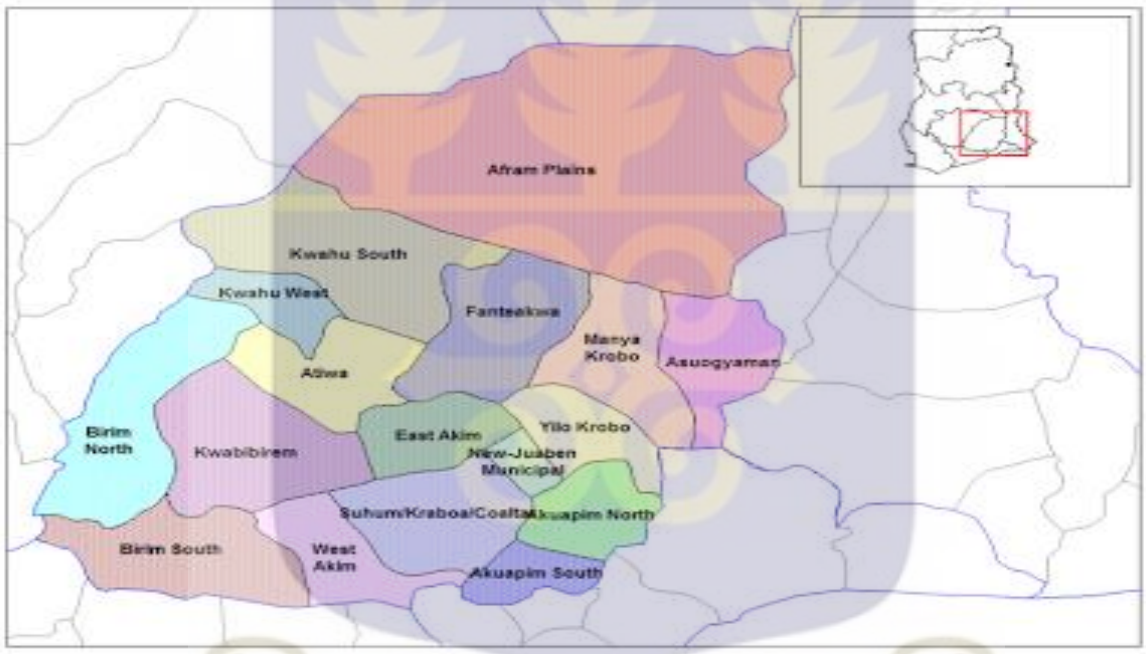


Figure 3: Map of New Juabeng Municipal Area of Ghana

Located in Koforidua in the New Juabeng Municipality of the Eastern Region of Ghana, the Eastern Regional Hospital (ERH) was the study site. Established in 1926 and one of ten Regional Hospitals in Ghana, the hospital has about 400 bed capacity with over 700 staff. It serves as a referral facility for all the districts/municipalities in the region. The facility is national health insurance (NHIS) accredited and provides specialist service such as medical and dental, surgical,

obstetrics and gynecology, pediatrics, critical and emergency, radiology, ophthalmology, rehabilitation, laboratory and pharmaceutical services. The facility also runs specialized clinics for conditions such as hypertension and diabetes, ear nose and throat (ENT) and optical, antenatal, postnatal and child welfare, HIV/AIDS, reproductive and adolescent, family planning and mental health clinics. The hospital in 2013 was adjudged the best hospital in Ghana an indication of the quality of services provided.

The hypertensive clinic which is dedicated to hypertensive patients is the biggest in the region and provides care to an average of 100 patients per clinic day. The main clinic days are Mondays, Tuesdays and Fridays however, services are provided to patients throughout the week at the OPD except for weekends. The solely hypertensive clinic has a staff strength of one (1) physician specialist, three (3) medical officers, six (6) nurses, one (1) pharmacist, two (2) pharmacy technicians, two (2) records personnel, one (1) cashier and two (2) audiles. At each clinic day, there are three (3) medical officers with about five nurses providing care. Payment for health service delivery is mostly by national health insurance and some few patients out-of-pocket. There were about 62% of the regional population who had registered with the National Health Insurance (NHIS) as at 2012.

New Juabeng Municipality is the municipality in which the hospital is located and is one of the twenty-six (26) political and administrative assemblies in the region established in 1988 by the Legislative Instrument (LI) 1426. Lying between longitudes 1030' West and 0030 East and latitudes 60 and 70 North, the municipality covers a land area of 159 square kilometers. It shares common boundaries with East-Akim Municipal to the North-East, Akwapim North District to the

East and South and Suhum-Kraboa-Coaltar District to the East. It has 52 major communities with Koforidua as its capital. The Municipality has a bi-modal rainy season, with two peak periods of May/June and September/October. Humidity and temperatures are generally high ranging between 20℃ and 32℃. It is a tourist destination because of the relatively mild temperatures.

Its urban share of the region is 15% and 0.8% as rural. The population of the Municipality in 2010 was 183, 727 with a growth rate of about 2.6%. This number is made up of 48.3% males and 51.7% females with about 66.5% of the total population living in the capital. The highest population within the Municipality is found in the age group of 20-24 years accounting for 12% of the population. There are more youthful people in the Municipality with those less than 15 years constituting almost 30.8% of the population.

The Municipality is heterogonous in terms of ethnicity with more of the people being Akans and Ga-Adangbes. Ewes and other ethnic groups of the north can also be found in the Municipality. The religion mostly practiced is Christianity, constituting a population of 82.8% with Moslems 6.1% and traditional believers 2.4%. It also has a dependency ratio of 56.1 in all ages and a migrant population (people born in other regions) of 51.5%. The municipality has good communication and road networks.

The service sector which contributes 39.9%, industrial manufacturing and processing 26.7%, agriculture 26.1% and other socio-economic activities adding up to 7.3% are the key sectors of the economy in the Municipality. Some main activities in the services and industrial sectors include textiles, crafts, soap making, carpentry, traditional medicine, beads making, hair-dressing salons,

repair shops etc. The agricultural sector engages in the cultivation of food and cash crops such as, maize, plantain, cassava, pawpaw, pepper, tomatoes, kola nuts etc. Some tourist attractions such as Kentenkeren Waterfall, Akyekyeso Crocodile Sanctuary among others also generate revenue for the Municipality.

Over 90% of the population aged 11 years and older are literate. Amongst not literate population, females are more than males. Seventy-two percent or more of the literate population are literate in English and Ghanaian language. Majority (54.9%) of the population currently in school are in the basic school level (primary and junior high schools). Senior high school people constitute 12% of those currently in school with 1.1% in vocational/ technical schools and about 13 percent (12.6%) in tertiary institutions. There are more females (57.0%) in basic schools than that of males (52.8%), but the reverse is the case for those in tertiary education (9.7 % for females and (15.3%) for males). 66.4% of the population in the Municipality are economically active (15 – 64 years) and 92.7% of this population are employed. It also has a high rate of entrepreneurship with 59.5% of the entire active population engaged as such and more than half of the economically active population are self-employed. The private informal sector is the largest employer of the workforce in the Municipality and there are more females than males working in this sector. The workforce employed in the private formal sector is 5.9% and 15.3% of the workforce is employed in the public sector. The main occupations engaged in are; the service and sales activities (35.7%), craft and related trades (20.1 %) and professionals (10.8 %).

The New Juabeng Municipality has a total of thirty-nine (39) health facilities (one (1) government hospital; two (2) mission hospitals; four (4) government clinics; nine (9) health centers; three (3)

maternity homes; twenty-seven (27) Community based Health Planning Services (CHPS) compounds; three (3) private medical laboratories) out of which majority are supervised by the Ministry of Health (MOH) / Ghana Health Service (GHS) with the rest being mission and privately owned. Curative care, preventive care, and promotion of health are among services offered at various levels of the health service. Major health problems facing the Municipality include malaria, respiratory tract infection, and tuberculosis amongst others. Non communicable diseases such as hypertension, diabetes, cardiovascular disease are on the sharp increase (ERHD, 2012).

3.4 Study Population

The study population was all adult hypertensive patients reporting to the hypertensive clinic at the out-patient department (OPD) of the Eastern Regional Hospital in the month of June 2016.

3.5 Study Variables

3.5.1 Dependent Variable

The outcome variable for the study is the quality of life of the adult hypertensive.

3.5.2 Independent Variables

The exposure variables for the study include the following;

- Demographic variables (age, religion, sex, marital status)
- Socioeconomic variables (education, occupation, employment and wealth)
- Behavioural variables (diet, inactivity, stress, alcohol, smoking)

3.6 Sampling

3.6.1 Sample Size

A study by Ha, Duy, Le, Khanal, and Moorin (2014) estimated hypertensive patients with a lower quality of life in Vietnam to have a mean score of 49.4 (SD – 12.7). Based on this score, the minimum sample size for the study was calculated using the Cochrans' formula for representative sample for means in large populations and an outcome variable estimated on a continuous scale.

$$n = \left[\frac{z_{\alpha/2}\sigma}{E}\right]^2$$

Where:

- n – sample size
- Z – critical value on standard normal scale for desired confidence interval (1.96)
- σ – standard deviation of outcome of interest (12.7)
- E – margin of error around the outcome of interest (1.4)

$$\Longrightarrow n = \left(\frac{1.96*12.7}{1.4}\right)^2 = \frac{(24.892)^2}{1.96} = \frac{619.61}{1.96} = 316.13$$

$\Longrightarrow n = 316$

Making 10% allowance for losses and non-response;

$\Longrightarrow 316*0.1 = 31.6$

Therefore, the minimum sample size required used in the study was;

$\Longrightarrow n = 316.13 + 31.6 = 347.73$

$\Longrightarrow n = 348$

3.6.2 Sampling Procedure

The Hypertensive Clinic at the ERH has three (3) clinic days per week and has a scheduling register for next visits' by patients. Scheduling is done on a two or three monthly basis for reviews which could fall in any of the sessions per week. On a clinic day, an average of 120 patients are attended to. Out of this number, the required numbers (30-40) per clinic day was obtained, this was done for a month until the total sample size was attained. Hypertensive patients reporting for clinic days thrice (3) in a week for the month of June were interviewed. A simple random sampling technique was adopted to select from the sampling frame (scheduling register) and eligible patients were interviewed.

3.7 Data Collection Approach

Data was collected using a structured interviewer administered questionnaire which was adapted *(WHOQOL BREF Health Survey Tool, the GDHS Socioeconomic Tool and the Simple Wealth Index Tool)* and modified to suit the study locally. The questionnaires were interviewer administered and elicited information on the socio demographic characteristics of the patient, socioeconomic characteristics (employment, education, income, occupation), household assets, quality of life, behavioural factors and healthcare utilization. Data collection was carried out by the researcher with assistance from experienced research assistants.

3.8.1 Inclusion criteria

The study participants included:

- Diagnosed hypertensives who have been on medication for not less than six months. This was confirmed from patients' records with the help of nurses and were;
- Aged 18 years and above

3.8.2 Exclusion criteria

The study participants excluded:

- Diagnosed hypertensives who have been on medication for less than six months.
- Aged below 18 years

3.9 Quality Control Measures

To ensure quality in the data collected, experienced research assistants were used to collect data. Researcher supervised the entire field work and all data collected was checked first by the data entry assistants and double checked for accuracy and consistency by researcher before data was entered into Epi Info. After entry, the data was again checked for consistency and accuracy by running frequencies.

3.10.1 Training of Research Assistants

Research assistants were trained before data collection. The training focused on ensuring they understood and appreciated the study objectives, familiarization with survey tools and interpretation of each question, and the ability to perform the survey tasks assigned. Role plays were done to build consistency on administering the questionnaire. In all seven (7) research assistants with a minimum background of a first degree were recruited for this study.

3.10.2 Pre-testing

The research tool was pre-tested at the Eastern Regional Hospital hypertensive clinic. The purpose of the pre-test of questionnaire was to ensure the questions were clear and could be understood. Also help to identify deficiencies with the tool if any for amendment or additions. It also afforded

the researcher and his team the opportunity to know the average response time in administering a questionnaire.

3.10.3 Data Entry

The data was entered into Epi Info (7) by two independent data entry clerks and imported to Microsoft Excel 2013 for data cleaning. To prevent data entry errors, the completed questionnaires were coded, double entered and cleaned. Detected discrepancies such as omitted ages or ages below 10 years were resolved by consulting the original completed questionnaires.

3.11 Data Analysis Approach

After data entry and cleaning, data was imported from Microsoft Excel 2013 into STATA MP 13 for analysis. Descriptive statistics in the form of frequencies measuring was used to summarize the background characteristics of respondents. Quality of life, socio-economic status and wealth of the adult hypertensive attending the hypertensive clinic at the ERH were also determined as follows;

3.11.1 Quality of Life Measurements

Adapting the WHO Quality of Life tool with its associated score, the study determined the quality of life of the adult hypertensive as a continuous variable and in domains 1 to 4. The WHOQOL-BREF (26) questionnaire contains two items from the self-rated overall QOL and general health and 24 items of satisfaction that are divided into four domains: Physical health with 7 items, psychological health with 6 items (DOM2), social relationships with 3 items (DOM3) and environmental health with 8 items. Each item is rated on a 5-point Likert scale and is scored from

1 to 5 on a response scale. Raw domain scores for the WHOQOL were then transformed to a 4-20 score according to guidelines (Skevington, Lotfy, & Connell, 2004). Domain scores was scaled in a positive direction (i.e., higher scores denote higher QOL). The mean score of items within each domain was then used to calculate the domain score. Computed scores were transformed linearly to a 0-100-scale according to WHO guidelines (Asnani, Lipps, & Reid, 2009; Skevington & Tucker, 1999) to estimate the quality of life of the study patients as shown in table 1.

Differences in quality of life by SES was computed using the two sampled Wilcoxon rank-sum and Kruskal-Wallis equality-of-populations rank test. After which Spearman Rank Correlation was also done to determine the direction and extent of the relationship. A one way ANOVA Bonferroni test was also conducted to see the extent differences in paired categories.

Table 1: Determination of the quality of life of hypertensive patients

Category	Domains	Description	Estimation
General Quality of life	Physical health	Pain and discomfort Energy and fatigue Sleep and rest Dependence on medication Mobility Activities of daily living Working capacity	5-point Likert scale and scored 1 - 5
	Emotional and psychological functioning	Positive feelings Negative feelings Self-esteem Thinking learning, memory and concentration Body image Spirituality, religion and personal beliefs	
	Social functioning	Personal relations Sex Practical social support	
	Environment	Financial resources Information and skills Recreation and leisure Home environment Access to health and social care Physical safety and security Physical environment Transport	

3.11.2 Socioeconomic Status Measurements

Social Factors

Adapting the Ghana Demographic and Health Survey (GDHS) tool on socio-economic indicators, socio-economic status (SES) was categorized into the social and economic factors. Social factors included education which has been categorized according to no education, primary, middle, JSS/JHS, secondary/vocational, SSS/SHS, higher/tertiary. Higher educational level denotes higher SES. Another social factor used as SES indicator was occupation of respondents. This was classified into the following; profession, semi-profession clerical, shop-owner, farmer skilled worker, semi-skilled worker and unskilled worker. For ease of analysis, the SES classifications were collapsed into two categories that is formal and informal. These were the two main social factor considered for the research. For further analysis employment status was added to the social factors and categorized into employed or unemployed as shown in table 2 below.

Table 2: Determination of the socio-economic status of hypertensive patients

Category	Domains	Description	Estimation
Socio-economic status	Education	1. No education 2. Primary 3. Middle 4. JSS/JHS 5. Secondary/Vocational 6. SSS/SHS 7. Higher	Coded 1 to 7
	Employment	Employed or not	Scored 0 and 1
	Occupation	Profession Semi-Profession Clerical, Shop-owner, Farmer	Coded 1 to 8

		Skilled worker Semi-skilled worker Unskilled worker Unemployed	
	Income	Ranging from zero to infinity	Scaled with a 5 or more points difference and scored from lowest to highest

Economic Factors

3.11.3 Simple Wealth Index - Principal Component Analysis

Adapting the GDHS tool, patients self-reported assets ranging from functional items at home (TV, mobile phones etc.), agricultural assets (lands, livestock's and farm tools), building materials (roofing, floor tiling, walls), sanitary conditions, water sources etc., was asked, scored and categorized into lowest/poorest, second/poorer, middle, fourth/richer and highest/richest wealth quintiles. (Ghana Statistical Service (GSS), 2015).

Factor scores and weights were assigned each asset and computed and a relative wealth variable was created from the data with the help of STATA version 13. In order to assess wealth index, quintiles of wealth was computed based on the categories above

Domains were categorized in a positive direction that is, higher scores denote higher SES (Bairwa, Rajput, & Sachdeva, 2013). To determine the relationship between SES and demographic variables, the Chi squared and the Fishers Exact tests were calculated and determined at a 5% significance level. This test was done because the outcome variable was categorical and the data was not linearly distributed.

Table 3: Summary of data collection techniques, tools and analysis

No.	Specific Objective	Variable	Sampling procedure/approach	Data Collection Technique	Tools	Source of Data	Type of data Analysis
1	Determine the socio-economic status of the adult hypertensive	Socio-economic status	Simple random sampling of adult hypertensives above 18 years (n=348).	Interview	Structured questionnaire	Eastern Regional Hospital Hypertensive Clinic	Descriptive analysis (reporting frequencies and proportions using STATA MP Version 13 **Principal component analysis:** Wealth quintiles were computed with the help of STATA Version 13. In order to assess wealth index, quintiles of wealth were computed based on the categories of lowest, second, middle, fourth and highest wealth.
2	Assess the quality of life of the adult hypertensive	Quality of life	Simple random sampling of adult hypertensives above 18 years (n=348).	Interview	Structured questionnaire	Eastern Regional Hospital Hypertensive Clinic	**Quality of life measurement.** Each domain is rated on a 5-point Likert scale and is scored from 1 to 5 on a response scale. Raw domain scores for the WHOQOL BREF were transformed to a 4-20 score according to guidelines. Domain scores were scaled in a positive direction (i.e., higher scores denote higher QOL). The mean score of items within each domain were used to calculate the domain score. Computed scores were transformed linearly to a 0-100-scale

No.	Specific Objective	Variable	Sampling procedure/approach	Data Collection Technique	Tools	Source of Data	Type of data Analysis
3	Determine differences in quality of life by the socio-economic status of the adult hypertensive	Quality of life differences	Simple random sampling of adult hypertensives above 18 years (n=348).	Interview	Structured questionnaire	Eastern Regional Hospital Hypertensive Clinic	Analysis of variance
4	Ascertain the reasons for differences in quality of life by the socio-economic status of the adult hypertensive	Reasons	Simple random sampling of adult hypertensives above 18 years (n=348).	Interview	Structured questionnaire	Eastern Regional Hospital Hypertensive Clinic	Descriptive analysis (reporting frequencies and proportions using Microsoft Excel Version 13

3.12 Ethical Considerations

Ethical approval was sought for this study from the Ghana Health Services Ethical Review Committee. Permission was also given from the Eastern Regional Health Directorate, New Juabeng Municipal Health Directorate and the Eastern Regional Hospital Management and the Heads of Unit of the hypertensive clinic. Informed consent was developed based on the WHO guidelines and it contained information sheet detailing the (researcher background and contact information, purpose of the study, procedures, confidentiality, risks, voluntary participation and benefits of participating in the study) and a certificate of consent which were signed or thumb printed by respondent to indicate voluntary participation. Study participants were informed about the purpose, procedures, risks and benefits of participating in the study. There was no risk involved in participating in the study and no conflict of interest. Informed consent were obtained from respondents in the language they understood and confidentiality was assured before their engagement in the study. Participants were informed that there will be no consequences, like loss of benefit or care to them if they choose to withdraw from the study. Study participants were given a token at the completion of the interview as a show of appreciation for their time spent answering the research questions. Only participants who agreed to be part of the study were recruited and required to sign or thumbprint after which a copy of the information sheet was given to them.

Data collected for the study was kept confidential and used solely for the purpose indicated for the study. Data files were password protected. Information given (both hard and electronic copies) were kept confidential and securely stored under lock and key in locked file cabinets with access to only researcher. Confirmation of hypertensive status from patients' records were done only by researcher with the help of the nurses on duty. The participants were however informed of possible

minor discomforts in answering certain questions for which they may choose not to answer. Participants were informed that participation in the study is voluntary and they may withdraw from the study at any time without attracting any penalty. Participants were not be coerced into taking part in the study.

CHAPTER FOUR

4.0 RESULTS

4.1 Introduction

This chapter outlines and presents the results of the survey data gathered from 352 adult hypertensive patients attending OPD at the ERH with a response rate of 94.3%. Essentially the chapter presents findings on the socio demographic characteristics of the adult hypertensives; socio-economic status of the adult hypertensive; quality of life lived by the adult hypertensive; the differences in quality of life by the socio-economic status; and the reasons for the differences.

4.2 Socio-demographic Characteristics

Patients' socio-demographic characteristics are presented in Table 3. The mean age of patients who responded to the survey was 61.2 years (SD 12.4). A higher percentage of the study population (81%) were above the age of 50 years whiles the few (17.3) fell below the 50 years age. Across the age categories (< 50, 50-59, 60-69, 70+), the 70+ age group had most respondents. Majority of the study respondents representing 78% (274) were women with the remaining 22% (77) being men. Out of the study respondents 48.3% were either married or living together whilst 32.4% were widowed. Also 16% of the respondents were divorced/ separated and the 3% had never married and never lived together.

On educational attainment, 39.5% of study patients had attained Middle/JSS/JHS leaving certificates, 16.5% had Secondary/SHS/Vocational/Technical certificates whilst 6.0% had higher education. Respondents with primary and no education represented 15% and 23% respectively.

Christianity is the dominant religion amongst the study patients representing 88.1% with the 11.9% remaining being of the Islamic faith. Akan was the majority ethnic group amongst the 352 adult hypertensives representing 64.5% of the study population. The other minority ethnic groupings included Ga/Dangme, Ewe and the Northern tribes.

Table 4: Socio-demographic characteristics of the adult hypertensives patients

Characteristics	**Frequencies (N=352)**	**Percentages (%)**
Sex		
Male	77	22.0
Female	275	78.0
Age		
<50	61	17.3
50 – 59	97	27.6
60 – 69	87	24.7
70+	101	28.7
Marital Status		
Never married/never living together	9	2.6
Married/living together	171	48.6
Divorced/separated	57	16.1
Widowed	115	32.7
Education		
No education	81	23.0
Primary	53	15.0
Middle/JSS/JHS	139	39.5
Secondary/SHS/Technical/Vocational	58	16.5
Higher/Tertiary	21	6.0
Religion		
Christian	310	88.1
Islam	42	11.9
Ethnicity		
Akan	227	64.5
Ga/Dangme	49	13.9
Ewe	46	13.1
Northern Tribes	30	8.5

Missing values not shown

4.3 Health status of the hypertensive patient

Most of the study patients (88.3%) had been medically diagnosed of hypertension and have been living with the condition for more than a year and majority of them had had the condition between 1 and 5 years (Table 4). Comorbidities were reported by 42.9% of patients with musculoskeletal (30.4%), injury (16.5%) and cardiovascular (15.3) being the most common comorbidities among patients. More women (75.5%) reported having comorbidities compared to men (24.5%) and the similarly more female patients who reported not having comorbidities (82%:18% respectively).

Majority of the study patients had never smoked (96.3%) and those who had ever smoked but currently do not smoke accounted for 3.7% and had smoked for a year or more. Among those who had ever smoked, had more than a stick of tobacco a day. Patients who reported never having taken an alcohol beverage was 74.4% whereas 25.6% reported ever consumed alcoholic beverage and also currently drinks. Patients who had ever consumed alcoholic beverages does so once in a day on the average.

Patients who reported moderate to high levels of fruits intake and does so 1 – 3 times per week on the average were 83.2%. Physical inactivity on the other hand was high amongst study patients with majority (73.3%) of them engaging in very low to moderate levels of physical activity.

Table 5: Current health status and behaviors by adult hypertensives

Characteristics	Frequencies (N=352)	Percentages (%)
Duration of illness		
Less or equal to 1	41	11.7
Between 1 to 5	113	32.1
Between 5 to 10	93	26.4
10+	105	29.8
Physical activity		
Low level	106	30.1
Moderate level	152	43.2
High level	94	26.7
Presence of co-morbidity		
No	201	57.1
Yes	151	42.9
Type of co-morbidity		
Kidney	3	0.9
Diabetes	15	4.3
Cancer	3	0.9
Cardiovascular	54	15.3
Musculoskeletal	107	30.4
Injury	58	16.5
Disability	17	4.8
Alcohol consumption		
No	262	74.4
Yes	90	25.6
Smoking		
No	339	96.3
Yes	13	3.7
Fruits intake		
Low level	49	13.9
Moderate level	244	69.3
High level	59	16.8

Missing values not shown

4.4 Socio-economic Characteristics

4.4.1 Social Factors

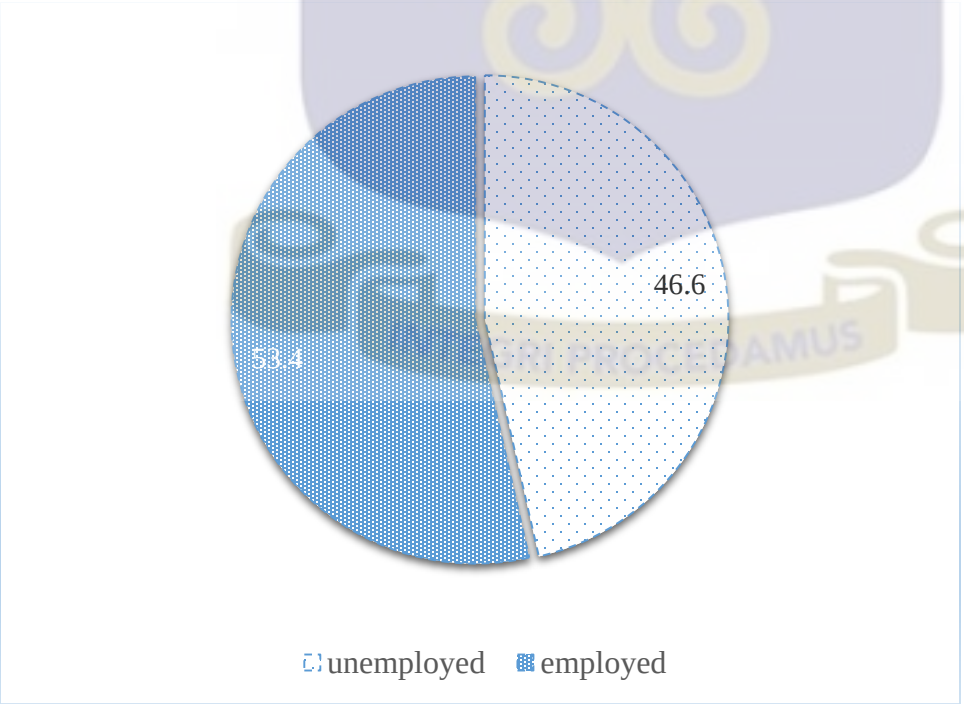
Education

Table 3 shows, 39.5% of the study population attained Middle/JSS/JHS leaving certificates, 23.0, 16.5% had Secondary/SHS/Vocational/Technical certificates whilst 6.0% had higher education. Respondents with primary and no education represented 15% and 23% respectively.

Employment

As shown in Figure 4, the proportion of study participants currently employed was 53.4%. Majority of this number (88.8%) were employed in the informal sector of the economy and the remaining 11.2% in the formal sector. The other 46.6% were unemployed due to retirement, severity of their condition and the absence of jobs.

Figure 4: Distribution of patients' by employment status



Occupation

From Figure 5, out of the number employed, most of them representing 77.1% were semi-skilled and skilled workers engaged predominantly in trading and farming activities, 14.9% were in the professional category as teachers, accountants, entrepreneurs and civil servants, 5.3% are unskilled workers and the other 2.7% being clerical and shop owners.

Figure 5: Distribution of employed patients' occupation

4.4.2 Economic Factors

Income

As shown in Table 3, 184 out of the 352 patients reported on their incomes. The rest (47.7%) either declined, did not know or had no income. The average monthly income for study patients was GHS 512.84 (USD 131.49) (SD – 854.80). Majority of patients who reported having income (38.9) earn monthly incomes less than GHS 500 and barely 4.3% earned more than GHS 1000 (USD 256.41) and the remaining (9.1) earning between GHS 500 – GHS 1000 (USD 128.21 – USD 256.41). On the average 3.5 people depended on patients' income.

Table 6: Average monthly income of patients

Characteristics (N=352)	**Frequencies (N)**	**Percentages (%)**
Average monthly income (GHS)		
< 300	80	22.7
300 - 500	57	16.2
500 - 1000	32	9.1
1000+	15	4.3
Non-response	168	47.7

US$ 1.00 equivalent to GHS 3.90 (Bank of Ghana average monthly interbank exchange rate, July 2016
Mean 512.84, SD – 854.80

4.5 Socio-demographic characteristics and wealth status

The results as presented in table 8 shows the distribution of study patients wealth status and their socio-demographic characteristics. From Table 7 there are significant variations in the wealth status of the hypertensive patients across the various demographic characteristics. There were significant differences between males and females and their wealth status (p=0.012). The proportion of women to men in both the poorest and the second poorest quintiles were more and vice versa in the fourth richest and the richest quintiles of the patients' wealth status. Among the

study patients', education was also significant with wealth status (p=0.003). Wealth was fairly distributed amongst the various categories of education with patients with a higher/tertiary education in the richest quintile (Table 8).

Table 7: Relationship between demographic characteristics and patients wealth status

Characteristics	Wealth Quintile (Percentages - %) – (N=352)						
	Lowest	Second	Middle	Fourth	Highest	Total	P-value
Sex							0.012
Male	23.7	15.8	10.5	18.4	31.6	100	
Female	19.3	21.2	22.6	20.4	16.4	100	
Age							0.132
<50	13.1	27.9	18.3	23.0	18.0	100	
50 – 59	22.7	14.4	23.7	20.6	18.6	100	
60 – 69	28.7	20.7	14.9	11.5	24.1	100	
70+	14.9	19.8	21.8	24.8	18.8	100	
Marital Status							0.059
Never married/never living together	33.3	11.1	22.2	11.1	22.2	100	
Married/living together	20.0	17.1	15.8	20.6	26.5	100	
Divorced/separated	16.0	28.6	23.2	10.7	21.4	100	
Widowed	21.9	21.1	23.7	23.7	9.7	100	
Education							0.003
No education	12.4	28.3	28.4	18.5	12.4	100	
Primary	17.0	20.8	26.4	20.8	15.1	100	
Middle/JSS/JHS	21.6	21.6	18.7	20.1	18.0	100	
Sec/SHS/Tech/Voc	29.3	3.50	12.1	19.0	36.2	100	
Higher/Tertiary	25.0	20.0	5.00	25.0	25.0	100	
Religion							0.900
Christian	20.7	19.4	20.7	19.7	19.7	100	
Islam	16.7	23.8	16.8	21.4	21.4	100	

Characteristics	Wealth Quintile (Percentages - %) – (N=352)						
	Lowest	Second	Middle	Fourth	Highest	Total	P-value
Ethnicity							0.686
Akan	18.9	19.4	20.7	20.7	20.3	100	
Ga/Dangme	24.5	28.6	18.4	18.4	10.2	100	
Ewe	26.1	13.0	19.6	17.4	23.9	100	
Northern Tribes	10.7	21.4	21.4	21.4	25.0	100	

4.6 Quality of life assessment of hypertensive patients

Table 9 presents WHOQOL-BREF average score of self-rated quality of life, self-rated health status and the different domains. From the Table 9 below, aside reporting dissatisfaction with their current state of health (2.79 (1.06)), patients also perceived their satisfaction with their quality of life to be neither good nor bad was (3.33, (0.96)). The highest average score of satisfaction was found in the Environment domain (67.6, (SD 18.7)), while the lowest average score were found in the Social relationships domain (51.3, (SD 24.4)). The physical and psychological domains also recorded mean scores of (54.6, (18.4); 60.2 (16.5)) respectively.

Table 8: Quality of life Q1, Q2 and domain scores (N=352)

QOL Domains	Min	Max	Mean (SD)
Q1 – self-rated QOL	1	5	3.33 (0.96)
Q2 – self-rated health status	1	5	2.79 (1.06
Physical health (DOM1)	0	100	54.6 (18.4)
Psychological health (DOM2)	25	100	60.2 (16.5)
Social relationships (DOM3)	0	100	51.3 (24.4)
Environment (DOM4)	0	100	67.6 (18.7)

Mean scores were generated from raw scores based on WHOQOL-BREF measurements

4.6.1 Quality of life and demographic characteristics of hypertensive patients

The mean score of each domain across demographic characteristics is presented in Table 10. Compared to females, males had higher mean scores in three out of the four domains. There was however no significant difference between sex and quality of life. Higher mean scores were recorded for patients in the psychological and environment domain across all ages. However, patients above 60 years had very low mean scores in the physical and social relationship domain

compared to others below 60 years. There was a significant difference across all age categories in the physical domain (p=0.014). Across marital status, the environment domain had higher mean scores compared to the other domains. The social relationships domain had the lowest mean scores with the never married/never living together, divorced/separated and the widowed scoring below average mean scores (45.3, (SD 30.7); 48.3, (SD 25.4); 48.4, (SD 27.7)) respectively. There was however, significant difference between marital status and the social relationship domain of quality of life (p=0.033).

Similarly across education, patients had higher mean scores in the environment domain and least mean scores in the social domain. The physical and psychological domains also had above average mean scores for the study patients. There was however, a significant relationship between education and physical health domain of quality of life. Significant difference was found amongst religion and environment domain of quality of life. A section of religion recorded lower mean scores in the physical health domain with the highest mean scores being in the environment domain. There were no significant relationship between ethnicity across the various quality of life domains. All quality of life domains score across ethnicity had above average mean scores.

The mean scores in the physical domain across socio-demographic characteristics was significant in age and education. In the social relationship domain marital status was the only significant variable and religion in the environment. There was no significant difference in the psychological domain across patients' background characteristics as shown in Table 10.

Table 9: Relationship between demographic characteristics and quality of life

Characteristics	QOL Scores (N=352)			
	Physical Mean (SD)	Psychological Mean (SD)	Social Relationships Mean (SD)	Environment Mean (SD)
Sex				
Male	56.7 (19.4)	59.0 (17.0)	51.8 (19.7)	68.5 (18.0)
Female	53.6 (18.1)	60.4 (16.5)	51.1 (25.5)	67.3 (18.9)
P-value	0.189	0.537	0.743	0.519
Age				
<50	59.6 (16.6)	63.0 (14.2)	57.7 (17.4)	66.2 (19.7)
50 – 59	55.2 (16.4)	59.3 (15.8)	50.7 (23.7)	65.8 (17.6)
60 – 69	55.8 (18.4)	60.7 (17.9)	48.4 (24.6)	70.5 (18.2)
70+	50.3 (20.5)	59.0 (17.6)	49.9 (27.9)	66.9 (19.5)
P-value	0.014	0.339	0.073	0.317
Marital status				
Never married/living together	59.1 (24.9)	61.1 (25.2)	45.3 (30.7)	75.0 (22.4)
Married/living together	55.9 (17.0)	60.4 (15.3)	54.7 (20.9)	68.7 (17.2)
Divorced/separated	53.5 (19.8)	61.4 (18.6)	48.3 (25.4)	64.7 (19.8)
Widowed	53.1 (18.3)	59.5 (16.8)	48.4 (27.7)	67.2 (19.8)
P-value	0.282	0.946	0.033	0.383
Education				
No education	50.2 (17.6)	58.2 (16.6)	52.4 (26.8)	67.5 (17.1)
Primary	50.3 (18.6)	60.3 (18.7)	51.4 (28.9)	68.4 (22.1)
Middle/JSS/JHS	55.5 (17.6)	59.5 (15.9)	52.4 (21.8)	67.7 (18.1)
Sec/SHS/Tech/Voc	61.3 (19.0)	64.3 (14.9)	47.6 (22.0)	66.8 (19.2)
Higher/Tertiary	58.5 (17.9)	60.7 (18.8)	49.5 (25.4)	67.8 (18.2)
P-value	0.004	0.189	0.893	0.989

Characteristics	QOL Scores (N=352)			
	Physical Mean (SD)	Psychological Mean (SD)	Social Relationships Mean (SD)	Environment Mean (SD)
Religion				
Christian	55.3 (17.7)	60.8 (16.5)	51.1 (23.8)	68.4 (18.3)
Islam	49.1 (21.8)	55.9 (16.4)	52.2 (24.3)	61.4 (20.3)
P-value	0.082	0.079	0.711	0.04
Ethnicity				
Akan	55.1 (18.0)	60.5 (15.9)	51.6 (23.6)	69.1 (18.4)
Ga/Dangme	51.9 (18.0)	58.8 (16.3)	50.4 (23.9)	65.1 (17.3)
Ewe	55.6 (18.3)	63.0 (19.0)	54.1 (26.4)	65.5 (18.9)
Northern Tribes	53.6 (22.8)	56.1 (17.6)	46.6 (28.1)	62.5 (22.0)
P-value	0.681	0.323	0.698	0.312

4.6.2 Quality of life and health status

The mean score of each domain across health status is presented in Table 11. The results shows significant differences in the social relationships domain and duration of illness (p=0.014). The mean scores were higher in the environment domain as compared to the physical and psychological domains across duration of illness but not significant. Above average mean scores were recorded for all domains across level of physical activity. There were also significant differences in physical (p=0.002), psychological (p=0.007) and environment (p=0.002) domains across levels of physical activity. As shown in the table, there were significant differences in the level of fruits consumed and the quality of life. This was highly significant in the physical ((p=0.003), psychological (p=0.000) and environment (p=0.000) domains.

Physical and social relationships domain had lower mean scores across presence of comorbidity. Highly significant differences occurred in physical (p=0.000), psychological (p=0.000) and environment (p=0.000) domains across presence of comorbidity. No significant differences were recorded amongst patients' alcohol and smoking levels even though there were variations in the mean scores.

The mean scores across health status of study patients were above average in all domains of the quality of life. Significant differences were recorded in physical, psychological and environment domains of quality of life across level of fruit consumption, level of physical activity and presence of comorbidity.

Table 10: Relationships between patients' health behaviors and their quality of life

Characteristics	QOL Scores			
	Physical Mean (SD)	Psychological Mean (SD)	Social Relationships Mean (SD)	Environment Mean (SD)
Duration of illness				
Less or equal to 1	55.2 (18.9)	62.4 (13.7)	50.4 (19.3)	66.6 (19.3)
Between 1 to 5	56.7 (18.0)	61.3 (16.5)	57.1 (24.3)	67.2 (17.2)
Between 5 to 10	55.8 (18.3)	58.4 (17.2)	48.8 (23.9)	66.2 (19.3)
10+	50.8 (18.2)	59.8 (17.0)	47.4 (25.7)	69.5 (19.3)
P-value	0.092	0.421	0.014	0.577
Physical inactivity				
Low level	52.5 (21.1)	57.0 (17.7)	49.9 (24.1)	67.8 (18.8)
Moderate level	53.0 (16.6)	59.5 (15.4)	51.2 (24.3)	64.2 (18.1)
High level	59.9 (16.6)	65.2 (16.0)	52.5 (24.8)	73.0 (18.1)
P-value	0.002	0.007	0.804	0.002
Pres. co-morbidity				
No	60.2 (17.7)	62.9 (16.2)	53.7 (24.0)	70.5 (17.8)
Yes	47.2 (16.6)	56.6 (16.4)	48.1 (24.5)	63.7 (19.1)
P-value	0.000	0.000	0.009	0.001
Alcohol consumption				
No	53.6 (18.8)	59.9 (16.5)	50.7 (25.2)	66.9 (18.5)
Yes	57.4 (16.8)	60.8 (17.3)	52.6 (21.8)	69.4 (18.9)
P-value	0.088	0.615	0.524	0.348
Smoking				
No	54.3 (18.4)	60.2 (16.6)	51.2 (24.4)	67.3 (18.6)
Yes	60.7 (19.2	60.8 (16.0)	49.6 (24.0)	72.2 (17.6)
P-value	0.221	0.879	0.800	0.272

Characteristics	QOL Scores			
	Physical Mean (SD)	Psychological Mean (SD)	Social Relationships Mean (SD)	Environment Mean (SD)
Fruits intake				
Low level	49.3 (20.5)	59.5 (16.5)	47.9 (22.6)	66.9 (20.4)
Moderate level	54.2 (17.8)	58.4 (16.3)	50.9 (24.7)	65.6 (17.9)
High level	61.3 (17.5)	68.0 (16.5)	55.8 (23.8)	76.7 (17.2)
P-value	0.003	0.000	0.158	0.000

4.7 Differences in quality of life by the socio-economic status

Table 12 shows the mean scores of quality of life by the socioeconomic status of study patients. There was no significant difference between an adult hypertensives' occupation and three of the four domains of quality of life but significant in the environment domain ($p<0.05$). However, there were variations in the mean scores of formal and informal occupation across the domains. Informal occupation had higher mean scores compared to formal occupation. Levels of education only had significant differences in the physical ($p=0.004$) domain of quality of life. Higher mean scores were recorded in the environment domain and lower mean scores in the social relationships domain.

There also was a highly significant difference between employment status and physical domain of patients' quality of life. Employed patients, recorded higher mean scores in all four domains than the unemployed patients. Higher mean scores were recorded for patients in the poorest category of the wealth quintiles compared to poorer, middle and richest categories in the wealth quintiles. Amongst the wealth quintiles categories, the richest 20% of study patients had the highest mean scores in all domains of quality of life. There were significant differences in the physical ($p=0.006$) and psychological ($p=0.001$) domains of patients quality of life and their wealth status.

There existed differences in the physical and psychological domains of quality of life and a patient's socio-economic status.

Table 11: Relationship between patients' socioeconomic status and quality of life

Characteristics	QOL Scores (N=352)			
	Physical Health Mean (SD)	Psychological Health Mean (SD)	Social Relationships Mean (SD)	Environment Mean (SD)
Education				
No education	50.2 (17.6)	58.2 (16.6)	52.4 (26.8)	67.5 (17.1)
Primary	50.3 (18.6)	60.3 (18.7)	51.4 (28.9)	68.4 (22.1)
Middle/JSS/JHS	55.5 (17.6)	59.5 (15.9)	52.4 (21.8)	67.7 (18.1)
Sec/SHS/Tech/Voc	61.3 (19.0)	64.3 (14.9)	47.6 (22.0)	66.8 (19.2)
Higher/Tertiary	58.5 (17.9)	60.7 (18.8)	49.5 (25.4)	67.8 (18.2)
P-value	0.004	0.189	0.893	0.989
Employment status				
Unemployed	50.8 (19.9)	59.4 (17.1)	48.9 (25.6)	66.7 (19.6)
Employed	57.9 (16.2)	61.1 (16.1)	53.1 (23.2)	68.5 (17.9)
P-value	0.000	0.224	0.061	0.355
Occupation				
Formal	56.0 (11.7)	61.1 (14.8)	52.6 (25.6)	61.3 (15.9)
Informal	58.2 (16.7)	61.1 (16.3)	53.2 (23.1)	69.4 (18.0)
P-value	0.569	0.669	0.935	0.034
Wealth quintile				
Lowest	56.7 (20.8)	64.1 (18.1)	51.5 (26.7)	67.6 (18.4)
Second	49.4 (18.5)	57.0 (18.6)	51.2 (26.5)	63.7 (18.2)
Middle	51.9 (17.4)	55.7 (14.7)	51.5 (22.9)	66.0 (19.4)
Fourth	53.3 (14.9)	59.4 (14.2)	52.3 (24.7)	68.1 (18.2)
Highest	61.6 (17.7)	64.7 (15.0)	51.2 (21.0)	72.5 (18.3)
P-value	0.006	0.001	0.991	0.069

Two sampled Wilcoxon rank-sum and Kruskal-Wallis equality-of-populations rank test

From Table 12, indicates the correlation or the strength of association between socio-economic status of the adult hypertensive and the quality of life. As shown in the table, although not too strong, there is a positive and significant ($p<.05$) correlation between a patient's level of education and the physical ($Rs=0.21$) and psychological ($Rs=0.11$) health of quality of life domains. There was also an inverse relationship between a patients' level of education and his or her social relationship and environment domains of quality of life. This differences in the physical and psychological health domain in the quality of life of the adult hypertensive by the patients' educational level was significantly different in the ''secondary/SHS/Technical/Vocational'' and the ''no education'' ($p<.05$) group as well as the ''secondary/SHS/Technical/Vocational'' and the ''primary education'' ($p<.05$) groupings.

Patients' employment status was positively correlated with all four domains of the quality of life but only significant ($p<.01$) in the physical domain. General positive direction between socio-economic status and the quality of life. Also whereas psychological and social domains of quality of life were inversely related to occupation, the physical and environment domains had a positive correlation with quality of life. This was however not significant in all four domains.

Wealth status of the adult hypertensive was significantly ($p<0.05$) and positively correlated with the physical ($Rs=0.13$) and environment ($Rs=0.11$) domains of quality of life and also positively correlated with the social and psychological domains of quality of life but not significant. This observed differences in the physical health quality of life is seen highly significant between the richest quintile and the poorer quintile ($p<0.05$) and also between the richest quintile and the middle quintile ($p<0.05$) of the wealth status. Also the difference in the environment domain of the quality of life and the wealth status was seen between the richest and the poorer quintiles ($p<0.05$).

Table 12: Correlation between socioeconomic status and quality of life

	Physical	Psychological	Social	Environment	Educ	Employment	Occupation	Wealth
Physical								
Corr. co-efficient	1.000							
P-value								
Psychological								
Corr. co-efficient	0.464	1.000						
P-value	0.000							
Social relations.								
Corr. co-efficient	0.237	0.224	1.000					
P-value	0.000	0.000						
Environment								
Corr. co-efficient	0.394	0.441	0.224	1.000				
P-value	0.000	0.000	0.000					
Education								
Corr. co-efficient	0.205	0.106	-0.034	-0.011	1.000			
P-value	0.000	0.046	0.521	0.831				
Employment								
Corr. co-efficient	0.212	0.065	0.100	0.049	0.115	1.000		
P-value	0.000	0.227	0.061	0.356	0.032			
Occupation								
Corr. co-efficient	0.041	-0.031	-0.006	0.154	-0.398	.	1.000	
P-value	0.570	0.670	0.935	0.343	0.000	.		
Wealth quintile								
Corr. co-efficient	0.125	0.053	0.002	0.110	0.092	-0.098	-0.082	1.000
P-value	0.018	0.319	0.968	0.039	0.083	0.083	0.259	

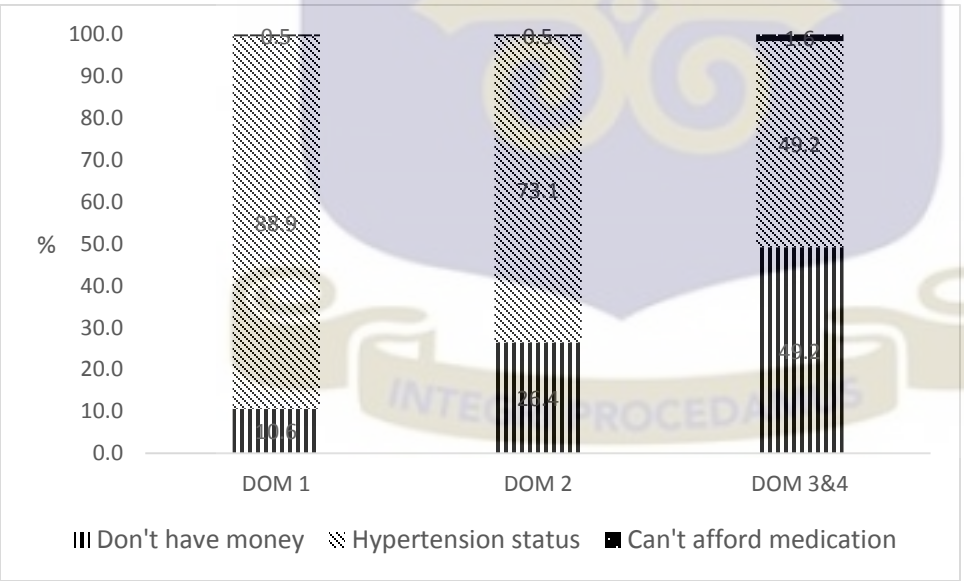
The Spearman's correlation at 5% significance level

4.8 Self-reported reasons for the differences in quality of life

Results from Figure 3 below shows self-reported reasons explaining the differences in quality of life by the socio-economic status of the study patients. The results indicates that majority of the patients attributed their levels of quality of life as affected by their socio-economic position to the current state of their hypertension condition. This was seen in all domains of quality of life but higher in the physical health domain of quality of life.

Not having money was closely related to my hypertensive condition as the other reason for the differences in the quality of life lived by the adult hypertensive. The results also showed that as we move across the domains of quality of life, "my hypertensive condition" as a reason reduces and the reason of "I do not have money" increases.

Figure 6: Self-reported reasons for quality of life



CHAPTER FIVE

5.0 DISCUSSIONS

5.1 Introduction

This chapter discusses the findings of the study according to the objectives of the research. It includes a summary and further discussions of the key findings and of this study and relates to published literature on the socio-economic status of the study patients and the quality of life lived

5.2 Summary of key findings

The mean age of hypertensive patients is 61.2 years and majority of study patients' were above the age of 50 years indicative of the fact that the prevalence of hypertension was more among the elderly, similar to research findings by (Toth et al, 2013). 78% of patients were female diagnosed adult hypertensives and 22% were male diagnosed adult hypertensives. This may indicate that the disease could be very prevalent amongst females rather than males as they constitute more than 75% of the study patients and this agrees with findings from (Pimenta, 2012; Veenstra, 2013). Contrary to studies by (Lipowicz, 2005) which reported higher prevalence of hypertension in never married couples, this study found that hypertension was prevalent in couples who are married/living together and the widowed compared to never married/never living together and divorced couples. This may be due to the fact that there are more emotional and psychological issues in marriages that demands attention than it is in being single. Amongst the two main religious inclinations of patients, there were more hypertensive patients in the Christian faith than there was of Islam. The disease was also prevalent in the majority ethnic group (Akans) than the minority groups. This is because the area is in the Eastern region of Ghana which is predominantly

consider an Akan region. This notwithstanding, the facility used was a referral facility and so had other tribes from other places also coming in

Majority of patients have had the hypertension condition in the last 10 years and it's more in patients who do not drink and do not smoke. Additionally, the disease severity in patients who had less physical activity (73.3%) and consumed less fruits (83.2%).

The socio-economic position of the patients varies across patients' education, occupation employment, income and wealth status. Educational level of patients' was low. Employment status of the adult hypertensive did not vary much as 53.4% were employed and the other 46.6% were unemployed. Most of the patients were employed gainfully in the informal sector of the economy with majority of them engaged in unskilled labour such as trading and farming mostly subsistence. The wealth status of patients' were fairly distributed across the wealth quintiles. The socio-economic status of the adult hypertensive was average.

The overall quality of life of the adult hypertensive is average with reports of dissatisfaction with their current health status Patients are satisfied with their environment and dissatisfied with their social relationships. The physical and psychological health of the adult hypertensive is above average.

Quality of life lived by the adult hypertensive differs across the patients socio-economic status. The differences are seen more in the education and wealth status of the patient. In education,

differences are found in patients with lower education whereas the differences in wealth status are found in the richest and the poorer quintiles.

5.3 Socio-economic status of the adult hypertensive

The social and economic status of the adult hypertensive patient in this study is low. More than two-thirds of patients (75.6%) have lower levels of education. This shows that using education as a socio-economic status indicator, the prevalence of hypertension is relates to lower levels of education, similar to research findings by (Addo et al., 2009) and (Siadat et al., 2012) which reported a negative association between level of education and hypertension.

The employment status of patients did not vary much in this study. Amongst the employed, majority of the hypertensive patients are working in the informal sector of the economy engaging in unskilled labour and working long hours doing stressful jobs such a petty trading, head porting, food sellers, farmers etc. Most often than not these patients are deprived of good rest and sleep as they have to wake up early to meet their work demands. This outcome is not too surprising as it is in line with study findings by (Rosenthal & Alter, 2012) who reported that the occupational stress and the strenuous nature of jobs is a factor in the risk of hypertension and (Yang et al, 2006) who also reported the effects of long working hours on hypertension. Despite the different methods used in wealth measurement, most studies such as the one done by Hajat and colleagues (2010) reported an association between wealth and hypertension.

5.4 Quality of life of the adult hypertensive

The highest mean rating of satisfaction is found in the environment domain and this reflected positive feelings in how safe adult hypertensives feel; how healthy their physical environment is

as they perceive; having some but not enough money to meet their needs; how available information they need; the extent to which they have the opportunity for leisure activities; satisfaction with the condition of their living place; how satisfied they are with access to health services; and how satisfied they are with their transport. Conversely and according to this study, the lowest mean satisfaction rating score is in the social relationships domain of the patients' quality of life. This is not surprising as patients showed less positive but more negative feelings about life; not too good personal relationships; not too good sharing/support from family and friends; and not too good fulfillment from sexual activity. In contrast a study done in Brazil reported results of adult hypertensive patients having the highest mean sore of satisfaction for social relationship domain (Klocek, 2003). The same study also found a higher range in satisfaction score of QOL in all domains from 59.7 to 72.3.

In this study, interestingly results show how the domain scores varied across socio-demographic and health behaviour characteristics. A decrease in QOL is observed with age, but only in relation to physical health rather than psychological health, social relationship and environment. This finding in this study is similar to a study in Vietnam (Ha, 2014). However, the study done in Vietnam, measured changes in QOL by age in older people irrespective of specific disease group. A similar result was also found in another study conducted among hypertensive patients in Europe (Le Hoi, 2010) and (Lionakis et al., 2012).

In contrast with other studies conducted elsewhere, this study finds a few variation in QOL by gender. However, although other studies have shown evidence of gender disparity in QOL

(Dueñas, Ramirez, Arana, & Failde, 2011), they have not captured the differences across domains of QOL. In this study, gender gap is not statistically significant in any of the domains.

5.5 Quality of life differences by the socio-economic status and health behaviours

Level of education attained by a patient has been widely identified as a determinant of QOL; people with higher levels of education often reporting better QOL (Gholami A, 2013). In this study, those attaining high school or higher education have significantly higher mean scores in the environment domain than those with lower education (no education to primary education). This suggests the effect of being educated gives a sense of safety and security for hypertensive patients. Judging from the mean age of patients, they may be having this level of education primarily due to the fact that at their time enrolment rates into schools were very low and especially for the women. It was said that their place is in the kitchen rather than in the classroom.

This study seems to suggest that hypertension is more among the informal sector workers than it is among formal sector workers and this is contrary to (Addo et al., 2009) who reported higher prevalence of hypertension among formal workers in urban Accra. Surprisingly however, even though there seem to be higher population of hypertension being informal workers, their quality of life is better than that of the formal worker in all domains. This may be due to the fact that their jobs entail a lot of walking and standing and talking thereby enhancing their physical and psychological domains of quality of life. They also engage in a lot of social activities both at work and at home which also makes their social relations domain better.

Wealth is also identified as a determinant of QOL similar to findings by (Stanford et al., 2011). Interestingly, those in the poorest 20% have higher mean scores just as those in the richest 20%. This can be attributable to members of households sharing assets, therefore the effects of wealth can be seen across all quintiles. Aside this there is a positive correlation between wealth and quality of life.

According to Kwon and colleagues (2015) there exist significant association between fruits and vegetable intake and physical health days among Hispanics. This study also finds similar results of differences between the amounts of fruits consumed and a patient's physical health. These differences are not only limited to the physical domain alone but in the psychological and environmental health of the patients.

Encouraging physical activities among patients' is important as this study finds out that the more you exercise or engage in any physical activity the better your physical, psychological and environmental state of quality of life and this agrees with (Gill et al., 2013) who reported physical activity as a contributory factor to better quality life in multiple aspects.

This study results indicate that, combination of more fruits intake and more physical activity leads to better quality of life in multiple domains of the quality of life and even to some extent reduce the risk of mortality and this is in line with (Dankel et al., 2016) who reported that individuals who engage in none or one of the two behaviours (fruits intake and physical activity) are at a higher risk of all-cause-mortality that those who engage in both.

The presence of comorbidity is an important aspect of risk that extremely affects the quality of life lived by adult hypertensives across all domains and this is highly significant in our study and similar to findings by (Haagsma et al., 2011). Comorbidities in treatment seeking behaviours of patients does not only add to the physical and psychological stress of the individual and care givers but also significantly adds to the cost build-up of treatment. Most people from this study with comorbidities report not having enough money for treatment cost of the other condition.

5.6 Self- reported reasons for differences in quality of life by the socio-economic status

Overall this study finds out that patients self-reported reasons for perceived quality of life is mostly based on the condition of the disease. Other reasons that also influence the quality of life lived by the socio-economic status is the not having enough money to cater for needs mostly outside expenditures due to health. Social and economic conditions are factors that have been proven over time to influence a persons' quality of life. Therefore the quality of life lived by hypertensive patients in the study area can be improved if social and economic factors are considerably improved.

5.7 Conclusion

Theoretically findings of this study supports the concept of quality of life developed by the World Health Organization in 1999. Over time, social and economic determinants of health combine with risk associated factors of diseases can either reduce or increase the incidence or prevalence of a disease. From the conceptual framework, social determinants of health such as income, wealth, education and occupation are predictors of quality of life and this has been corroborated by study findings. It is therefore important that social determinants of health are given considerable

attention in the treatment and care giving aspects of health. Comprehensive and holistic treatment approaches is advised.

CHAPTER SIX

6.0 CONCLUSIONS AND ECOMMENDATIONS

6.1 Introduction

This section provides conclusion to the study and make constructive recommendations based on the study findings and practicable suggestions from respondents. It presents a summary of findings, make recommendations, research limitation(s) and suggest areas for further studies.

6.2 Conclusions

This study has shown that there are more women than men adult hypertension patients. Women with hypertension had lower satisfaction rating in psychological health than men. Hypertension is also related to old age and this is associated with lower QOL in both physical and psychological health. Most patients are also in the married/living together and the widowed' category of marital status. Among the ethnic groups, Akans are more affected by the disease than other tribes and so it is with Christians than with those of the Islam faith.

In the study area, hypertensive patients have a low or below average socio-economic status. This was evident in their level of education, occupation and wealth. There exist vast disparities between those with higher levels of education and those with lower levels of education. Lower levels of education is related to population of hypertension as well as more patients with hypertension work in the informal sectors of the economy.

In terms of the health related quality of life, hypertensive patients attending the Eastern Regional Hospital have a fairly moderate QOL across all domains of physical health, psychological heal

health, social relationships and their environment even though scores for social health is lower. However, the level of quality of life is not reflective in the overall reported health status of the patients.

There are significant differences in the quality of life lived by the adult hypertensive in terms of his/her socio-economic standings. Education, employment and wealth are significant socio-economic indicators that affects the quality of life lived by the adult hypertensives. Differences existed between the highly educated and the lowly educated and then the richest quintiles and the poorer quintiles.

Moderate to high level of physical activities, eating more fruits and avoiding comorbidities are significant independent predictors of a good health related quality of life of adult hypertensives in the physical, psychological and environment domains. Presence of co-morbidity in hypertensive patients is an important health issue influencing their satisfaction in all domains.

6.3 Recommendations

Aside giving clinical care, the findings of this study indicate the necessity for health professionals to pay more attention to other factors that may affect treatment regimens of hypertensive patients. Therefore the study recommends to the Ghana Health Service and other stakeholders that;

- Health facilities must intensify health education on better measures to sustain and improve the current quality of life of adult hypertensives. Specifically, the education must be targeted at patients who are women, lowly educated, aged, informal sector workers and those with comorbidities. This will impact positively on treatment outcomes and reduce the incidence of comorbidities.
- To reduce the risk and incidence of hypertension, educational out-reach programmes on life style modifications and risk factors for hypertension targeted at women, informal sector workers and the lowly educated person must be encouraged.
- Interventions aimed at improving the socio-economic conditions of the patients are needed. This could be in monetary or in kind form as it will ensure access to health and other services needed for better treatment outcomes.
- Individual patients must strictly adhere to dietary plans and engage in moderate to high levels of physical activities.
- Further research should be done to establish the extent of inequalities in the socio-economic status of hypertensives in relation to seeking treatment and better quality of life.

6.4 Study limitations

Despite the comprehensive nature of this study, employing quantitative analysis to explore the various issues related socio-economic status and quality of life of hypertensives is however limited in scope. Constrained by time and social desirability bias, the study could have been extended to other facilities and in other regions and in other rural areas where majority of the patients are less privileged and highly vulnerable in order to give a true representation of the situation in Ghana.

Nonetheless, the situation can be generalized for hypertensives in Ghana since the Eastern Regional Hospital is a referral facility that handles all classes of the society. Further studies could be done to take a broader outlook by covering all the ten regions in Ghana, specifically the major towns. This will give a relatively general idea and true picture of the situation in Ghana.

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APPENDICES

Appendix I – Respondent Information Sheet

General information

Project Title: Socio-economic differences in the quality of life of adult hypertensives attending the outpatient clinic at the Eastern Regional Hospital

I am …….(interviewer), a student of the Department of Health Policy Planning and Management in the School of Public Health, University of Ghana Legon pursuing a Master of Public Health Degree Programme. I am here with my research assistants to carry out a survey to find out the Socio-economic differences in the quality of life of adult hypertensives. This is purely for academic purposes and forms part of the requirement for the award of Master of Public Health Degree. The researcher has no conflict of interest in this study.

Procedure

The study will involve answering questions from a questionnaire about the quality of life lived by adult hypertensives. The information you provide will add to knowledge and inform policy about the challenges in living a quality life by hypertensives and propose some interventions needed.

Benefits and Risks

There will be no monetary or material compensation for the study. There are also no known risks associated with this study and I am always available to assist with any queries. .

Confidentiality

No name will be recorded. Your name and identity are not needed in the study. However the information you are going to provide will be coded and will be treated strictly confidential. You are assured of total confidentiality to the information you will give. Apart from the researcher and supervisor of this research, no one else will have access to information provided whether in part or whole. Data collected will be stored under lock and key then destroyed after a minimum of three years as per research protocol.

Right to refuse

Participation in this study is voluntary. You are free to answer part or the entire questionnaire. You can choose to withdraw from the study or stop the interview at any time you want. You can also choose not to answer any question(s) you find uncomfortable about. Should you choose not to not to participate, it will not affect the quality of service(s) and treatment offered to you in this hospital in any way. However you are encouraged to participate fully in this study to help improve treatment outcomes and the general health related quality of life lived by hypertensives in Ghana and beyond.

Dissemination of results

Findings and recommendations would be available at the School of Public Health and it will also be disseminated through a meeting with different stakeholders at the end of the study.

Before Taking Consent

Do you have any questions you wish to ask about the study? Yes/No

If yes, please indicate the questions below

……

……

……

If you have any question(s) or further clarification concerning this study and/or the conduct of the researcher and research assistants, please do not hesitate to contact the following; Daniel Nana Yaw Abankwah, School of Public Health, University of Ghana, Legon, daniel_jnr@hotmail.com. Tel: 0249534022/0207818088; Prof Moses Aikins, School of Public Health, University of Ghana, Legon, maikins57@yahoo.com. Tel: 024-4433 743 and; Mrs. Hannah Frimpong (Administrator), Ghana Health Service Ethical Review Committee Secretariat, Accra. Tel: 0507041223/0243235225

Appendix II: Informed Consent

I have read the information given above, or the information above has been read to e and I understand. I have been given a chance to ask questions concerning this study and questions have been answered to my satisfaction. I now voluntarily agree to participate in this study knowing that I have the right to withdraw at any time without it affecting my current or future use of health care services.

Signature/Thumb print: …… Date: ……..

Contact detail: ……..

I, the undersigned, have explained this consent to the respondent in English/Twi/Ga/Ewe/Hausa and that she/he understands the purpose of the study, procedures to be followed as well as the risks and benefits of the study. The participant has fully agreed to participate in the study.

Signature of interviewer:…… Date: ……

Contact detail: ……

Appendix III – Questionnaire

ID No.				

Questionnaire

Topic: Socio-Economic Differences in the Quality of Life of Adult Hypertensives attending the Out Patient Clinic at the Eastern Regional Hospital

Dear respondent,

This is a research carried out on quality of life of hypertensives in the New Juabeng Municipal of the Eastern Region. I will therefore like to take a few minutes of your precious time to answer these questions. You are assured that the answers you give will be strictly confidential and your name will not be mentioned in my response report. Thank you.

Ques No.	Questions	Response
Section 1	**Demographics – Background information of patient**	
101	Sex (Do not ask) 1. Male 2. Female	|___|
102	What is your age as at your last birthday? (in years)	|___|___|
103	What is your marital status? 1. Married/living together 2. Divorced/ Separated 3. Widowed 4. Never married and never lived together	|___|
104	What is your religious denomination? 01. Catholic 02. Anglican 03. Methodist 04. Presbyterian 05. Pentecostal/Charismatic	

	06. Other Christian 07. Islam 08. Traditional/Spiritualist 09. No Religion 96. Other (Specify): ……	|___|___|
105	What ethnic group do you belong to? 01. Akan 02. Ga/Dangme 03. Ewe 04. Guan 05. Mole-Dagbani 06. Grusi 07. Gurma 08. Mande 96. Other (Specify): ……	|___||___|
Section 2	**Socio-economic characteristics of patient**	
201	What is your highest educational level attained? 1. No education 2. Primary 3. Middle 4. JSS/JHS 5. Secondary/Vocational 6. SSS/SHS 7. Higher	|___|
202	What is your employment status? 1. Unemployed 2. Employed	|___|
203	If employed, what is your occupation, that is, what kind of work do you mainly do? ……	|___|
204	If unemployed, reason for not being employed? 01. Student 02. Housewife 03. Retired 04. Unable due to my hypertensive condition 96. Other (Specify): ……	|___||___|

205	What is your overall monthly household income?	|__|__|__|__|__|__|.|__|__|
206	How many people are supported on this income?	|___|___|
207	Does your household have the following functional items? Yes No a) Electricity 0 1 b) Wall Clock 0 1 c) Radio 0 1 d) Black/White Television 0 1 e) Color Television 0 1 f) Mobile Telephone 0 1 g) Land-Line Telephone 0 1 h) Refrigerator 0 1 i) Freezer 0 1 j) Generator/Invertor 0 1 k) Washing Machine 0 1 l) Computer/Tablet 0 1 m) Photo Camera 0 1 n) Video Deck/DVD/VCD 0 1 o) Sewing Machine 0 1 p) Bed 0 1 q) Table 0 1 r) Cabinet/Cupboard 0 1 s) Internet Access 0 1	 |___| |___| |___| |___| |___| |___| |___| |___| |___| |___| |___| |___| |___| |___| |___| |___| |___| |___|
208	What type of building material is your house made of? [1] Unplastered mud walls [2] Plastered mud walls [3] Cement blocks/bricks [96] Other (Specify):	|___|
209	What type of material is used for the roofing of your house? [1] Thatch/Bamboo [2] Zinc/Aluminum [3] Asbestos/Concrete/Slate [4] Roofing tiles [96] Other (Specify):	|___|
210	Does your house have Ceiling? [1] Yes [2] No	|___|
211	Does your house have Mosquito netting over Windows [1] Yes [2] No	|___|
212	What is the main source of drinking water in your house? [1] Piped water	

	[2] Tube well /Bore Hole [3] Protected dug well [4] Unprotected dug well [5] Water from spring [6] Rainwater [7] Tanker truck [8] Cart with small tank [9] Surface water [10] Bottled water/Sachet water [96] Others (Specify):	|___|
213	Where is that water source located? [1] In own dwelling [2] In own yard/plot [3] Elsewhere	|___|
214	a. Does your household carry out any cooking activities? [0] No [1] Yes b. If yes, what type of fuel does your household mainly use for cooking? [1] Straw/Shrubs/Grass [3] Charcoal [5] LPG/Natural gas [2] Firewood [4] Biogas [6] Electricity Other:	|___|
215	Does your household have its own toilet facility? [0] No [1] Yes	|___|
216	What kind of toilet facility do members of your household usually use? [1] Water closet [2] Pit latrine [3] Bucket/pan [4] Bush/Field [96] Others (Specify):	|___|
217	Do you share this toilet facility with other households? [0] No [1] Yes	|___|
218	Do you own agricultural land: [0] No [1] Yes, How big?	|___|
218	a. Do you own livestock's or farm animals? [0] No [1] Yes, how many? [1] Cattle	|___|

	[2] Goats [3] Chickens [4] Pigs	
219	How would you rate your household's economic status in relation to general Ghanaian condition? [1] Very wealthy [2] Wealthy [3] Moderate [4] Poor [5] Very poor	|___|
Section 3	**Quality of life assessment**	
	General health	
301	Generally, how would you rate your quality of life? 1. Very poor 2. Poor 3. Neither good nor poor 4. Good 5. Very good	|___|
302	How satisfied are you with your health? 1. Very dissatisfied 2. Dissatisfied 3. Neither dissatisfied nor satisfied 4. Satisfied 5. Very satisfied	|___|
303	Why do you think you have this quality of health? 01. I don't have money 02. My hypertension condition 03. Cannot access healthcare services 04. Cannot afford medication 96. Others (Specify): ……....	|___||___|
	Physical health/functioning	
304	Does physical pain prevents you from doing what you need to do? 1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extreme amount	|___|
305	How much do you need medicines or any medical treatment to be able to go about your duties in your daily life? 1. Not at all 2. A little 3. A moderate amount 4. Very much	|___|

	5. An extreme amount	
306	Do you have enough energy for everyday life? 1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extreme amount	|___|
307	How satisfied are you with your sleep? 1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extreme amount	|___|
308	How satisfied are you with your ability to perform your daily living activities? 1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extreme amount	|___|
309	How satisfied are you with your capacity for work? 1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extreme amount	|___|
310	Why do you think you have this level of physical health? 01. I don't have money 02. My hypertension condition 03. Cannot access healthcare services 04. Cannot afford medication 96. Others (Specify): ……....	|___||___|
	Psychological functioning	
311	How much do you enjoy life? 1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extreme amount	|___|
312	To what extent do you feel your life to be meaningful? 1. Not at all 2. A little	

	3. A moderate amount 4. Very much 5. An extreme amount	|___|
313	How well are you able to concentrate? 1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extreme amount	|___|
314	Are you able to accept your bodily appearance? 1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extreme amount	|___|
315	How satisfied are you with yourself? 1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extreme amount	|___|
316	How often do you have negative feelings such as bad mood, despair, anxiety, depression? 1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extreme amount	|___|
317	Why do you think you have this level of psychological functioning? 01. I don't have money 02. My hypertension condition 03. Cannot access healthcare services 04. Cannot afford medication 96. Others (Specify): …….....	|___||___|
	Social relationships	
318	How satisfied are you with your relationships with family, friends etc? 1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extreme amount	|___|

319	How satisfied are you with your sex life? 1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extreme amount	|___|
320	How satisfied are with the emotional and financial support you get from your friends? 1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extreme amount	|___|
321	Why do you think you have this level of social relationships? 01. I don't have money 02. My hypertension condition 03. Cannot access healthcare services 96. Others (Specify): …….....	|___||___|
	Environment	
323	How safe do you feel in your daily life? 1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extreme amount	
324	How healthy is your physical environment? 1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extreme amount	
325	Have you enough money to meet your needs? 1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extreme amount	
326	How available to you is the information that you need in your daily-to-day life?	

	1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extreme amount	
327	To what extent do you have the opportunity for leisure activities? 1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extreme amount	
328	How satisfied are you with the condition of your living place? 1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extreme amount	
329	How satisfied are you with your access to health services? 1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extreme amount	
310	How satisfied are you with your transport? 1. Not at all 2. A little 3. A moderate amount 4. Very much 5. An extreme amount	
Section 4	**Health status and behaviour**	
401	How long have you been hypertensive? 1. < 1 year 2. 1 – 3 years 3. 3 – 5 years 4. >5 years	|___|
402	What kinds of food do you eat in a normal day? 01. Protein 02. Fatty 03. Carbohydrate	|___||___|

	04. Balanced diet 96. Others (Specify)	
403	How many times do you eat fruits in a week? 1. Not at all 2. 1 – 3 times 3. More than 3 times 4. Every day	|___|
404	How is your physical health in general? 1. Very good 2. Good 3. Fair 4. Poor 5. Very poor	|___|
405	How many times do you exercise in a week? 1. Not at all 2. 1 – 3 times 3. More than 3 times 4. Every day	|___|
406	Have you had any of following health problems during the past one year? Yes No Chronic disease a) Kidney diseases 1 2 b) Diabetes mellitus 1 2 Other diseases a) Cancer or other neoplasms 1 2 b) Cardiovascular diseases 1 2 c) Musculoskeletal disease (e.g. Osteo) 1 2 d) Injury 1 2 e) Persistent disability 1 2 Others (Specify): ……	|___| |___| |___| |___| |___| |___| |___|
	Smoking	
407	Do you currently smoke cigarettes or any other type of tobacco? 1. Yes 2. Currently I don't smoke but I have ever smoked 3. No. I have never smoked a cigarette, not even a puff	|___| If No, skip to 410

408	How many sticks of cigarette or any other type of tobacco did you smoke in a day? 1. 1 2. 2 3. 3 4. 4 5. 5 or more	|___|
409	How long have you been smoking or did you smoke? 1. 1 year or less 2. 2 years 3. 3 years 4. 4 years 5. 5 or more years	|___|
	Alcohol	
410	Do you currently consume alcoholic beverages? 1. Yes 2. No. 3. No. but I used to drink	|___|
411	How many times do you drink alcoholic beverages usually? 1. Once daily 2. Twice daily 3. 3 times daily 4. Once a week 5. More than once in a week	|___|

THANK YOU VERY MUCH FOR YOUR TIME