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**PREVENTION AND MANAGEMENT OF HYPERTENSION:
A study on knowledge and attitudes of women of
childbearing age**

Thesis

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<p>Prevention of high blood pressure is recognized as the controlling key to hypertension especially in developing countries. Identification of the level of knowledge and attitude of the population is however, an optimum steps to prevention. The purpose of the study was to assess the level of knowledge of women of child bearing age on preventive measures of high blood pressure.</p> <p>Quantitative descriptive method was used for the study. Hundred participants answered both closed and open ended questionnaires in Eastern region, Ghana.</p> <p>Results suggested that general knowledge of high blood pressure is adequate. Participants lacked of understanding in the etiology of high blood pressure. For instance: 82% consider high level of stress, tension or over thinking as hypertension. Focus should be on the publics education in understanding high blood pressure by helping to control it. Findings can assist in health planning programmes on the knowledge and attitudes of the population.</p> <p>Nurses need to educate the public on the effect of high blood pressure disease. Awareness must be created that detection of hypertension is only by screening. The effect of salt reduction can be emphasized on preventing high blood pressure that may intend prevent other cardiovascular diseases. Nurses can also increase the individuals control over own live through self-empowerment tool and educational approach.</p>		

Key words

Attitude, developing countries, hypertension prevention, knowledge, nursing.

ABBREVIATIONS

AHA	American Heart Association
BMI	Body Mass Index
DAILYs	Daily- Adjusted Life Years
DRIs	Dietary Reference Intakes
IMF	International Monetary Fund
HBP	High Blood Pressure
Salt	Sodium
STM	Ministry of Social Affairs and Health
NIH	National Institute of Health
U.S	United States
WHO	World Health Organization

ABSTRACT

ABBREVIATIONS

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1 INTRODUCTION

The act of health promotion and disease prevention is economical. However, benefits are sometimes seen many years later. This makes it less tangible for politicians to invest especially in communities of ever increasing emergence of communicable diseases. Therefore, promoting health and preventing disease greatly relies on the individual, community and organization. The need of nursing research is to develop, define and expand the knowledge of nursing. (Polit & Beck. 2006.)

The role of nursing in preventing hypertension is to create awareness, hence, its significant reduction. This is due to the fact that hypertension is becoming the world's most prevalent health condition as it leads to significant morbidity and mortality. New interventions such as the awareness of the population's knowledge and attitudes will assist nurses with better implementation methods of various health care techniques towards the prevention of hypertension. The topic is a contribution to existing theories as well as the researcher's personal interest derived from practical knowledge and also identification of ignored pattern in previous literature.

The increasing prevalence of hypertension in developing countries is of great concern. According to a report from the World Health Organization (WHO 2010), there was an estimated 972 million people with hypertension in the year 2000. 65% lived in developing world with the number predicted to grow to 1.5 billion by 2025. The increasing prevalence is well reflected in the increase in cardiovascular disease mortalities. This is especially in developing countries with high illiteracy rates and a drastic shift in the increase from communicable diseases to non-communicable diseases. (Maher et al. 2010.) Research is required to clarify the relationship between lifestyles, individual behaviors, health and illness as proposed by William Bosu, 2010 in his research (Epidemic of Hypertension in Ghana).

In addition to that, research has proved hypertension to be accounting for 13% of heart failure resulting to morbidity in a study conducted at the Department of Medicine, Komfo Anokye Teaching Hospital Kumasi, Ghana. High rate of hypertension has been associated with low levels of awareness as focus has been on communicable diseases until recently. (Amoah et al. 2006.) As such, prevalence of hypertension is deadly and a risk to the population. However, risk factors attributing to this problem included sedentary lifestyle. (Owusu 2007.)

The treatment of hypertension in developing countries is unaffordable for the average worker. This is due to the fact that, the lowest treatment pharmacologically is recorded to be 7.5-12% of the monthly income of the average worker in Ghana (ProCor 2009). In effect, it is impossible for a better treatment pharmacologically. Thus, the need for understanding the disease and controlling it with preventive measures is the key to the reduction of high prevalence in developing country as Ghana.

Ghana, formerly known as Gold Coast is located in West Africa with Gulf of Guinea as the bordering. Eastern Region, the setting of the research is one of the ten regions and is found in the Eastern of Ghana. The population consists of 49.2% males and 50.8% females, resulting as a sex ratio of 96.8 males to 100 females. It is also the sixth largest region in size and the main occupations are agriculture, private businesses, production, transport and equipment work, professional and technical work and other services. (Modern Ghana 2009.)

2 MAIN CONCEPTS

2.1 Hypertension

Hypertension is a term used to describe high blood pressure. Flow of blood is based on the beat of which the heart pumps blood. The pressure of the heart does not stay at the same level at all times. It varies based on activities at a particular point in time. Hypertension occurs as a result to long duration of abnormal pressure of the main arteries (Cunha 2011.) The term high blood pressure exists in the local Ghanaian Twi dialect as “Mogya Mboroso”. This literally means overflow of blood and it is the commonly known and used term for high blood pressure.

Hypertension is grouped into two main categories. These include primary and secondary hypertension. Primary hypertension is also known as essential hypertension and it affects ninety-five percent of persons suffering from the disease. causes of hypertension are not yet known, however, factors as age, high salt intake, low potassium diet, sedentary lifestyle, stress as well as genes have been found as contributing to hypertension (Carretero et al. 2002). High blood pressure occurring as a result to a consequence of another disorder or a side effect of medication is referred to as secondary high blood pressure. Such disorders may include renal failure or renovascular disease. This type of blood pressure is evident in about five to 10% of cases. (Cunha et al. 2011.)

2.2 Knowledge and Attitudes

Perspectives and behavior of persons have great influence on determining the quality of health care services. research is required to clarify the relationship between lifestyles, individual behaviors, health and illnesses. This can only be achieved based on the knowledge derived from the public. Hypertension has been on high prevalence

recently in developing countries as Ghana (Maher et al. 2010). Knowledge and attitude of the population is thus needed as suggested by Aubert et al. in 1998.

3 NURSING CONCEPT ON PREVENTION

Nursing care is sensitive to the individual's need of care under all circumstances. Preventive approach is seen as part of nursing practice. This is due to the fact that delivery of care is across a lifespan and activities reduce the burden of mortality from diseases. Nursing health promotion activities involves individuals, families, groups and the society as a whole. However, the individual is seen as a whole or holistic person. This means that the relationship of the individual to the external environment is vital in nursing. (Kozier & Erb 2008.)

Health as defined by WHO constitution of 1948 is a state of complete physical, social and mental well-being and not the absence of diseases or infirmity (Nutbeam 1998). Health in this context is an everyday resource of life. Educational approach is one of the tools that nurses can use. This is one of the best ways to provide reliable information to the public. Educational approaches also assist the individual development of decision making skills. In addition to that, it also provides a platform for the public to explore and share common health attitudes. (Kozier & Erb 2008; Naidoo & Wills 2000.)

The theoretical way of nursing intervention is by using an appropriate nursing model. Attitude and knowledge of the public is a great influence on health behavior. This is due to the fact that it can have a great effect on health. Personal factors can as well influence health behaviors. For instance, persons with previous health promoting behavior may receive a positive benefit and engage in future health behavior. Nurses can thus assist by focus on the benefits of such behavior. This is by incorporating nursing models in care of client. These approaches assist in better understanding of health behaviors. (Kozier & Erb 2008; Potter & Perry 2005.)

Florence Nightingales model of nursing is one of the most influential models in the nursing that can be used. The more model focused on preventive measures. In

addition to that, most of her theories suggested that the prevalence of diseases was more among the poor communities. However, these diseases can be prevented by promoting health through good environmental conditions. Nursing according to Nightingales model was assisting the individual to be in the best environmental condition for nature to act. Nursing scope was more focus on physical factors and it was the best approach for health promotion. This care helped clients to regain and maintain health. (Watson 1998.) Milio's model of prevention was also amongst the few that suggested that unhealthy behaviors of an individual are dependent on lack of knowledge. (Craven & Hirnle 2007; Potter & Perry 2005.)

4 HYPERTENSION

4.1 Definition of hypertension

Hypertension is a public health problem and a term used to describe HBP. It is a condition that occurs as a result of repeatedly elevated blood pressure exceeding 140 over 90 mmHg whereby a systolic pressure above 140 with a diastolic pressure above 90. However, normal blood pressure is below 120/80; readings between 120/80 and 139/89 is called pre-hypertension. Systolic blood pressure is the pressure in the arteries as the heart contracts and pumps blood forward into the arteries whereas diastolic represents pressure as a result to relation of the arteries after contraction. (Zareian 2004; Cunha 2011.) It has been called a silent killer as it is usually without symptoms. Hypertension takes a long time before diagnosed thereby causing major health problems as stroke and other cardiovascular diseases. Damage to organs as the brain, heart, kidneys and eye and so on are the long term effect of high blood pressure disease. (Cunha 2011.)

Diagnosis of high blood pressure is usually measured with a device called sphygmomanometer. This consist of an inflatable rubber cuff, an air pump and a column of mercury or a digital readout reflecting pressure in an air column as well as electronic blood pressure machines. The readings are widely expressed in millimeters of mercury or mmHg. Diagnosis of high blood pressure is not based on a single reading except when it is extremely high (above 170-180/105-110).

4.1.1 Causes of Hypertension

The cause of hypertension is not yet known unless it is unless is secondary high blood pressure. However, there are many underlying factors associated with the occurrence. These factors include: aging, excessive salt intake, sedentary lifestyle as well as genetic factors. (Cunha et al. 2011.) A study has showed the presence of

high blood pressure mostly amongst adults aged 20-79 (Keaney et al. 2005). Age is unavoidable. age increases with time. Schofield et al, (1999) refers to aging as a biological process with a decline in the performance of most organs. Less activity as a result to ageing also causes high blood pressure. Impaired ability of the arteries to expand when blood is pumped can be attributed to hardening of the structural changes in the arteries. Hormonal changes as a result to ageing can as well cause high blood pressure. Changes as decrease in estrogen production, underactive thyroid and overactive thyroid can as well influence the rise in the blood pressure. (Logan 2011.) It is known that high blood pressure usually develops in elderly women after menopause due to hormonal changes. (Schofield et al. 1999.) However, the occurrence is not a routine part of aging since there are other factors that influence the occurrence. (Young 2011; Logan 2011.)

Salt is not a major cause of HBP. However, it is a contributing factor especially among salt sensitive persons. Excessive intake of salt accounts greatly to the occurrence of HBP and other cardiovascular diseases. Several studies conducted over the years recommend reduction of salt intake as the key to prevention and control of high blood pressure. A study conducted by Karppanen and Mervala in 2006 confirmed the impressive fall of blood pressure in the Finnish population for the past thirty years now due to the decrease of salt.

According to a recent study Dietary Reference Intakes (DRIs), sodium consumption should be 1500milligram per day; equivalent to a teaspoon. The maximum level researched not to pose risk for consumption is 2500 milligrams per day (U.S Department of Health and Human Services 2005). However, research estimates daily consumption on the average westernized meal as 3000 to 4500milligram. This figure accounts twofold of the maximum recommendation. (Sacks et al. 2001.)

Life expectancy has increased during the past three decades in Finland. This is attributed to the decrease in salt intake incorporated into the nationwide nutritional recommendation. New salt labeling regulations were passed by the Ministry of Trade

and Industry in the conjunction with the Ministry of Social Affairs and Health (STM). This legislation affected all item categories that contributed high salt intake to the average Finnish meal. These included; bread, cheese, butter, sausage, sauces and so on. The fully implementation of this legislation since 1 June, 1993 contributed remarkably to decreasing high blood pressure. Even though obesity and alcohol consumption has increased, the decrease has contributed to other cardiovascular diseases as well. (Statistics on cardiovascular diseases 2003.)

Sedentary lifestyle is a medical term used to describe lifestyle with little or no physical activity. Sedentary lifestyle is dangerous to health as smoking. This is due to the fact that it contributes to most death as a result from heart diseases. The high growing rate of sedentary lifestyle could be attributed to economic growth, modernization, urbanization as well as globalization of food. (Puska et al. 2003.) Advance in technology today has also reduced level of morbidity at work. Most jobs demand sitting behind the desks for long hours during the day. This is followed by long hours enjoying television or video games at leisure time. As a result to this, most diseases as high blood pressure are directly related to the lack of exercise. (STM 2010; Puska et al. 2003.)

Obesity is a major public health problem and it is the excessive storage of body fat and weight. It is one of the causative factors of high blood pressure. Even though genes can put one at risk of gaining weight, the balance of energy intake and exercise is an important determinant. Body Mass Index (BMI) is calculated from weight and height. As suggested by the National Institute of Health (NIH) and WHO, the normal weight for an adult over 18 years is less than or equal to 18.5-24.9. BMI that is greater than this puts one at risk of obesity related diseases as high blood pressure. (NIH 1996.)

Blood pressure is affected by various activities of the body throughout the day. The heart reacts differently to basic activities of the day such as eating and drinking. High consumption of alcohol has been related to the rise of blood pressure over the years. (Mittal & Singh 2010.) This is due to the fact that, the kidney and liver works extra

hard in getting rid of waste from the bloodstream therefore, more pressure is exerted on the arteries. Excessive alcohol intake can also increase the chance of other medical issues as obesity that may lead to an increase in blood pressure. (Sheldon 2011; Bakx et al. 1999.)

According to Poikolainen (2011), there is Finnish proverb that mentioned alcohol is a drink for the wise. This means that too much consumption can be toxic the body. Study shows that excessive consumption of alcohol shortens life expectancy by six to eighteen years less than non-drinkers (Mäkelä 1998). Excessive use of alcohol elevates blood pressure and this can lead to paralysis from stroke. Alcohol also causes some people to become overweight. It has long been a contributing factor to overweight due to the number of calories it contains. (Sheldon 2011.) A study conducted by Yamada et al (1991) confirmed that there was rise in systolic and diastolic blood pressure in persons consuming 24 to 30 grams of alcohol per day compared with non drinkers. An increase of 3-4 mm Hg and 1-2 mmHg was noticed among participants of the study. Among subjects consuming 40-60 grams per day, the rise in systolic blood pressure was 5-6 mm Hg. This confirms that elevation of blood pressure depends on the amount of alcohol consumed.

4.1.2 Risk factors associated with HBP

Almost everybody is at risk of developing HBP without a healthy lifestyle habit. However, there are risk groups; risk is related to certain characteristics that contribute to the development of a disease. Therefore, these groups are at a higher risk of developing high blood pressure either through influencing factors or as a result of a secondary effect. Even though 90-95% of causes are unknown, there are risk groups as well as several factors that increase the chances of developing high blood pressure. (Cunha et al. 2011.)

The development of HBP at an early age has long been recorded as higher in Black Americans than the White Americans (American Heart Association (AHA), 2009).

Individuals with family history of high blood pressure, stroke and other cardiovascular diseases are always at risk of developing it. In recent studies, hereditary was referred to as participants with one or more first-degree biological family members diagnosed of HBP to identify risk groups. Results from these studies showed the high prevalence of HBP in Black Americans than the White even though there were other factors as stress, poverty, lack of access to health care and racial discrimination associated with the high prevalence. (Terry et al. 2007).

Good nutrition is essential for proper growth of the body. Diets that are high in salt, sugar, fat and so on increase the risk of becoming overweight and developing HBP. According to Stabouli et al. (2011), several studies conducted support the theory that primary hypertension at early age is associated with overweight and excessive salt intake. This is due to two established facts; firstly, excess gain of weight puts pressure on the heart. Secondly, excess salt intake causes fluid retention in the body causing too much burden to the heart. Furthermore, studies have shown that a high body weight in adolescents is related to the development of high blood pressure in adulthood. In addition to that, an 18 year study was conducted by Bakx et al. in 1999 about weight gain predicted as a future risk for hypertension. Results from this study showed that development women are at a higher risk of developing HBP irrespective of age and BMI.

Generally, excess intake of alcohol has long been linked to a number of serious medical conditions as well as social problems. These medical conditions can usually become acute or chronic without lifestyle modification. These conditions range from gastro-intestinal complications to cancer, diabetes, liver damage as well as other cardiovascular diseases that can result to death. (STM 2007.) According to Sundell (2010), heavy drinking is defined as drinking patterns with large amounts of alcohol consumed over a short period of time. This is considered as the consumption of five or more standard drinks for men and four or more for women at a time.

STM alcohol programme for 2004-2007 estimates one unit as 12grams or 15ml of pure alcohol. This is equivalent to 4.7% of 33cl beer, one glass (12cl) of table wine, and 2 cl of 80% spirit, 3 cl of 60%, 4 cl of c. 40% spirits. The risk consumption for men on weekly basis is 24 units or more (24 bottles of medium beer or 3 ½ bottles of table wine or 1 ¾ bottles of spirits) and 7 units or more at one time. Consumption of 16 units or more per week (16 bottles of medium beer or 2 1/3 bottles of table wine or 1 1/5 bottles of spirits) and 5 units or more at one time is also considered as heavy drinking for women. (STM 2007.) A review conducted by Campbell et al. (1999) in Canada confirmed that heavy alcohol consumption increases blood pressure regardless of gender or age. Drinking pattern was also observed by Russell et al. in 1991 and results showed that heavy drinking of alcohol increased the risk of developing HBP and other cardiovascular diseases.

4.2 Hypertension in developing countries

Developing country is a self explanatory term that is used to describe most countries with low level of standard living. According to report from International Monetary Fund (IMF) in 2010, Ghana is among the emerging and developing countries economically. It is considered as a country which has not achieved a lot with relation to industrialization. Factors as rate of literacy, general life expectancy, population growth compared to the general standard of living of the population. Ghana has over the year's economy remained essentially agricultural even though the industry is better developed in Ghana than the rest of the continent. The country achieved a 6.4% growth rate in 2007. This is evident as the setting of the research is characterized with main occupations as Agriculture, Private businesses, Production, Transport and Equipment work, Professional and Technical work and other services. (UNICEF 2010; Modern Ghana 2009.)

According to WHO (2009), deaths as a result to non communicable diseases as hypertension will increase by 17% over the next decade, with the greatest increase in the African region (27%). However, primary prevention has been proposed as the

most cost effective approach to the emerging epidemic. (Maher et al. 2010.) In 2003, a cross-sectional study by Amoah et al. (2003) conducted in Ghana concluded that high prevalence in women (29.5%) compared to male (27.6%) and low level of awareness. However, focus has been on communicable diseases in developing countries until recently as that similar study conducted in 2006 still showed a high prevalence with 32.3% of participants not having knowledge of the disease (Amoah et al. 2006).

More than 500,000 **women between the ages of 19 and 49** have been estimated to have died in developing countries each year due to hypertensive-related causes. Research reveals that women with pre-existing or chronic high blood pressure are more likely to have complications during pregnancy than those with normal blood pressure (Ashutosh et al. 2008, 197-230). Previous studies have showed hypertension as one of the major causes of maternal death in Ghana (Ghana Maternal Health Survey 2007). However, to a considerable extent, the growth and effectiveness of reducing maternal death by means of prevention and treatment of hypertension has not been effective even though it can be prevented.

In addition, a research conducted in Uganda concluded that approximately one in every three adult aged 20 years or older was hypertensive. Prevalence of 30.5% and female more hypertensive than males in this study suggested that advancing in ageing was a risk factor due to exposure to lifestyle risk factors of hypertension. (Wamala et al. 2009.) A recent research showed the huge gap on the statistics of industrialized countries, developed countries and the least developed. (Drife 2008.) It is extremely important to investigate on the knowledge and attitude of this target group about the preventive measures of hypertension. Significant reduction in maternal mortality can thus be achieved. (Danso et al. 2010.)

4.3 The effect of HBP

High blood pressure is related to **high occurrences of deaths**. This is due to the fact it can cause life threatening illness as heart attacks, stroke as well as other disability-adjusted life years (DALYs). Globally, HBP accounted for about 7.6million deaths (13.5%) in the year 2001. In addition , 92million of the population are globally affected with DALY. This health burden was greatest for stroke and ischemic heart disease. (Lawes et al. 2001.) According to WHO report in 2009 on mortality and burden of disease attributable to selected major risks, it was discovered that the risk of dying was more in low and middle income countries. African countries recorded about 25% deaths attributed to HBP below the age of 60.

Even though there is not yet detailed data on the expenditure of treating high blood pressure, the cost of treatment has been approximated as high. Per capita expenditure on drugs in Ghana was approximated as US\$8. However, considering the fact that it is a developing country and most participants for the study were unemployed. This could be justified that compliance to pharmacological treatment is unaffordable. (Buabeng et al. 2004.) The lowest treatment of hypertension pharmacologically is recorded to be 7.5-12% of the monthly income of the average worker in Ghana (ProCor 2009). This makes it expensive to be treated. Therefore, the need for understanding the disease and controlling it by preventive measures is the key to reduction of high prevalence in a developing country as Ghana. This can only be achieved through creating awareness by educating the public.

Another factor is also due to the fact that acute management of hypertension is limited in most developing countries. This is as a result to the unavailability of sufficient hospitals. visitations to the hospital tend to be inconvenient and this results to poor management of the disease. The high rate of mortality related to high blood pressure disease also cause low workforce. This can result to an economic burden for families and society. especially most African women tend to be housewives (dependent solely on husband). (Buabeng et al. 2004.) Studies by Wang et al. (2002)

and Oke and Bandale (2004) in Nigeria (West Africa) showed that poverty was one the disposing factors of hypertensive patients non-compliance to treatment. This caused depression and anxiety as they could not manage the treatment. This resulted to resorting to alternative care from traditional healers.

However, the use of **preventive measure** present positive activities that stops behavior that causes diseases as high blood pressure. It is the cheapest and most effective way of controlling high blood pressure. Primary prevention has been proposed as the most effective approach to the emerging epidemic. (Maher et al. 2010.) Prevention in this research referred to primary prevention. This is due to the fact that research has proven primary prevention to be the most effective way of preventing illnesses. This is because this type of approach makes health services easily accessible to the general public. It also promotes health through education; making individuals and the community as a whole to understand and develop skills that helps to improve and maintain health. This participation incorporates the individual into the delivery of care as well as encouraging people to reduce the risk of acquiring diseases by adopting a healthy lifestyle. (Ndindjock et al. 2011; Neil et al. 2002.)

5 PURPOSES OF STUDY AND STUDY QUESTIONS

Emergence of hypertension has become a significant public health problem especially in developing countries. Reasons behind the high prevalence are still a public health issue. Hypertension has also been recorded as a common medical disorder that occurs during pregnancy and a silent killer to the general public. Research has proved it to be accounting for 2-3% complications in pregnancies that result to death (Khan et al. 2006). Therefore, it was quite beneficial to research on the selected populations knowledge and attitudes. This was to assist nurses with the choice of appropriate nursing tools for promoting health.

- What kind of knowledge women of child-bearing age had about preventive measures of hypertension?

- What were the attitudes of child-bearing age women on preventive measures of hypertension?

6 METHODOLOGY

The topic of this research was to enquire the depth of knowledge and attitudes women of child bearing age about preventive measures of hypertension. The research aimed at targeting the population's thinking and behavior towards the subject. Designing a good research strategy played a significant role in the process. A design that integrated the two major elements of research. The researcher was not limited to one characteristic of a method that may result to unsatisfied conclusion. A quantitative descriptive study design was conducted with detailed open and close ended questionnaires. This wide range of selection offered the researcher a good perspective of the population as well as providing good data that was presented descriptively. (Houser 2008, Parahoo 2006).

Research is dependent on sampling (Houser 2008). Sampling design was random and based on the research problem. Sample group were women of childbearing age as the topic of the research. The sample size included 100 women between the ages of 19-50. The age range was selected based on a recommendation by Bosu(2010). The study revealed that young adults with a mean age of 36 years. About 29% of the review resulted as hypertensive. Questionnaires were distributed to pharmacy stores in Koforidua for duration of two months. each questionnaire was attached with a cover letter explaining the purpose of the research as well as seeking consent from participants since it was voluntary. After a period of two months, all questionnaires (100) had been answered. The data was collected and imputed into Microsoft Excel for analysis. Open ended questions were summarized into groups to reduce the number of different responses. However, open ended questions were coded by the researcher and analyzed. (Polit & Beck 2006; U.S. 1996.)

7 ETHICAL CONSIDERATIONS

7.1 Ethics

It was ethically accepted to provide information on this research topic since there has been great interest in previous studies. This is witnessed in researches conducted by Danso et al. (2010) concluding that the absence of measures to predict and prevent hypertension in pregnancy was still an option. Furthermore, participants were provided with enough information of the research in order to gain full consent. This was achieved through a letter of consent attached to each questionnaire stating the basis of the research, duration of participating, confidentiality as well as benefits. Contact information was also provided in the letter of consent for necessary further clarification enabling the achievement of reliability. (Holloway & Wheeler 2010; Houser 2008.)

In addition, permission for the research was obtained from the managing director of the unit. All required documents (research plan and a copy of questionnaire) were sent for one week. These were studied and signed before the commencement of the questionnaire distribution (APPENDIX 3). Questionnaires were distributed to pharmacy stores instead of the hospitals. This was because, pilot testing revealed that planned location was patronized by patients that may influence on the result. The choice of data collection usually determines the analysis of the research. A well structured questionnaire was used as the instrument for data collection. Questions were developed based on the research questions of the research. (Parahoo 2006.) Quota sampling method was used to acquire participants from Eastern Region, Ghana. The questionnaire was composed of 20 both open and closed ended questions. These questions were developed based on Oliviera et al. (2005) data collection on knowledge and attitudes of hypertensive participants. (Polit 1996.)

7.2 Reliability and validity

Literature for this research was acquired from reliable sources. The search was quite difficult from the beginning due to the choice of keywords. However, it became simpler as the first article was found. The search began with the use of proposed topic. Africa and international journals were used with selected keywords for the study. SCIENCE DIRECT and PUBMED were mostly used as well as WHO search box. Advanced search and reviewed articles were used with selected keywords as well as maternal morbidity. It was limited to journals from year 2008 to present. The search then resulted to 100 results. Challenges associated with hypertensive disease during pregnancy in low-income countries by Kwabena A. Danso and Henry S. Opare-Addo, and Maternal deaths due to hypertensive disorders in pregnancy by Moodley, J. & Professor Emeritus among others were chosen. More literature (books, journals and articles) were then chosen according to need during the process.

Several limitations were encountered during the study. Nevertheless, the research questions measured what it was intended to. First of all, the study was the first on the chosen study participants. There was no standardized instrument for the data collection to assess knowledge and attitude. However, questionnaires were formulated based on existing literature that measured knowledge and attitude of hypertension and pilot tested. (Oliveria et al. 2005.) Sample size may also be argued as small. However, the goal of the study was to evaluate the level of knowledge and attitude and not the prevalence.

Result from the study was also not discussed in terms of overall scores. This is due to the fact that each question had significant relevant information related to the study objectives. The open ended questions allowed participants to express in depth their knowledge on hypertension. However, concepts derived could not be directly quantified. Most frequent keywords used were grouped and Microsoft Excel was used to tabulate and calculate the percentages. Factor analysis reduce large set of

variables obtained from open answer into smaller manageable sets to measure. (Polit & Beck 2006; Polit 1993.)

8 FINDINGS OF RESEARCH

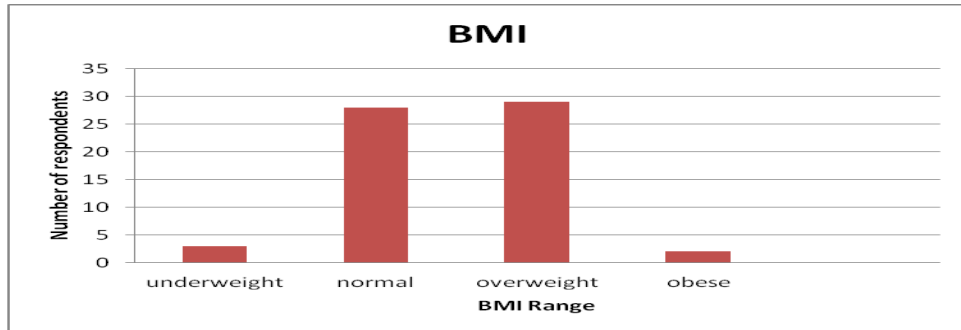
This chapter presents results of open and closed questionnaires addressed to assess the knowledge and attitudes of participants in Eastern Region of Ghana. Questionnaires were distributed and collected after a period of eight weeks. The general characteristics of participants were important to the study since its target group was women of child bearing age. In addition, other characteristics as weight, height, level of education, alcohol consumption and smoking were also needed to assist in processing the conclusions about risk groups of hypertension.

TABLE 1. Characteristic of study participants.

Characteristics	n(100)	%
Age(SD)		
Mean	27,88	
Median	26,00	
Minimum	19	
Maximum	50	
Education		
No Education	3	3
Primary School	1	1
Junior Secondary	5	5
Senior Secondary	15	15
Tertiary (Vocational School, College, Polytechnic, University)	75	75
Smoking		
Yes	5	5
No	94	94
Used to	1	1
Alcohol consumption		
Yes	58	58
No	38	38
Used to	4	4

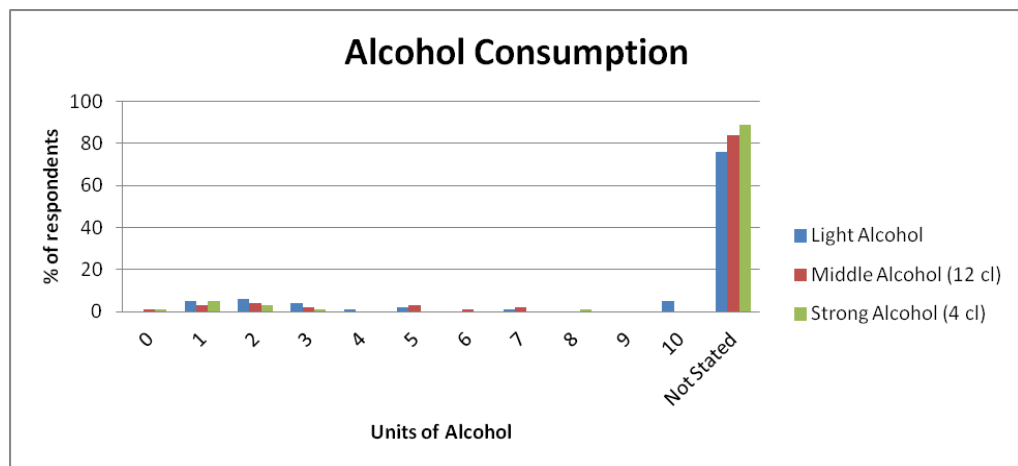
A sample size of 100 participants was targeted for this research. 100 questionnaires were distributed and all were completed on return. Thus the return rate was 100% (n=100) with the median age of 26, the minimum age of 19 and maximum of 50 years. This recorded a standard deviation of 7,081 as shown in table 1. Data collection also presented that most participants were educated. Most of the participants (75%) had

tertiary level of education. About 15% of them had reached the senior secondary level and 3% had no education. The table further illustrates that most of the participants (93%) were non smokers, 1% used to smoke and 5%smoked.



GRAPH 1. Participant’s BMI.

The Graph recorded presented a total response from 62 participants. Participant’s weight and height were collected. Figures were than calculated using the BMI formula and categorized. About 29 were overweight and 28 had a normal weight in this study. The graph also shows that three of the participants were underweight and two were obese.



GRAPH 2. Alcohol consumption.

A total of 58% were alcohol consumers according to TABLE 1. According to the Graph above, light alcohol as beer was mostly consumed by participants. The graph

further illustrates that the highest unit recorded per week was 10 units by 5 participants. Most participants consumed light alcohol (beer) and middle alcohol (wine). However, most participants did not state the units consumed as the question demanded.

8.1 Level of knowledge on HBP

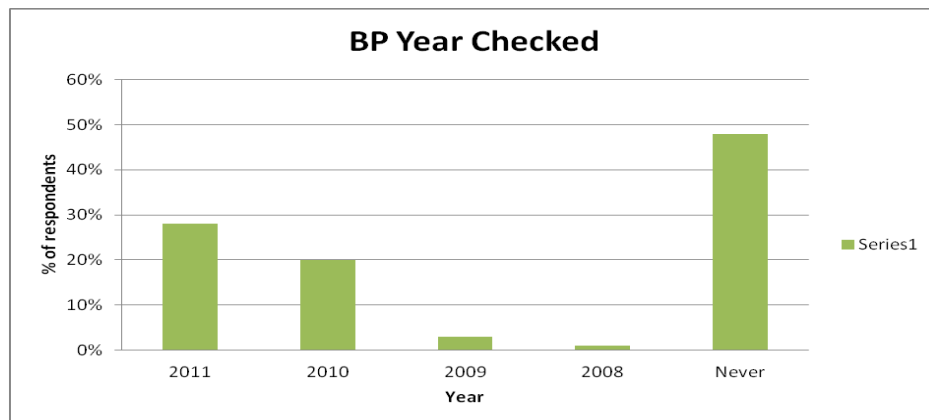
TABLE 2. Definition and Source of information.

Question	Options	n=100	Percent (%)
What does the term high blood pressure mean?	High level of stress, tension or over thinking.	82	82
	Rapid pulse or rising blood looking for a way out.	9	9
	Force of blood pushing against blood vessel walls.	2	2
	I don't know	7	7
What should normal high blood pressure be?	Less than or equals 120 / 80	50	50
	Greater than 120 / 80 but Less than or equals 139 / 89	38	38
	Greater than 139 / 89 but Less than or equals 160 / 100	2	2
	I Don't Know	11	11
What do you think are the symptoms of high blood pressure?	Headache, Dizziness, General tiredness	88	88
	Tense feeling in the chest(Cannot breathe)	6	6
	There are no symptoms	0	0
	I Don't Know	3	3
	Other	3	3

The table above represents summary of responses on the level of knowledge of participants on the question “What does the term high blood pressure mean?” 82% of participants answered that high blood pressure was high level of stress, tension or over thinking. Specifically, only 2% knew it was force of blood pushing against blood vessel walls.

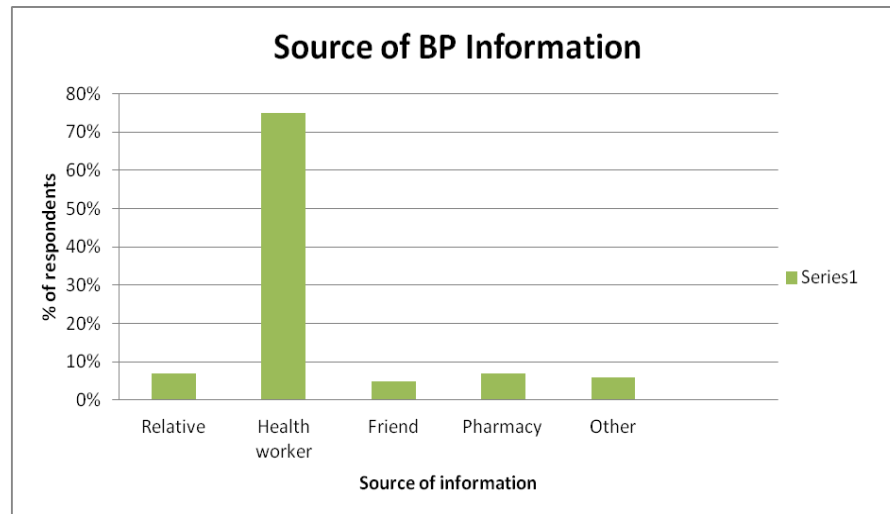
The table shows that most participants (88%) had the knowledge that headache, dizziness and general tiredness were the symptoms of high blood pressure. About 6% also knew that common symptoms of high blood pressure were tense feeling in the chest resulting to breathlessness. About 3% did not know the symptoms of high blood pressure and 3% also thought symptoms was not among the options. However, none of the participants agreed that high blood pressure is symptomless. Most of the participants (75%) obtained their information from health workers (Doctor, Nurse, and Midwife). Few (7%) received their information from the pharmacy and about 12% from relatives and friends.

However, half (50%) of the participants had a good knowledge on normal high blood pressure measurements. More than a quarter of the participants (38%) answered that normal high blood pressure should be greater than 120/80 but less than or equals 139/89. A few (2%) answered that normal measurement should be greater than 139/89 but less than or equals 160/100. More than one tenth (11%) of participants had no knowledge of normal blood pressure measurement.



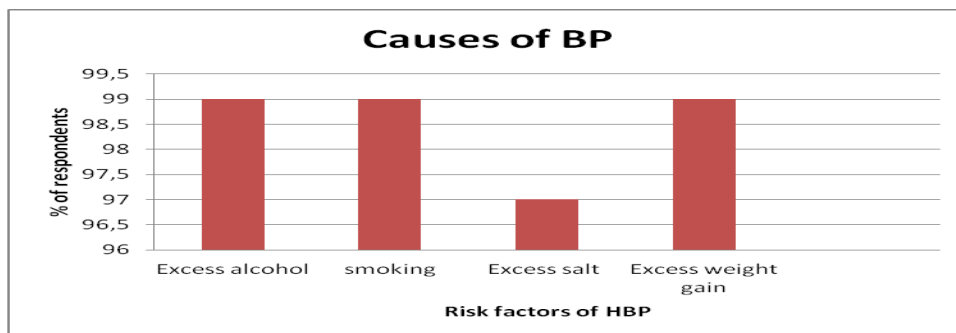
GRAPH 3a. BP Year Checked.

Graph 3a illustrates that altogether, 48% of participants have had their blood pressure checked within the last two years at the hospital. Almost half of participants (48%) have never checked their blood pressure.



GRAPH 3b. Source of BP Information

Most of the participants (75%) according to Graph 3a have had their information of high blood pressure from health care workers. A few (7%) also obtained information from pharmacy and relatives.



GRAPH 4. Causes of HBP.

The graph above indicates that 99% of participants agreed that excess gain of weight can cause high blood pressure. The same percentage (99%) agreed that excess intake of alcohol and smoking can cause high blood pressure. However, a total of 97% agreed that excessive salt intake can cause high blood pressure.

TABLE 3a. Effect of HBP on health.

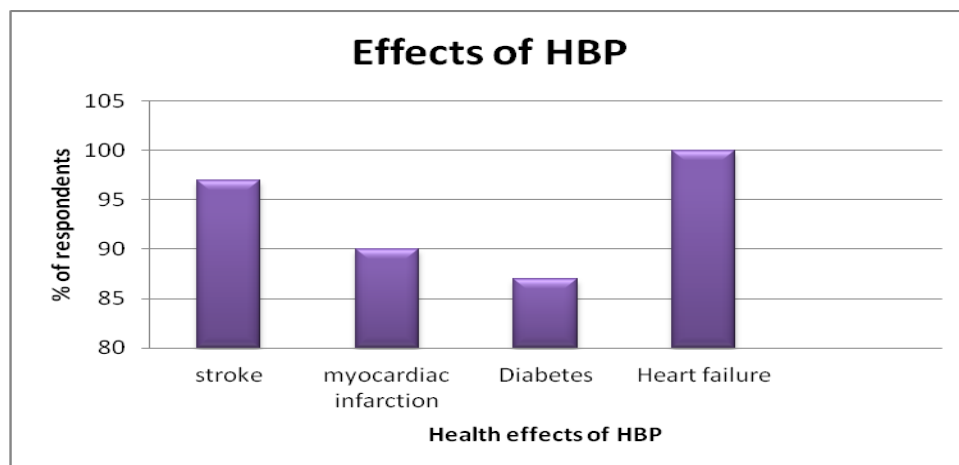
Question	Options	Percentage%
How dangerous do you think high blood pressure is to your health?	Extremely Dangerous Somewhat Dangerous Not at all Dangerous I Don't Know	66 24 1 9

As shown in Table 3, most of the participants considered high blood pressure as extremely dangerous to their health (66%). Out of a hundred, 24% thought that high blood pressure is somewhat dangerous to their health. Only one person thought that it was not dangerous at all and 9% had no idea the dangers of high blood pressure to their health.

TABLE 3b. Open data on effect.

Category	Ethnography(statements)	n=90
Cardiovascular diseases	it causes heart problems	55
Death	it can lead to your death when not treated	15
Multiple organ damage	Cause destruction of the major organs in the body, such as the heart, brain, kidneys and the lungs.	8
Low birth weight	High blood pressure can harm the mother's kidneys and other organs, and it can cause low birth weight and early delivery.	2
Nothing		10

A total of 90 participants answered that HBP can somewhat be dangerous as well as extremely dangerous to their health. Out of the total, 55 knew that high blood pressure can cause cardiovascular diseases. 15 of the participants answered that high blood pressure can result to death.



GRAPH 5. Effect of HBP

The graph above illustrates that 97% of participants knew that HBP can lead to stroke. All the participants knew that high blood pressure result to heart failure. Nearly 87% also had the knowledge that HBP can cause diabetes. Almost 90% knew that myocardial infarction was as result to HBP.

TABLE 4. Prevention of HBP.

Question	Answer	n=100
High blood pressure can be prevented.	Yes	90
	No	-
	I don't know	10

The table above illustrates that 90% of participants had the knowledge that high blood pressure can be prevented. One tenth, however, did not know that high blood pressure can be prevented.

TABLE 5. Open data of prevention of HBP

Category	Ethnography(statements)	n=90
Regular exercise	by doing moderate exercise	40
Smoking	giving up smoking completely	15
Reduction of stress	by not thinking too much	5
Reduction of alcohol intake	If you drink alcohol, limit how much you drink to not more than two drinks a day.	15
Reduction of salt intake	avoid too much of salt intake	8
Reduction of caffeine	by reducing your caffeine intake e.g. coffee, tea, coke, etc	2
Drugs	Going to the hospital for medications.	5

This table explains participants (90) suggestions on HBP prevention.

8.2 Attitude towards prevention

TABLE 6a. Preventive attitude.

Question	Options	Percent
Is healthy lifestyle important to you in order to prevent illness?	Yes	99
	No	1
Do you think that high blood pressure is preventable?	Yes	87
	No	13
Can change of lifestyle help to prevent hypertension?	Yes	97
	No	3

Healthy lifestyle is important to almost all participants (99%). However, only 87% considered that high blood pressure is preventable. Most participants (97%) believed that change of lifestyle could help prevent hypertension. Only a few (3%) believed that lifestyle can prevent hypertension.

TABLE 6b. Open Data of Preventive attitude.

Category	Ethnography(statements)	n=3
Hereditary	Because it can be hereditary problem from parents and family.	3

Table 6b describes reasons that support participant's (3) believe that high blood pressure cannot be prevented by lifestyle changes.

TABLE 7. Suggestive preventable measures of HBP.

Category	Ethnography(statements)	n=87
Exercise	Through exercise	15
Nutrition	by avoiding fatty foods	8
Smoking	giving up smoking completely	5
stress	by not thinking too much	18
Alcohol intake	Avoiding alcoholic drinks	12
Excess salt	avoid food that contain too much of salt	15
Body weight	Maintaining a healthy weight	12

Table 7 describes participants (87) suggestive preventive measures of HBP. Data was collected as open questions and categorized. The table further illustrates participants own statement or suggestions. According to Table 7, most participants (18) suggested that avoiding stress could prevent HBP. However, a few (8) suggested that balanced diet can contribute to the prevention of HBP.

TABLE 8. Concern of health.

Question	Option	n=100
How do you react when you suspect / assume you have high blood pressure?	Rest	1
	Go to Hospital	100
	Do Nothing	1
	Other	1
Should a Doctor or a Nurse tell you that you have high blood pressure, how serious will personal health be of concern to you?	Very Serious	81
	Somewhat Serious	19
	Not at all	0

Generally, most participants had great concern for their health. Almost all (100%) would go to the hospital when they assume that they have HBP. None of the participants will be less concern if diagnosed with HBP. However, almost 2% of participants answered that they will be somewhat serious after HBP diagnoses.

9 DISCUSSIONS

9.1 Knowledge

9.1.1 Definition of hypertension

Only 2% of participants indicated that high blood pressure was force of blood pushing against blood vessel walls as shown in TABLE 2. Most of the respondents (82%) had the knowledge that high blood pressure was high level of stress; tension or over thinking. Even though half proportion of participants could identify normal blood pressure readings. 38% answered that pre-hypertensive reading (greater than 120/80 but less than or equals 139/89) as normal readings. In addition, 11% had no knowledge at all about the readings although it is low. These findings closely confirmed a study by Aubert et al. (1998) in which only 14% answered correct values for normal blood pressure. A high percentage of participants (Table 2) showed low level of knowledge on the symptoms of hypertension. Generally, the initial onset of hypertension is asymptotic (Cunha 2011). For instance, symptoms of markedly elevated hypertension as headache, dizziness and general tiredness were reported as symptoms of hypertension.

This study showed that participants have limited knowledge regarding the etiology of hypertension. Despite global reports that suggest that hypertension is a silent killer, this study presents a high proportion of the level of knowledge on symptoms. This can mislead participants into reluctantly waiting for such symptoms. Early screening of hypertension may be ignored thus resulting to already elevated high blood pressure. The population should be educated that detection of hypertension is only by screening.

9.1.2 Causes of high blood pressure

On the average, the most identified causes of hypertension was mentioned in participants own words. Opportunity given to participants to choose underlying causes from a list showed high level of knowledge on the possible causes of high blood pressure. According to Graph 5, most participants (99%) had the knowledge that excess alcohol, smoking and excess weight gain can cause high blood pressure. However, the percentage reduced by 8% on excessive salt intake as a causative factor. Even though the difference is not significant, emphasis should be made on the effect reduction of salt intake has on preventing high blood pressure which may intend prevent other cardiovascular diseases. Many studies conducted over the years have demonstrated that high salt intake is directly associated with high blood pressure (Karppanen & Mervalva. 2006).

A research conducted by Balogun et al. (2006) revealed that popular Nigerian, Ghanaian, and Caribbean meals had high levels of salt (8.6-12g per portion). Rice and beans, popularly known as waakye and jollof rice were amongst the list of food mentioned. Findings further revealed that high levels of salt were food both in meals from restaurants and homemade meals. This is due to the fact that most seasonings as cubes used for preparing meals at home had about 5.4g of salt per cube.

9.1.3 Effects

According to Table 3a, 24% considered high blood pressure as somewhat dangerous to their health. Almost a tenth (9%) had no knowledge on the dangers of high blood pressure to their health. This raises cause for concern as research has proved high blood pressure to be a leading risk of most cardiovascular diseases. These cardiovascular diseases result to death as it accounted for about 7.6million deaths globally in 2001 (Lawes et al. 2001). Awareness of the dangers of high blood pressure disease must thus be created by health professionals. This will in effect

improve the general lifestyle of the population as most participants had great health concern.

More than half of participants (86%) had the knowledge that high blood pressure could result to diabetes. This showed that participants had low level of knowledge on the effect of high blood pressure even though other cardiovascular diseases were mentioned. According to studies the common contributing factor of diabetes and high blood pressure is obesity. This is due to the fact that hardened arteries as a result to high blood pressure can prevent the absorption of insulin either produced naturally or injected. Obesity is also a causative factor of HBP as it store excess body fat. It results to reduce blood flow to most organs and this as well result to cardiovascular diseases as stroke. (WHO 2011.)

9.2 Attitudes

Results suggested that most participants had a positive attitude towards preventive measures of illnesses in general as well as HBP (TABLE 5a). Suggestive attitude towards prevention mentioned were mainly reduction of stress, salt, alcohol and maintaining body weight through exercise, nutrition and smoking. However, according to TABLE 6, a few participants suggested that healthy diet and avoidance of smoking can prevent HBP. WHO report in 2009 suggested that early intervention can avoid high occurrences of related diseases of tobacco or smoking. Among suggestions obtained was the enactment of policies on tobacco control or prevention of smoking among the public.

In addition to that, even though all participants would go to hospital when assumed they had HBP, about 2% of participants will be somewhat serious after diagnoses. However, HBP account for 13% of mortality risks globally. (WHO 2009.) In addition, nurses need to educate the public on the effect of high blood pressure disease on other organs of the body as eyes, kidney and so on. In addition to this education, awareness of HBP disease as a silent killer should be created by health

professionals. This is due to the fact that control of high blood pressure is dependent on involving the individual in a management plan. This may include firstly, lifestyle changes (healthy weight, physical activity, healthy diet, and avoiding heavy alcohol use) as well as close monitoring after diagnoses. This is very important in the control of HBP. Professor Pobee, also known as ``Father of Hypertension Prevention`` in an interview in 2007 answered to the question; what action is needed to address hypertension in Ghana and who needs to act?

“As to who needs to act, everybody must be on board. There should be a joint action. We must all preach to ourselves. I always say physicians are only advisors. Patients must be the owners of their health. They should take interest in their own health”. (ProCor 2009.)

10 RECOMMENDATIONS

A number of conclusions have been discussed in the previous chapter based on the findings of the research,. The research process has increased the author's knowledge about tools available for nurses to promote health. Reasons for increased prevalence of hypertension have also been confirmed. However, a general assessment of knowledge and attitude was not reached due to design of the research. It is thus recommended for further studies on the subject with an in-depth instrument for data collection and analysis. Nevertheless, specific recommendations retrieved from data collections associated with participant's knowledge and attitude on HBP may include.

Firstly, health care professional (nurses, physicians, midwives, public health nurses, community nurses and so on) are known to be the leading source of information. This is positive as information retrieved can be considered as reliable. Health care workers must utilize this opportunity to the fullest. Educating the public on primary prevention of HBP must be a priority. Awareness of possible lifestyle changes can be proposed. This can intend empower the individual as care takers of their own health.

Readings from blood pressure measurements should also be explained. This will assist in improving the general knowledge of normal blood pressure readings. It will also create awareness as differences between measurements can be accessed independently.

A nationwide health promotion campaign on the reduction of salt intake should be prioritized. This is a cost effective public health approach that has a long term effect on the general health of the population as a whole. Educating of the population especially women will have a great impact on the health of the family, society and nation. This is due to the fact, Ghanaian culture basically consider the woman as the leading role of the kitchen.

Finally, understanding the etiology of HBP is as well important. The public's view of "tension" as one of the main causes of HBP must also be addressed by health care workers. Knowledge that risk lifestyle behaviors (excess alcohol, excess salt intake, sedentary lifestyle, smoking, unhealthy nutrition) are the main cause of HBP even though there are other hereditary factors. Lifestyle modification education must thus be one of the main focuses of education.

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APPENDIX 1

Map of Ghana



(Modern Ghana, 2001-2009.)

APPENDIX 2

Literature

Title of the research and author(s)	Type and Research methods	Target group	Main Results
<p>Prevalence, Detection, Management, and Control of Hypertension in Ashanti, West Africa. By Francesco P. Cappuccio, Frank B. Micah, Lynsey Emmett, Sally M. Kerry, Samson Antwi, Ruby Martin-Peprah, Richard O. Phillips, Jacob Plange-Rhule and John B. Journal of American Heart Association</p> <p>Epidemic of hypertension in Ghana by Bosu William, 2010.</p>	<p>Community based study.</p> <p>systematic review</p>	<p>Detailed questionnaire. 1013 participants</p> <p>literature review</p>	<p>Prevalence was higher in women than in men and there was an urgent need for preventive strategies on hypertension control in Ghana.</p> <p>Hypertension was a public health problem in Ghana. However effective controls of hypertension are low. Thus health promotion and healthier lifestyles are the measures to help prevent and control hypertension.</p>
<p>The changing patterns of hypertension in Ghana: a study of four rural communities in the Ga district. By Addo J., Amoah AG, Koram KA. 2006.</p>	<p>cross sectional study</p>	<p>362 adults from 18years</p>	<p>Hypertension is a public problem and can be addressed through lifestyle intervention and creating awareness</p>
<p>Prevalence factors associated with hypertension in Runkugiri District- Uganda by Wamala JF, Karjabakabo Z., Ndungutse D., Guwatude D. 2006.</p>	<p>Community based cross sectional study design</p>	<p>Questionnaire 842 participants, 20 years and older</p>	<p>Prevalence of hypertension in rural Ugandan district was relatively high.</p>

APPENDIX 3

Research License


KESKI-POHJANMAAN AMMATTIKORKEAKOULU
 MELLERSTA ÖSTERBOTTENS YRKESHÖGSKOLA
 Central Ostrobothnia University of Applied Sciences

APPLICATION FOR RESEARCH LICENSE

Application is directed to (Name of organisation)
 REGIONAL HEALTH DIRECTOR OF HEALTH

Person responsible in the organisation KWAADZO ADOBLANYI (MR)

Applicant(s) KOFI JANET OYEDI

Address CENTRAL OSTROBOTHNIA UNIVERSITY OF APPLIED SCIENCES, UNIT OF
 HEALTH, WELLFARE AND CULTURE, TERVEYSTIE 1, 67200 KOKKOLA

E- mail Janet.kofi@cou.fi

Name of the research PREVENTION AND MANAGEMENT OF HYPERTENSION
 (KNOWLEDGE AND ATTITUDES OF WOMEN OF CHILD-
 BEARING AGE)

Purpose of the research: TO ACQUIRE KNOWLEDGE AND ATTITUDES OF PARTICIPANTS
 TOWARDS PREVENTION OF HYPERTENSION. CONTRIBUTE TO THE IMPROVEMENT OF
 HEALTH CARE IN GHANA BY REDUCTION OF HIGH PREVALENCE OF HYPERTENSION.

Target group of the research WOMEN OF CHILD-BEARING AGE

Estimated period of time for collection of data 2 MONTHS

Research method QUANTITATIVE

Research plan accepted 13 / 05 2011

Supervisor of the research PIA HAGQVIST / ANITA HOLLANTI

License admitted
place KOFORIDUA **time** 10.00am 05/08/2011

according to the application
 amendments
 refused

License admitted by (signature) 

ATTACHMENTS
 Research plan
 Inquiry/Interview form
 Other attachments QUESTIONNAIRE



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APPENDIX 4**Letter of Consent**

Dear participant,

I am a nursing student of Central Ostrobothnia University of Applied Science, Kokkola, Finland. In doing my Bachelors Degree Thesis, I am collecting information on the knowledge and attitudes of child bearing age women on the preventive measures of high blood pressure.

Your participation is likely to assist in assessing better approaches towards the prevention of hypertension. As well as enhance your contribution to reducing mortality as a result of high blood pressure which is currently one of the burdens of the Ghana's health service.

There are no risks in answering these questions. All information from this questionnaire is confidential and participation in answering questions for this survey is voluntary. It will take between 20-30 minutes to complete. Answered papers should kindly be dropped in the box to ensure that the information collected is accurate and kept confidential.

If you need any further information please feel free to contact by e-mail: janet.kofi@cou.fi.




Thank You.

KOFI JANET OYEDI

APPENDIX 5

PREVENTION AND MANAGEMENT OF HYPERTENSION: A Study on knowledge and attitudes of women of childbearing age

Research Questionnaire

GENERAL CHARACTERISTICS OF THE STUDY GROUP	
AGE	years
WEIGHT	kg
HEIGHT	cm
EDUCATION	1. No education [] 2. Primary school [] 3. Junior secondary [] 4. Senior secondary [] 5. Tertiary (vocational school, college, polytechnic, university) []
SMOKING	Yes [] No [] Used to []
ALCOHOL CONSUMPTION	Do you drink alcohol? If Yes [] No [] Used to []
 =1 UNIT	How many units of light alcohol beverages (beer, long-drinks, or equivalent) do you drink per week?
 =1 UNIT	How many 12 cl (units) of middle alcohol beverages (wine, vermouth, sherry or equivalent) do you drink per week?
 = 1 UNIT	How many 4 cl (units) of strong alcohol beverages (vodka, whisky, cognac or equivalent) do you drink per week?

QUESTIONS ON KNOWLEDGE			
What does the term high blood pressure mean?			
1. High level of stress, tension or over thinking			[]
2. Rapid pulse or rising blood looking for a way out.			[]
3. Force of blood pushing against blood vessel walls.			[]
4. I Don't know			[]
Where did you get your information of high blood pressure?			
1. Relative			[]
2. health worker(Doctor,nurse,midwife)			[]
3. Friend			[]
4. Pharmacy			[]
5. Any other (please mention)			
When was the last time your blood pressure was checked?			
1. When (state date or month-year or just year)			
2. State where			
3. Don't remember			[]
4. Never			[]
What should normal high blood pressure be?			
1. Less than or equals 120/80			[]
2. Less than or equals 139/89			[]
3. Less than or equals 160/100			[]
4. I Don't know			[]
How dangerous do you think high blood pressure is to your health?			
1. Extremely			[]
2. Somewhat			[]
3. Not at all			[]
4. I Don't know			[]
If you replied EXTREMELY/SOMEWHAT to the previous question, please explain HOW?			
What do you think are the symptoms of high blood pressure?			
1. Headache, dizziness, general tiredness			[]
2. Tense feeling in the chest (cannot breathe)			[]
3. There are no symptoms			[]
4. I Don't know			[]
5. Any other (please mention):			
Do you think the following factors can cause high blood pressure?			
1. Excess gain of weight	Yes []	No []	
2. Excessive alcohol consumption	Yes []	No []	
3. Smoking	Yes []	No []	
4. Excessive salt intake	Yes []	No []	
Do you know if high blood pressure disease can cause:			
1. Stroke	Yes []	No []	
2. Heart failure	Yes []	No []	
3. Diabetes	Yes []	No []	
4. Heart attach	Yes []	No []	

A question on Knowledge continues on next page...

Can you prevent high blood pressure through lifestyle changes?	
Yes [] State _____ HOW: _____ _____ _____ _____ _____	No [] State _____ WHY: _____ _____ _____ _____ _____

QUESTIONS ON ATTITUDE	
Is healthy lifestyle important to you to prevent illnesses?	
Yes [] State _____ HOW: _____ _____ _____ _____	No [] State _____ WHY: _____ _____ _____ _____ _____
Do you think that high blood pressure is preventable?	
Yes [] State _____ HOW: _____ _____ _____ _____	No [] State _____ WHY: _____ _____ _____ _____
Can change of lifestyle help to prevent high blood pressure?	
Yes [] State _____ HOW: _____ _____ _____ _____ _____	No [] State _____ WHY: _____ _____ _____ _____ _____
Would you change your lifestyle if needed to prevent hypertension?	
Yes [] State _____ HOW: _____ _____ _____ _____	No [] State _____ WHY: _____ _____ _____ _____ _____

QUESTIONS ON ATTITUDE

How would you react when you assume you have high blood pressure?

- | | |
|-------------------------------|-----|
| 1. Rest | [] |
| 2. Go to hospital | [] |
| 3. Do nothing | [] |
| 4. Any other (please mention) | [] |

If ever told by a doctor or nurse you have high blood pressure; how serious of a personal health concern will it be to you?

- | | |
|-------------------------------|-----|
| 1. Very serious concern | [] |
| 2. Somewhat serious concern | [] |
| 3. Not at all serious concern | [] |