

**SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA**



UNIVERSITY OF GHANA

**PREVALENCE OF RISK FACTORS OF HYPERTENSION AMONG MEDIA
WORKERS IN SELECTED MEDIA HOUSES IN GREATER ACCRA REGION,
GHANA**

BY

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**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN
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CONTROL DEGREE**

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DECLARATION

I, Abigail Brago Ofosuhene, hereby declare that this research work is the result of my independent work done under supervision, except for other peoples' work which I have duly acknowledged. I further declare that it does not contain any materials which have been accepted for award of any degree in this institution and other universities elsewhere.

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DEDICATION

This work is dedicated to my husband, Mr. Derrick Ofosuhene and my daughters, Ronli and Kayla Ofosuhene for their love, support and encouragement throughout this journey.

To my father in-law Mr. Kwabena Adjei Ofosuhene for his financial support. This is for you daddy!

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LIST OF ABBREVIATIONS

BMI	-	Body Mass Index
BP	-	Blood pressure
CVD	-	Cardiovascular diseases
DALY	-	Disability Adjusted Life Years
DM	-	Diabetes Mellitus
DPB	-	Diastolic blood pressure
GBC	-	Ghana Broadcasting Corporation
GH	-	Ghana
GHS	-	Ghana Health Service
HTN	-	Hypertension
Mmol/l	-	Millimole per liter
NCDs	-	Non-communicable diseases
PA	-	Physical Activity
SBP	-	Systolic blood pressure
WHF	-	World Heart Federation
WHO	-	World Health Organization
WHR	-	Waist to Hip Ratio
USDA	-	United State Department of Agriculture
ESRD	-	End Stage Renal Disease

ABSTRACT

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Background: World Health Organization (WHO) define hypertension as a systolic blood pressure (BP) equal or above 140mmHg and/or diastolic BP equal to or above 90mmHg. Hypertension is a dominant risk factor of cardiovascular diseases and accounts for 7.1 million deaths globally (WHO, 2009). An estimated 1.1 billion people have raised blood pressure globally. In Ghana, hypertension was the 4th cause of Outpatient Mortality in 20016. It is a major risk factor for many non-communicable diseases. The study aims at assessing the risk factors of hypertension among media workers.

Method: This was a cross-sectional study that used multistage sampling procedure to select media workers in Greater Accra Region. Data collection was carried out during the month of May and June 2019. A self- administered questionnaire was used and data on demographic characteristics and modifiable risk factors collected. Blood pressure and other anthropometric measurements were also done. Venous blood sample (5ml) was also obtained from respondents for estimation of fasting blood sugar and fasting lipids.

Demographics, lifestyle and anthropometric factors associated with high blood pressure were determined using Persons's Chi-square test and logistic regression were used to calculate odds ratio and results with $P < 0.05$ were considered statistically significant.

Results: A total of 344 respondents participated in the study. Prevalence of hypertension was 7.8%. Mean age of respondents was 38 years (range: 22-60). Alcohol use was 45.3%, moderate physical activity 76%, 43.3% for overweigh and 18% for obesity. Average body

mass index was recorded as 26.9kg/m^2 (SD ± 6.33), fasting blood sugar 5.1mmol/l (SD ± 0.95) and triglycerides 0.88mmol/l (SD ± 0.36). Most of respondents (89.5%) experience moderate stress whilst 8.4% experience high level of stress. Vigorous intensity physical activity had reduced odds of hypertension whilst alcohol had an increased risk of hypertension

Conclusion: Prevalence of hypertension was low. Risk factors such as weight, obesity, alcohol use and inadequate physical activity were fairly high among respondents. Regular screening of blood pressure, healthy eating and regular physical activity should be encouraged.

Key words: Hypertension, systolic blood pressure, diastolic blood pressure

CHAPTER ONE

INTRODUCTION

1.1 Background

World Health Organization (WHO) defined hypertension as a systolic blood pressure (BP) equal or above 140mmHg and/or diastolic BP equal to or above 90mmHg. Hypertension is a dominant risk factor of cardiovascular disease and accounts for 7.1 million deaths globally. Deaths from hypertension are estimated to be 7.5 million deaths, of which 12.8% are of total annual deaths. Raised blood pressure is a major risk factor for coronary heart disease and ischemic as well as hemorrhagic stroke (WHO, 2011). Adults aged 18 years and over had a raised blood pressure global prevalence of 24.1% in men and 20.1% in women in 2015 (WHO, 2017).

The prevalence of raised blood pressure is highest in the African Region, about 46% for both sexes combined (WHO, 2011). In Africa, about 80 million of adult population has hypertension. Estimated prevalence of hypertension in Nigeria was 19.3% , 21.4% in Kenya, 23.7% in Tanzania and 38.0% in Namibia (Hendriks et al., 2012). The prevalence rates reported were also similar to rates seen in other low- and middle-income countries, with rates in adults of 29% in rural, and 27% in urban Ghana, (Bansal et al., 2012). The prevalence of hypertension in urban Accra by Dual et. al., in 2013 was, 28.3% and 28.7% in Kumasi.

Hypertension is the 4th cause of Outpatient department (OPD) Morbidity in 2016 (Ghana Health Service, 2017). It has both physical and economic effects due to cost of treatment and the various complications such as stroke, ischemic heart diseases and disabilities

leading to loss of productivity.

Prevalence of hypertension in a study in Volta Region of Ghana found a high adult prevalence of 61.7% in both urban and rural setting (Atinyi et al., 2017).

Major risk factors for hypertension include modifiable risk factors such as tobacco use, excessive alcohol use, physical inactivity, high salt intake, low vegetable and fruit intake, stress and obesity (World Health Organisation, 2010) . Age and genetic predisposition are associated with irreversible risk factors for hypertension. A study at Valley View Hospital in Accra among obese women attending the hospital found age, obesity and family history of hypertension to be associated with prevalence of hypertension (Sangam et al., 2015). Adverse lifestyle behaviors such as high dietary salt intake and low levels of physical activity which tend to occur with a country's increasing economic development are also associated with higher blood pressure levels at the population level (Hussain et al., 2016). These changes can be achieved with only lifestyle modification or with simultaneous use of antihypertensive medications.

The study sought to determine the prevalence of risk factors of hypertension among media workers in Greater Accra Region. Furthermore, it sought to identify possible risk factors for HTN and stress levels among adults in the media industry.

One of the major challenges to effective control hypertension is that most people are unaware of their hypertension status. About 37% of adults in Indonesia who are hypertensive do not know their hypertensive status (Hussain et al., 2016). The goal of the Ghana non-communicable diseases program is to ensure that the burden of non-communicable diseases is reduce to the lowest possible level to render it of little public health importance. To achieve this aim, it is important to identify risk factors of

hypertension in at risk populations to reduce the incidence of hypertension, morbidity and mortality associated with hypertension and to improve the overall quality of life among the population. The study will also provide essential information for evaluation and implementation of appropriate health programs for media workers that can reduce the incidence of hypertension.

1.2 Problem Statement

Hypertension is a dominant risk factor of cardiovascular diseases and affects both developed and developing countries. An estimated 1.1 billion people globally are living with hypertension. It is a major public health problem due to its physical and economic burden due to cost of treatment and the various complications such as stroke, ischemic heart diseases and disabilities leading to loss of productivity (WHO, 2011).

In sub-Saharan Africa, HTN affects about 80 million of adult population. Hypertension is preventable with some modifiable risk factors, however, the number of undiagnosed hypertension is high in the adult population (Tarkang et al., 2017). Greater Accra has an urban hypertensive prevalence of 28.3% and high among formal workers than informal workers.

A study in Peshawar by Fawad et al (2010) among journalist in Pakistan, found a prevalence of 34% of journalist living with high blood pressure. Media work entails some form of inactivity and stress due to prolong sitting time and the demand to meet deadlines for publication. These are some of the risk factors of hypertension yet not much is known on the prevalence of hypertension among media workers.

Modifiable risk factors of hypertension such as physical inactivity, obesity, diet, alcohol consumption and tobacco when managed can prevent and/or reduce the incidence and prevalence of hypertension and prevent loss of productivity due to complications that results from hypertension. Although some studies have been done on the prevalence of cardiovascular diseases among various working groups, not much has been done on the prevalence of hypertension among media workers in Ghana.

A study on prevalence of risk factors of cardiovascular diseases found hypertension prevalence of 12.5% among media in Ghana Broadcasting Corporation (GBC) (Renee et al., 2015). The study recommended a confirmation of the prevalence of hypertension using various media houses in Accra and a larger sample size to prevent bias and increase the power of the study. It is based on this recommendation that this study was conducted.

1.3 Justification

Hypertension is a major risk factor to cardiovascular conditions and some non-communicable diseases and prevalence is associated with certain job description. The prevalence of hypertension among media personnel's will help in instituting measures in media houses that will reduce the incidence and prevalence of the condition among workers in the media industry.

Data on prevalence of hypertension can be used to create awareness on hypertension, set up structures on workplace wellness that can help workers in prevention and coping with hypertension. This can lead to decrease in complication, cost of treatment and increase in productivity.

1.4 Conceptual Framework

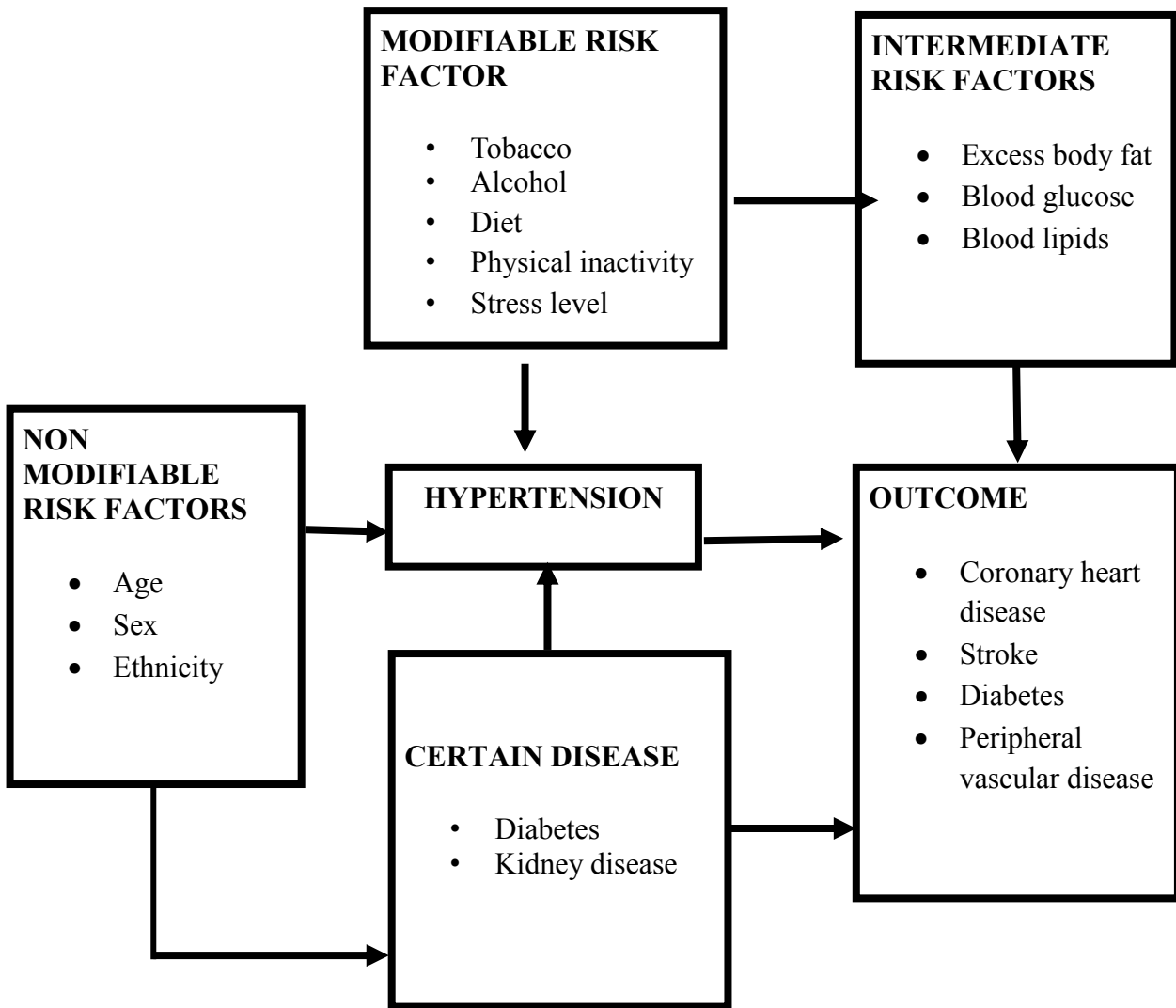


Figure 1: Conceptual framework on risk factors of hypertension

Conceptual Framework Description

1.4.1 Modifiable Behavioral Risk Factors

These are behavioral factors that can be controlled by an individual in the quest to prevent hypertension. These include the use of tobacco products such as cigarettes, harmful use of alcohol, unhealthy diets saturated with salt and salt products, low fruit/vegetable consumption and physical inactivity.

1.4.2 Biological Risk Factors

These include overweight/ obesity, raised blood pressure, raised blood glucose and abnormal lipids profile. These factors cause a change in the physiology of the body and lead to predisposing to hypertension.

1.4.3 Non Modifiable Risk Factors

These are factors that cannot be modified by an individual and very little can be done about it in the prevention of hypertension. These are age, sex and race/ethnicity. These factors make an individual more prone to hypertension than others. Studies have shown an increase in prevalence of hypertension in blacks than whites. Also, an increase in age has been associated with increasing risk of hypertension.

1.4.4 Intermediate risk factors

These include excess body fat, raised blood glucose and blood lipid profile. These factors are usually derived from behavioral risk factors as mentioned above.

1.4.5 Certain Diseases

Certain diseases conditions such as diabetes, obstructive sleep apnea and kidney diseases can be a predisposing factor to hypertension.

1.4.6 Outcome of Risk Factors

When these risk factors are not prevented or controlled, an individual can gradually develop hypertension over a period of time. Hypertension over a period of time will result in complications such as coronary heart diseases, stroke, diabetes, peripheral vascular diseases among others.

1.5 Research Questions

What is the prevalence of hypertension among media workers in Greater Accra Region?

What proportion of media workers are at risk of factors associated with hypertension?

What is the level of stress among media workers in Greater Accra Region?

1.6 General Objectives

To assess the prevalence of risk factors of hypertension among selected media workers in Greater Accra Regional.

1.6.1 Specific Objectives

1. To assess prevalence of hypertension among media workers.
2. To determine modifiable risk factors of hypertension (alcohol, tobacco, physical inactivity and overweight) among media workers.
3. To determine the level of stress among media workers.

CHAPTER TWO

LITERATURE REVIEW

Burden of hypertension

According to World Health Organization (WHO), an estimated 17.7 million people died from cardiovascular disease in 2015, which represents for 31% of all global deaths. Coronary heart diseases from these deaths were 7.4 million. Of these deaths, an estimated 7.4 million were due to coronary heart disease and 6.7 million were due to stroke (WHO, 2017).

Globally, 1.39 billion people (31.1%) of adult population had hypertension in 2010. Hypertension is higher in low-and middle-income countries (31.5%) than in high-income countries (28.5%) (Mills et al., 2016a).

Hypertension a risk factor in cardiovascular diseases and a leading cause of death globally. An estimated 1.56 billion of adult population will have raised blood pressure by the year 2025. Hypertension, the most common cardiovascular disorder affecting approximately one billion people globally, remains the leading single contributor to global burden of disease and mortality accounting for approximately 9.4 million deaths annually (Guwatudde et al., 2015).

In 2000, there were an estimated 972 million people with hypertension, 65 % of whom lived in the developing world, with the number predicted to grow to 1.5 billion by 2025. The effects of hypertension if not controlled are devastating, and may include stroke, myocardial infarction, cardiac failure, and renal failure among others

The prevalence of raised blood pressure defined as systolic and/or diastolic blood pressure $\geq 140/90$ mmHg globally in adults aged 18 years and over is estimated to cause 7.5 million deaths. In certain age groups, there is a double risk of cardiovascular disease for each incremental increase of 20/10 mmHg of blood pressure, starting as low as 115/75

mmHg (WHO, 2011). Mills et al., in 2016, found less than 46.5% of adults worldwide with hypertension in 2010, were aware of their condition, 36.9% have had treatment with anti hypertensive medication and only 13.8% had their blood pressure under control. Hypertension prevalence was found to be 22.4% in a study in adults in Nepal (Chataut et al., 2011).

There are modifiable and non-modifiable risk factors that contributes to the development of hypertension. Modifiable risk factors are mainly behavioral factors such as tobacco use, alcohol consumption, physical inactivity, unhealthy diet, overweight/obesity and abnormal blood cholesterol levels and these are usually seen in those with hypertension (WHO, 2017). Age, race/ethnicity, sex and family history are non-modifiable risk factors that contribute to the development of hypertension (Banerjee, Mukherjee, & Basu, 2016). Systolic blood pressure and diastolic blood pressure have been found to be increased with increasing age in both sex in different geographic setting and senior staff were found to have hypertension as compared to junior staff (Bosu, 2016). Hypertension increases the heart's workload to cause a thickening of vessels and muscles stiffening which results in abnormal functioning of the heart.

In sub-Saharan Africa, hypertension affects about 80 million of the adult population. Though a preventable disease with modifiable risk factors, the number of undiagnosed hypertension is high in the adult population (Tarkang et al., 2017). Hypertension prevalence is higher in low and middle income countries (31.5%) than in high income countries (28.5%) and approximately 75% of people with hypertension 1.04 billion live in low and middle income countries (Mills et al., 2016b). This accounts for 57 million disability-adjusted life years (DALYs) or 3.7% of total DALYs (Kweku et al., 2017). Tackling the rising burden of hypertension in Sub-Saharan Africa is most likely a cost-effective approach to curbing the societal and economic impact of cardiovascular disease

in the region. Such an approach would involve concerted efforts to improve early detection of hypertension, increase hypertension awareness in the community, and improve access to affordable healthcare for those with the condition (Ataklte et al., 2015). A study on global disparities of hypertension and control indicated that the proportions of awareness, treatment, and control of hypertension were much lower in low- and middle-income countries than in high-income countries (Mills et al., 2016b).

Hypertension was reported by the Ghana Health Service to be the 4th cause of Outpatient Morbidity in 2016 (Report, 2017). It is the third most commonly newly diagnosed outpatient disease among adult and a prevalence increasing rate from 19-48%. Prevalence of hypertension is projected to increase due to aging, unhealthy lifestyle, rapid changes in diets associated with industrialization, urbanization, economic development and market globalization have accelerated over the past years (Abate, 2017). A study found prevalence of hypertension to increase with increasing in age with those among the ages 40-49 (11.6%) (Kweku et al., 2017). In a community-based survey of adults in rural and semi-urban Ghana, the prevalence of hypertension was 28.7 % (Cappuccio & Miller, 2016a). The Results from surveys conducted in and around Accra suggest that the prevalence of hypertension has increased from about 25%-28% in the 1976-1998 period to about 37%-45% in 2002-2006 (Taylor et al., 2015). A study on risk factors of hypertension among security workers in University of Ghana found prevalence of 45% (Shaidah, 2016).

A study conducted on the prevalence of hypertension among four rural community residents in Ga District of Ghana was 25.4%. Of those with hypertension, only 32.3% had prior knowledge of their condition (Addo et al., 2012).

Another study in Hohoe found prevalence of hypertension among rural adults to be 37.4% (Kweku et al., 2017). Target organ damage such as heart failure, peripheral vascular disease, renal impairment, retinal hemorrhage and visual impairment are associated with

severe hypertension (Bosu, 2015).

In certain age groups, there is a double risk of cardiovascular disease for each incremental increase of 20/10 mmHg of blood pressure, starting as low as 115/75 mmHg (WHO, 2011). Aside coronary heart disease, other complications of raised blood pressure include heart failure, peripheral vascular disease, renal impairment, retinal hemorrhage and visual impairment are associated with hypertension are associated with hypertension (Bosu, 2015). Treating systolic blood pressure and diastolic blood pressure are associated with a reduction in cardiovascular complications (Dzudie et al., 2012).

The STEPS surveillance system by the WHO attributes tobacco use, alcohol consumption, low fruit, overweight and vegetable intake, physical inactivity as some of the risk factors to hypertension (Aryal et al., 2015). Prevention, detection, and control of hypertension should be regarded as a high priority.

2.1 Risk Factors of Hypertension

2.1.1 Weight

A body mass index (BMI) of 25 kg/m² and above is considered overweight whilst a BMI of 30 kg/m² above is considered obese. Excessive body fat especially at the waist is a risk factor of hypertension. Worldwide, 2.8 million people die each year as a result of being overweight and an estimated 35.8 million (2.3%) of global DALYs are caused by overweight or obesity (WHO, 2011). Overweight and obesity may lead to a predisposing to developing hypertension. Obesity is strongly related to major cardiovascular risk factors, such as hypertension, glucose intolerance, type 2 diabetes and dyslipidaemia. To attain optimal health, the average BMI for adult populations should be in the range of 21–23 kg/m², while the goal for individuals should be to maintain a BMI in the range between 18.5–24.9 kg/m² (Renee et al., 2015).

High overweight prevalence of (25.4%) and obesity (17.1%) was found among Ghanaian

adults (Ofori-asenso et al., 2016). A study by Albert Amoah and his team in urban and rural Accra in Ghana, showed that the overall prevalence of overweight and obesity was 23.4% and 14.1% respectively among adults aged 25 years and above (Nelson et al., 2015). Another study also found overweight and obesity prevalence to be 29.9 and 4.8% respectively among civil servants in Nadowli district in Ghana (Atuahene et al., 2017). A sustained weight loss of 3 to 5 percent of body weight can significantly decrease the risk of hypertension.

2.1.2 Job Stress

Individual response to stress may be a contributing factor for heart attacks. Some scientists have noted a relationship between coronary heart disease risk and stress in a person's life, along with their health behaviors and socioeconomic status. These factors may affect established risk factors. People under stress may overeat, start smoking or smoke more than they otherwise would normally do (American Heart Association, 2016). The increasing societal pressure has also been associated with stress and contributes to excessive eating for comfort. This has been linked with cortisol secretion caused by stress and this can cause a disruption of food intake regulation, increased in energy and fat accumulation (Chan & Woo, 2010).

The results of Feinstein and colleagues' study supports the hypothesis that reported that job strain (Job dissatisfaction, depression, psychosomatic symptoms) and burnout is significantly higher in jobs that combine high workload demands with low decision latitude (Taylor et al., 2015). A study found 90% of bankers in Nigeria with stress work schedules due to daily long at work and sedentary lifestyle (Bosu, 2016).

2.1.3 Smoking

Tobacco use and exposure can be in both smokeless and smoking forms. Smokeless tobacco is consumed in un-burnt forms through chewing or sniffing and contains several carcinogenic, or cancer-causing, compounds. Smokeless tobacco has been associated with oral cancer, hypertension, heart disease and other conditions. Smoking tobacco, by far the most commonly used form globally, contains over 4000 chemicals, of which fifty are known to be carcinogenic (WHO, 2011). Each year, about 6 million people die from tobacco use, both from direct tobacco use and second hand smoking. These deaths from tobacco use are expected to increase to 7.5 million by 2020 and cause of nearly 10% of cardiovascular diseases. A study in South Africa in 2009 found incidence of smoking to be related to poverty and low-socio-economic position among men in lower-middle-income countries (Belue et al., 2009). The 2008 Ghana Demographic Health Survey (GDHS) revealed that the extent of smoking among Ghanaian adults smoking in Ghana is higher among men than women. Ninety-three percent of men said they did not use tobacco at all and only 6% of men aged 15-49 years said they currently smoked cigarettes (Nelson et al., 2015).

2.1.4 Alcohol

Hazardous and harmful drinking was responsible for 2.3 million deaths worldwide in 2004. That amounts to 3.8% of all deaths in the world. More than half of these deaths occurred as a result of NCDs, including cancers, cardiovascular disease and liver cirrhosis (World Health Organisation, 2010). Moderate alcohol consumption has been studied to be associated with lower incidence of cardiovascular diseases such as coronary artery disease, stroke, heart failure, hypertension and peripheral vascular disease (Halanych et al., 2010).

High alcohol consumption (≥ 210 g ethanol per week or 3 drinks per day) independently increased risk of hypertension in black and white North Americans. However, low to

moderate consumption (<210 g per week) increased the risk of hypertension in black males, while being protective against hypertension in black females and whites. It was also observed that the effect of alcohol on blood pressure depended on the individual's current intake (Abban, 2013). A study on factors associated with hypertension reported alcohol intake by respondents to be 7.6% (Sarfo et al., 2018). Risk of hypertension was found to be higher among respondents with history of current alcohol consumption in a study by Wang et al (2011).

2.1.5 Physical Inactivity

WHO defines physical activity as any bodily movement produced by skeletal muscles that requires energy expenditure including activities undertaken while working, playing, carrying out household chores, travelling, and engaging in recreational pursuits (Loke, 2018). Regular, moderate to vigorous physical activity helps reduce the risk of cardiovascular disease. Physical activity can help control blood cholesterol, diabetes and obesity and also help to lower blood pressure in (American Heart Association, 2016). It is recommended for adults 18-64 years to do at least 150 minutes of moderate-intensity physical activity throughout the week, or do at least 75 minutes of vigorous-intensity physical activity throughout the week, or an equivalent combination of moderate- and vigorous-intensity activity. Increase in moderate-intensity physical activity to 300 minutes per week, or equivalent and muscle-strengthening activities on two or more days a week has additional health benefits (Loke, 2018). Lifestyle devoid of physical activity is a risk factor for hypertension and coronary heart disease and other cardiovascular diseases (American Heart Association, 2016). The prevalence of the significant risk factors in study among patients in a hospital found physical inactivity (54.3%) as a risk factor to hypertension and that the less active, less fit persons have a greater risk of developing high blood pressure (Nelson et al., 2015).

Sodium consumption

Salt is an essential electrolyte to life in human beings and is used universally in cooking, seasoning and preserving manufactured foods around the world. Salt can also be found in meat, vegetables and fruits though in small quantities. Sodium serves as an important nutrient in the body and help nerves and muscle to function correctly. It is also involved in the auto-regulation of the water and fluid balance of the body. High dietary salt intake presents a major challenge to the kidneys to excrete large amounts of salt and predisposition to high blood pressure. Salt consumption in most households far exceeds the average daily recommendations of the American Heart Association (1.5 g/day) and World Health Organization (2 g/day) (Frame & Wainford, 2018).

Local delicacies such as salted fish (momone and koobi), salted pig feet and “maagi” seasonings have high concentrations of salts. The effect of salt on hypertension was evident in a population bases study that found significant and positive relationship between the level of salt intake on both systolic and diastolic blood pressure (Addo, Agyemang, et al., 2012). There is good evidence that a reduction in salt intake reduces blood pressure, and that black people are more sensitive than white people to the beneficial effect of reducing salt intake (Cappuccio & Miller, 2016b). Results of randomized controlled trials have consistently shown reducing sodium intake reduces average blood pressure (Zhang et al., 2013).

Potassium

Potassium is an essential nutrient found abundantly in intracellular fluids where it is responsible for maintaining cell function such as muscles and nerves. Dietary potassium sources can be found in banana, oranges, mushrooms, cucumbers and other fruit and vegetables with potassium being the highest source of potassium (Bolton et al., 2019).

The US Department of Agriculture (USDA) recommends potassium intake of $\geq 4,700\text{mg/day}$ (Elfassy et al., 2019).

Reduced potassium consumption has been associated with hypertension and cardiovascular diseases, and appropriate consumption levels could be protective against these conditions. This may be potassium's ability to increase sodium excretion and vasoactive effects of potassium on blood vessels (Renee Taylor et al., 2015).

However, the effect of potassium intake on the systolic blood pressure appeared to be stronger among the older than among younger participant (Zhang et al., 2013).

Diabetes

Higher levels of glucose and insulin may contribute to the development of hypertension by promoting kidney disease and vascular stiffness. Hyperglycemia can damage both the kidney and the arterial wall through deposition of advanced glycation end products, generation of reactive oxygen species and activation of protein kinase (Levin et al., 2010).

In Malawi, hypertension, diabetes, overweight and obesity are found among urban and rural dwellers despite it being a very low- income country affected by under nutrition and food insecurity. Most cases of hypertension and diabetes remain undiagnosed, untreated and inadequately controlled (Price et al., 2018).

In a community-based multiethnic population, diabetes and higher fasting concentrations of serum glucose and insulin were associated with increased risk of incident hypertension (Levin et al., 2010).

A study by Bosu (2013) an estimated 150,000 newly diagnosed outpatient cases of diabetes and 70,000 cases are reported each year in Ghana. Hyperglycemia is thus a risk factor of hypertension.

Kidney disease

Progressive kidney disease can exacerbate uncontrolled hypertension due to volume expansion and increased systemic vascular resistance. Hypertension is the most frequent complication of kidney disease and chronic disease is a common cause of resistant

hypertension (Ritz & Bakris, 2009).

The increase in hypertension is linked with increased in type II diabetes, raising the likelihood that it is pathogenically related and also linked to environmental and dietary changes (Elfassy et al., 2019). Prevention, detection, management and control in kidney disease are essential in controlling hypertension.

CHAPTER THREE

METHODS

3.1 Study Design

Analytical cross-sectional study was conducted at various media houses among selected media workers in the Greater Accra Region. Media workers eighteen years and above were enrolled using stratified random sampling technique to select participants. Self-administered interview questionnaire were used to collect data on participants' demographics.

Respondents' weight and height were measured using weighing scale and stadiometer respectively. The Perceive Stress Scale was used to assess level of stress among respondents. Blood pressure readings were taken as well as blood sample for fasting blood sugar and fasting blood lipid assessment.

3.2 Study Area

The Greater Accra region is one of the ten administrative regions of Ghana with a population of 4,671,226.

About 500 health facilities, both public and private, provide health services to the population. The region is the second most populous region in the country with two metropolis, nine municipalities and five Districts administratively. These are: Accra Metropolis, Tema Metropolis, Ledzokuku-Krowor Municipality, Ashaiman Municipality, Adentan Municipality, Ga East municipality, Ga West municipality, Ga South municipality, La Dadekotopon Municipality , La Nkwantang Madina Municipality , Ga Central Municipality, Kpone Katamanso Municipality, Ada East district, Ada West District, Ningo Prampram District and Shai Osu Doku district.

Accra metropolitan is the largest among the administrative districts and is further sub divided into five sub metros namely Ablekuma, Ayawaso, Ashiedu Keteke, Osu Clotey and OkaiKoi sub metros. Greater Accra has 21 Radio stations, 14 Television stations and 28 Print houses.

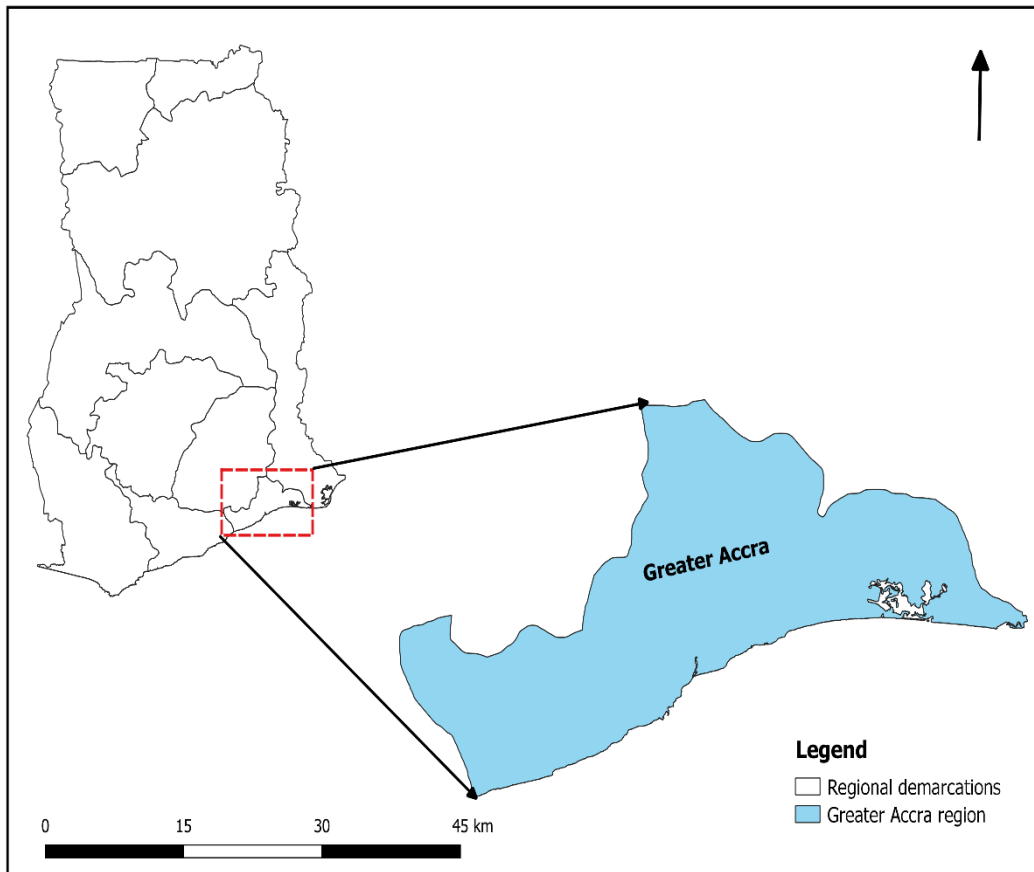


Figure 2: Map of Greater Accra, Ghana

Table 1: study variable for risk factors of hypertension

Variable	Operational Definition	Measurement/Possible values
Socio-Demographic Characteristics		
Age	Refers to age of participant at the time of interview	Numerical variable
Sex	Sex of participant at the time of interview	Categorical -Male -Female
Educational level	Refers to educational status reported by the participant during the interview	Categorical variable: -Secondary -Tertiary
Marital status	Refers to the marital status reported by the participant during interview	Categorical variable -Single -Married - Cohabitation - Divorced/separation -Widow
Physical Measurements		
Height	Refers to height of participant	Continuous
Weight	Refers to weight of participant at the time of interview	Continuous
Waist circumference	Refers to waist circumference of participants at the time of interview	Continuous
Hip circumference	Refers to hip circumference of participants at the time of interview	Continuous
Risk Factors		
Physical activity	Refers to level of intensity physical activity of participant	Categorical -Moderate activity -Vigorous activity
Stress	Refers to the level of stress of participants	Categorical -Low -Medium -High
Fasting lipids levels	Refers to the cholesterol levels of participant during the interview	Categorical -Normal -Low -High
Alcohol consumption	Refers to participants consumption of alcohol	Categorical -Yes -No
Tobacco use	Refers to participants consumption of tobacco products	Categorical -Yes -No
Dietary	Refers to vegetable intake of participants during time of interview	Categorical -Yes -No

Diastolic blood pressure	Refers to systolic blood pressure levels of participants during interviewed	Categorical -Normal -Low -High
Systolic blood pressure	Refers to diastolic blood pressure levels of participant during interview	Categorical -Low -Normal -High
Fasting blood glucose level	Refers to the level of blood glucose of participants	-Normal -Low - High
Past Medical History		
Hypertension	This refers to any history of hypertension of participant during the interview	Categorical -Yes -No
Diabetes	This refers to any history of diabetes of participant during the interview	Categorical -Yes -No
Hyperlipidemia	This refers to any history of high blood cholesterol of participant during the interview	Categorical -Yes -No

3.3 Sampling

3.3.1 Study population

The study population were workers eighteen years and above in selected media houses.

3.3.2 Sample size

Using the Cochran formula, an estimated prevalence of hypertension in Accra (28.3%) instead of 12.5% prevalence of hypertension among media workers in Greater Accra by Reene et. al., was used for proportion that will yield a large sample size for the purpose of generalization, a 95% confidence interval and 10% non-response, the sample size estimated as 344 individuals.

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

n= sample size

Z= (Z-score associated with confidence interval level of 95%) = 1.96

p = (Prevalence rate of hypertension in Greater Accra Region)

e = (Allowable error/ non-response)

d² = (precision of 5%)

Sample size = $\frac{(1.96)^2 * 0.283 * (1 - 0.283)}{0.05^2}$

$\frac{(3.8416) * 0.283 * (0.717)}{0.0025}$

Sample size (n) = 312 (plus 10% non-response)

Sample size = 344

3.3.3 Inclusion criteria

Workers of media houses who have worked in a media house for more than two years and above with or without hypertension.

3.3.4 Exclusion criteria

Visitors/panelist of programs present at the time of the study, pregnant women, security staff, workers who are not directly involved in media work and media workers who are not affiliated to the media houses.

3.3.5 Sampling technique

The study employed multistage sampling technique in the sampling process. Simple random sampling through balloting was being used to select media houses from radio, television and print media houses in the Greater Accra Region.

Proportional allocation was used to select respondents from the various media houses.

Using stratification, the sample size was divided into three for the three strata (radio,

television and print) using proportional allocation of the media houses. Considering media workers of each stratum, the sample size (Table 2) was calculated using the number of media workers of a particular media house as the numerator divided by the total number of the media house in that strata and multiply it by the sample size allocation for the particular media house to obtain the number of respondents that were selected from each media house.

At each media house, simple random sampling by balloting was used again to select the number of respondents that was required for the study.

Selection of respondents

Sample size - 344

Number of media houses in Greater Accra Region - 63

Number of radio houses - 21

Number of television houses – 14

Table 2: sample size allocation of media houses for the study

Proportional sample size allocation of media houses

(Type of media house/total number of media houses x sample size)

Print media houses	$28/63 \times 344 = 153$
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Radio media houses	$21/63 \times 344 = 115$
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Television media houses	$14/63 \times 344 = 76$
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3.3.6 Data collection/ Data collection tool

A self-administered questionnaire was used to collect data from respondents. The tool had three components. The first component was on demographic data of respondents such as age, sex, educational status, marital status and place of work. The second component

involved behavioral assessments such as tobacco use, alcohol use, and diet, physical activity, past medical history of hypertension, lipideamia and diabetes mellitus. Furthermore, physical assessments such as blood pressure measurement, Weight, height, waist circumference and hip circumference were measured. The last component on the tool was respondents' biomedical assessment. Respondents fasting blood sugar and fasting lipids profile levels were assessed.

3.3.7 Physical measurements

Weight

Respondent's weight was measured using an Omron digital weighing scale. The scale was placed on a flat surface and set to the nearest 0.1kg. Respondents were asked to remove their shoes, jackets/ heavy clothing and any other heavy objects before standing erect on the scale.

Height

Using a portable stadiometer, respondents were asked to stand upright on a base plate without shoes, their head and back straight, feet together with heels touching the back of the plate. The head of the stadiometer was lowered to touch the top of the head and the height was measured to the nearest 0.1cm.

Waist circumference

With feet apart, respondents' waist circumference was measured with a non elastic/stretchable tape measure to the nearest 0.1cm between the 12th rib and the iliac crest at the level of the umbilicus at the end of expiration.

Hip circumference

Hip circumference was measured to the nearest 0.1cm using a non-stretchable tape measure to the fullest point of the buttocks.

Waist-to-Hip Ratio

Waist-to-hip ratio (WHR) was obtained by dividing the result of the waist circumference by the result of the hip circumference. Participants were asked to dress in light clothing. The World Health Organization cut-offs were used in the classification of the waist-to-hip ratio of each participant.

Blood pressure measurement

A digital blood pressure monitor (Omron HEM- 7120) with appropriate cuff size was used to measure blood pressure. Respondents were asked to rest for at least 10 minutes before measurement was taken. Three measurements were taken at three minute's interval in the left arm with respondents sitting upright. The arm was at a height approximately at the heart level and respondents were asked to sit quietly with no fidgeting. This was to minimize errors in measurements. Blood pressure was assessed using the last two reading taken.

3.3.8 Biomedical assessment

Respondents were asked not to eat or drink anything 8-12 hours before blood sample was taken in the morning. Using aseptic technique about 5mls of venous blood was drawn from antecubital vein of respondents' arm, placed in a sterile sample aliquoted fluoride tubes (2 ml) for fasting blood glucose.

For fasting blood lipids, 3mls of blood was taken into separator tubes corked and stored in a sample carrier box and transported to the laboratory to analyze cholesterol, high density cholesterol, low density cholesterol and triglycerides levels.

Blood samples were taken the same day of the study. Makeshift laboratory rooms were created at each study site where blood samples were taken by trained laboratory scientists. Blood samples were sent to Life Healthcare Limited for biochemical assessment. Blood samples were analyzed same day with a full automated URIT 8030 machine.

3.3.9 Stress measurement

Stress was measured with the perceived stress scale, a 10-item questionnaire that asks about feelings and thoughts. Respondents were asked to answer questions on the scale and their answers were scored as low stress, moderate stress and high stress. Perceived stress was scored as 0-13 for low stress, 14-26 as moderate stress and 27-40 as high perceived stress.

3.4 Quality Control

Standard procedures were followed to ensure that samples were not compromised from the time sample taking to the point of sample analysis. Samples were collected aseptically to prevent any form of contamination and risk of infection to respondents. Appropriate sample containers with a tight fitting lid were used, labeled and given unique codes to prevent mixed up. Samples were stored on racks under optimal temperature in a sample carrier.

3.5 Data Processing and statistical analysis

Self-administered structured questionnaires were used to collect data from the randomly selected media workers. Basic demographic information such as age, sex, marital status and educational background were obtained using the questionnaire. Risk factor information such as tobacco use, physical activity pattern, diet, alcohol intake, smoking and past medical history was obtained using the WHO Stepwise approach to surveillance of non-communicable disease. Stress assessment was done using perceived stress scale to determine the level of stress of respondents.

Data was cleaned and coded using Microsoft Excel. STATA version 15 was used to run frequencies and variables. Results were presented as means and standard deviations.

Reference ranges for fasting lipids and fasting blood sugar

REFERENCE RANGE	DESIRABLE LEVELS	BORDERLINE HIGH	HIGH LEVELS
Total cholesterol	5.2 mmol/l	5.2 – 6.21 mmol/l	>6.24mmol/l
High Density Level Cholesterol	1.56 mmol/l		Up to 0.91
Lower Density Level Cholesterol	Up to 2.59 mmol/l		>4.92mmol/l
Triglycerides	1.88mmol/l	>2.26mmol/l	5.64mmol/l
Fasting Blood sugar			>5.9mmol//

Total cholesterol was determined by enzymatic hydrolysis followed by oxidation. High total cholesterol levels were defined as a serum cholesterol level of more than 5.2 mmol/l. Triglyceride levels were determined by enzymatic hydrolysis with lipoprotein lipases. High triglyceride levels were defined as more than 2.26 mmol/l. For HDL (good)

cholesterol, higher levels were recommended; range of 0.9 to 10.0 was considered normal. For LDL cholesterol, those who had more than 3.1 mmol/l were considered abnormal.

Data was cleaned and coded using Microsoft Excel. STATA version 15 was used to analyze the data. Results were presented as means and standard deviations. Charts and tables were used to describe results.

Chi-square test was used to test categorical variables, logistic regression was used to calculate odds ratio of risk factors and hypertension and results with $P < 0.05$ were considered statistically significant.

3.6 Ethical Consideration

Study site

Participants were drawn from print, radio and television media houses. Media houses involved were Ghanaian Times, Weekly Spectator, Vision one FM, and Light TV among others in Greater Accra Region, Ghana.

Purpose (s) of research

The purpose of the research was to assess the prevalence of hypertension among media workers. It also sought to determine modifiable risk factors of hypertension (alcohol, tobacco, physical inactivity and overweight) and the level of stress among media workers in selected media houses in Greater Accra Region, Ghana.

Research procedure

The study involved participants from various media workers in print, radio and television media houses. Participants were thoroughly briefed on the nature and objectives of the study for them to decide participation in the study. The study was carried out in three steps

by using WHO Stepwise guidelines. The first step requires participants to complete a structured questionnaire on demographic information such as age, sex, educational background, marital status among others. The second step involved taking physical measurements of participants such as blood pressure, waist circumference, arm circumference, weight and height.

The third component of the study involved taking blood sample for biomedical assessment for fasting blood sugar and fasting lipids profile levels. A total of 344 participants from various media houses were selected based on the prevalence of hypertension among media workers in Greater Accra Region. The study was done at no cost to the participants.

Voluntary consent/ Withdrawal

The participants were made aware that participating in the study was voluntary and they can refuse to participate or withdraw from the study at any point in time without explanation. Awareness was made to participants of the fact that there were no direct benefits and a slight risk was involved in this study. Some of the questions were expected to be a bit discomfort and a slight needle pain was to be expected during sample taking. Importance of the study was explained to the participants and confidentiality assured throughout the study.

Only willing participants were asked to be part of the study and interviews were conducted at their convenience. Data obtained was used only for the set objectives of this study. Code numbers were used to identify the participants. Data was stored both electronically and in hard copies with access given only to the research team. Participants found to be hypertensive were counseled and referred to appropriate health facilities for further medical investigations and care.

Possible Risk and Discomfort

There was the possibility that participants might have minor uneasiness when answering certain questions. The procedure of blood drawing for obtaining samples for laboratory test could be associated with rare risks including pain, bleeding or local skin infection. Aseptic technique was used throughout the process of taking blood sample to prevent infection. Minimal pressure was applied at the site of prick and plastered to prevent bleeding from the site.

Participants had the right to refuse to answer any question if they feel uncomfortable about it.

Possible Benefits

The participants were made aware of the fact that there will be no direct benefits. Participants were given health education on hypertension and lifestyle modification after the interview. Participants who had raised Blood Pressures were encouraged and counseled to report at the health facility for full medical evaluation and management. The findings would benefit the District Management teams in planning for health care delivery in the districts, the media houses in assessing their modifiable risk factors of hypertension and the National Non Communicable Disease Control Program in policy formulating.

Confidentiality

Confidentiality of participants was ensured and maintained throughout the study. Names of participants were not captured on questionnaires. Data collected were coded, stored securely and only accessed by the research team. Dissemination of results from the study was not linked to the identity of the participants.

No name was recorded on the research forms or electronic database. No name or identifier was used in any publication or reports from this study. However, as part of our responsibility to conduct this research properly, we may allow officials from the ethics review committee to have access to participants' records. All the blood samples were labeled with a code to identify participants whose blood sample was taken and analyzed.

Compensation

Participation in this study was solely voluntary and no monetary compensation to participants for accepting to be part of this study was given.

Choice of Participation

Participants were at liberty to choose to leave the study at any time and that their refusal not to participate would yield no penalty. Participants could withdraw consent and discontinue participation at any time with no consequences.

Clearance

The protocol was approved by the Ghana Health Service Ethics Review Committee (GHC-ERC: 130/02/19). Permission was sought from the Regional Health Directorate and community leaders before the beginning of the study to determine the prevalence of risk factors of hypertension among media workers in Greater Accra Region.

Written informed consent was obtained from the participants.

Approval from heads of media institutions was sought to get access to participants.

The participants were thoroughly briefed on the nature and objectives of the study for them to decide participation in the study. The purpose of the study was explained to

participants to enable them make informed decision and that the research would provide information to help improve their health.

Conflict of interest declaration

There was no conflict of interest with the study. I have no affiliation with any organization directly involved in the promotion or marketing of hypertensive products, prevention and or control interventions.

CHAPTER FOUR

RESULTS

A total of 344 of all media personnel participated in the study with no refusals. The median age of the respondents was 38 years (range: 22 – 60). The majority of the media personnel 52.33%, (180/344) had first degree and was mostly Christians (88.95%, 306/344). One hundred and ninety one (55.52%) of the respondents was from the private media houses (Table 2).

Table 2: Socio-demographic characteristics of study participants

Variable	Frequency (n=344)	Percent	95% CI
Age Group			
≤40 yrs	216	62.79	35.23 – 54.05
>40 yrs	128	37.21	45.95 – 64.77
Sex			
Male	186	54.07	48.75 – 59.30
Female	158	45.93	40.70 – 51.25
Educational Level			
SHS	2	0.58	0.14 – 2.31
Certificate	17	4.94	3.09 – 7.82
Diploma	125	36.34	31.40 – 41.58
Degree	180	52.33	47.01 – 57.58
Post graduate	20	5.81	3.77 – 8.86
Marital status			
Single	207	60.17	54.88 – 65.24
Married	137	39.83	34.76 – 45.12
Religion			
Christianity	306	88.95	85.16 – 91.87
Muslim	36	10.47	7.63 – 14.19
Traditionalist	2	0.58	0.14 – 2.31
Attended media school			
No	150	43.60	38.43 – 48.92
Yes	194	56.40	51.08 – 61.57
Media institution type			
Print	153	44.48	39.28 – 49.80
Radio	111	32.27	27.51 – 37.42
Television	80	23.26	19.07 – 28.04

Work experience			
0 – 10 yrs	226	65.70	60.49 – 70.55
11 – 20 yrs	49	14.24	10.92 – 18.37
≥21 yrs	69	20.06	16.14 – 24.65

Table 3: Lifestyle characteristics of respondents

Variable	Frequency (n=344)	Percent	95% CI
Tobacco smoking			
Yes	6	1.74	0.78 – 3.84
No	338	98.26	96.16 – 99.21
Alcohol intake			
Yes	156	45.35	40.13 – 50.67
No	188	54.65	49.33 – 59.87
Alcohol intake ≤3 months			
None	200	58.14	52.83 – 62.27
5-7days/week	16	4.65	2.86 – 7.47
1-4days/week	21	6.10	4.01 – 9.20
1-3days/month	87	25.29	20.96 – 30.18
<once/month	20	5.81	3.77 – 8.86
Frequency of adding salt to served food			
Always			
Often	26	7.56	5.19 – 10.89
Sometimes	22	6.40	4.24 – 9.54
Rarely	72	20.93	16.94 – 25.58
Never	121	35.17	30.28 – 40.40
	103	29.94	25.31 – 35.02
Frequency of adding salt to food when cooking			
Always	296	86.05	81.95 – 89.34
Often	48	13.95	10.66 – 18.05
Frequency of eating processed food			
Always	97	28.20	23.67 – 33.21
Often	190	55.23	49.91 – 60.44
Sometimes	53	15.41	11.94 – 19.64
Rarely	4	1.16	0.43 – 3.07
Stress level			
Low	7	2.03	19.34 – 28.35
Moderate	308	89.53	85.81 – 92.37
High	29	8.43	5.91 – 11.89
Moderate-intensity activity			
Yes	263	76.45	71.65 – 80.66
No	81	23.55	19.34 – 28.35
Vigorous-intensity activity			
Yes	90	26.16	21.77 – 31.09
No	254	73.84	68.91 – 78.23
Variable	Frequency (n=344)	Percent	95% CI

Moderate-intensity adequacy			
Adequate	73	21.22	17.20 – 25.89
Inadequate	271	78.78	74.11 – 82.80
Vigorous-intensity adequacy			
Adequate	84	24.42	20.15 – 29.26
Inadequate	260	75.58	70.74 – 79.85

95% CI = 95% Confidence Interval

Six of respondents (1.74%) reported smoking tobacco, 156 (45.34%) drank alcohol but the majority of respondents reported not consuming alcohol in the last 3 months prior to the study.

One hundred and one (32.26%) of the media personnel reported that they rarely add salt to served food when eating, 86.05% (296/344) often add salt to food when eating whilst 55.23% (190/344) often eat processed food (Table 4).

About 76.45% (263/344) reported that they do moderate intensity physical activities while 26.20% perform vigorous-intensity physical activity (Table 3). Seventy-three 21.22% (73/344) of the respondents reported undertaking adequate moderate-intense physical activity whilst 24.42%, (84/344) perform vigorous-intense activity.

The average Body Mass Index (BMI) of the respondents was 26.9kg/m² (SD± 6.33). About 43.31% (149/344) of the respondents were overweight while 18.02% (62/344) were obese. Among the overweight 40.94% (61/149) were from the print while 36.91% (55/149) were among those from radio and 22.15% (33/149) were from the television. Similarly, of the 62 who were obese, 26 were from the print, 20 from the radio and 16 from the television.

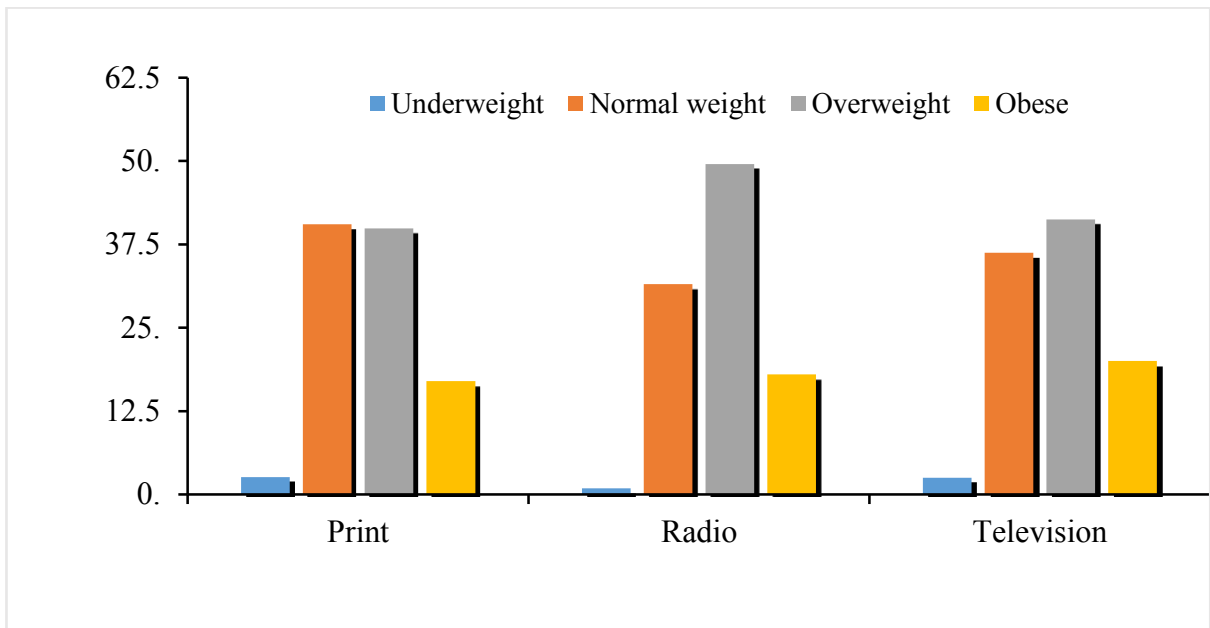


Figure 3: Weight status of media personnel in the Greater Accra region, 2019

Of the media personnel from the print media houses, 39.86% (61/153) were overweight while 17.0% were obese. From the radio, 49.55% (55/111) were overweight while 18.01% (20/111) were obese. With regard to media personnel in the television media houses, 41.25% (33/80) were overweight while 20% (16/80) were obese (Figure 2).

Table 4: Anthropometric and biomarkers of hypertension among respondents

Variable	Frequency (n=344)	Percent	95% CI
Weight status (BMI)			
Underweight	7	2.03	0.97 – 4.22
Normal	126	36.63	31.67 – 41.88
Overweight	149	43.31	38.14 – 48.63
Obese	62	18.02	14.29 – 22.47
Waist to Hip ratio			
Normal	180	52.33	47.01 – 57.58
Abnormal	164	47.67	42.42 – 52.99
Total Cholesterol (n=277)			
Desirable	190	68.59	62.85 – 73.82
Borderline high	79	28.52	23.48 – 34.16
High	8	2.89	1.44 – 5.69
High Density Lipoproteins (HDL) (n=277)			
Low risk	277	100.00	
Low Density Lipoproteins (LDL) (n=277)			
Optimal	86	31.05	25.85 – 36.78
Near/Above optimal	101	36.46	30.97 – 42.33
High	90	32.49	27.20 – 38.27
Triglycerides (n=277)			
Normal	276	99.64	97.45 – 99.95
High	1	0.36	0.05 – 2.55
Blood Sugar			
Normal	329	95.64	92.88 – 97.36
Above normal	15	4.36	2.64 – 7.12

95% CI = 95% Confidence Interval

The average waist circumference of the media personnel was 94cm (± 9) and the average hip circumference was 107cm (± 10). The average waist-to-hip circumference ratio was 0.87 (± 0.04). Seventy-four 21.51% (74/344) of the males media personnel had abnormal (higher than normal) waist-to-hip while 27.32% (94/344) of the females also had abnormal waist-to-hip circumference ratio. Overall, 47.67% (164/344) had abnormal waist to hip circumference ratio (Table 4).

The average blood sugar level of the media personnel was 5.16mmol/l (SD±0.95). The majority 95.64%, (329/344) of the media personnel had normal blood sugar level (3.2 – 6.4mmol/l). Of the 344 respondents, 19.47% (67/344) of both males and females did not consent to fasting blood lipids testing on account of the procedure being invasive, some had checked blood lipids level not long ago and some were outright refusal. The average triglycerides level among the respondents was 0.88mmol/l (SD±0.36). The media personnel who had normal levels of triglycerides were almost universal 99.64%, (276/277). The majority of the respondents 68.59%, (190/277) had desirable levels of total cholesterol with 100.0% (277/277) having low risk HDL while 32.49% (90/277) had high levels of LDL (Table3).

Level of stress among media personnel in Greater Accra region

Nine in 10 media personnel had moderate stress 89.53%, (308/344) while 8.43% (29/344) had high stress. Only 2.03% (7/344) of the media personnel had low level of stress.

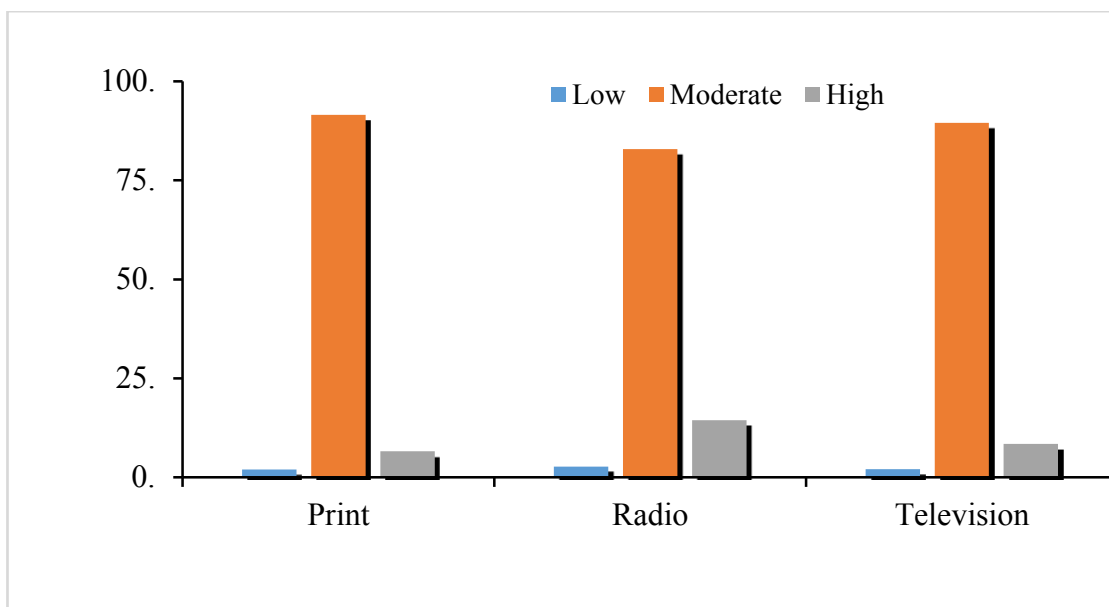


Figure 4: Level of stress among media personnel in Greater Accra region, 2019

One hundred and forty of those in the print, 82.88%, (92/111) of those in Radio and 89.53% (76/80) of those in Television had moderate stress (Figure 3). Among the 308 media personnel with moderate stress, 45.45% (140/308) were from the print, 29.87% (92/308) from the radio and 24.67% (76/308) were from the television. Similarly, among the 29 media personnel with high level of stress, 10 were from the print, 16 from the radio and 3 from the television. Of the 27 media personnel with hypertension, 24 had moderate stress while 3 had high stress. Similarly, the proportion of hypertension among media personnel with moderate stress was 22.22% (24/108) while 3 of the 29 media personnel with high level of stress were hypertensive. There was, however, no statistically significant association between level of stress and hypertension (Fisher’s exact, $p=0.841$) (Table 5)

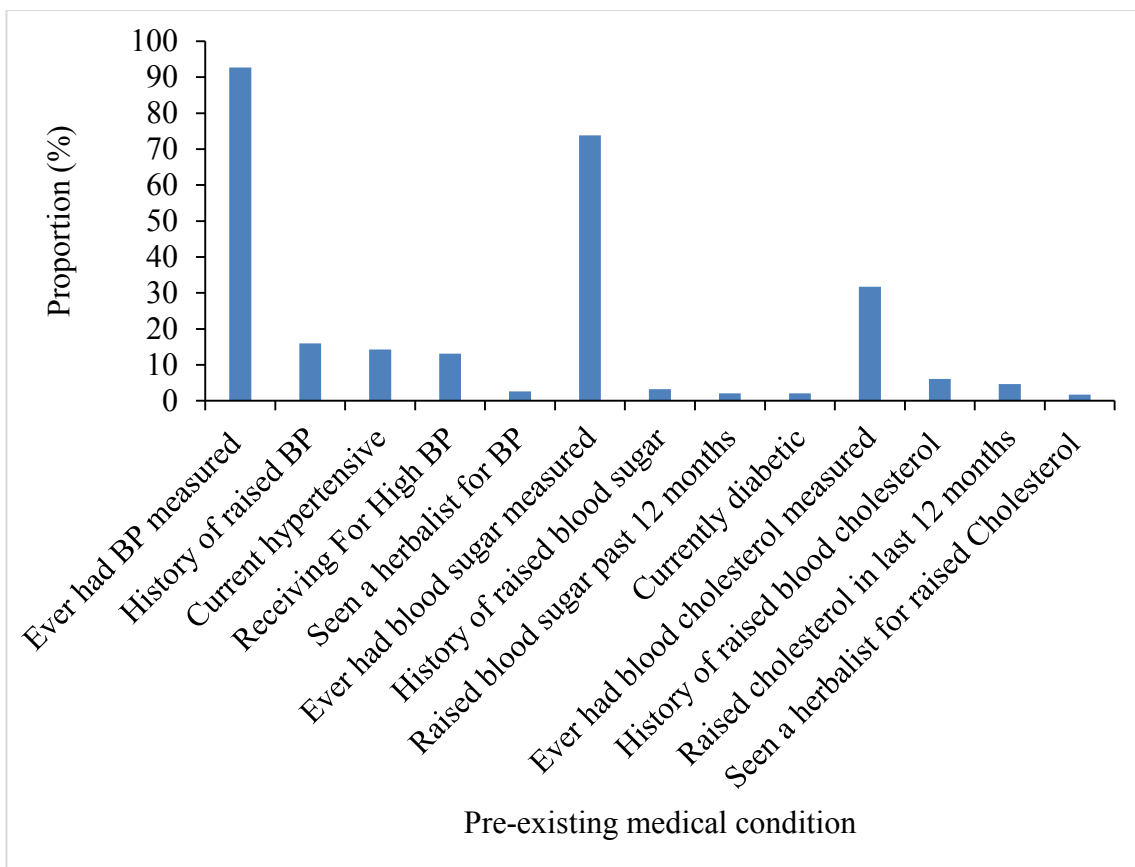


Figure 5: Pre-existing medical conditions of media personnel in the Greater Accra region, 2019

Nine in 10 media personnel interviewed 92.73%, (319/344) indicated that they ever had their blood pressure (BP) checked by either a doctor or any other health personnel (Figure 4). Also, 73.84% (254/344) indicated that they have ever had their blood sugar measured while 31.69% (109/344) indicated that they have ever had their blood cholesterol level checked.

Association between socio-demographic factors, lifestyle and pre-existing conditions and hypertension.

The average systolic blood pressure (SBP) of the media personnel was 127.4mmHg (SD±16.1) while average diastolic blood pressure (DBP) was 81.8mmHg (SD±9.1). The prevalence of hypertension among the media personnel was 7.85% (95% CI: 5.43 – 11.22). Of the 27 media personnel who were hypertensive, 19 were aged above 40 years. Among the media personnel aged 40 years and above, the prevalence of hypertension was 14.84% (19/128). Age was significantly associated with hypertension ($p < 0.001$) (Table 5).

The prevalence of hypertension was higher among media personnel with diploma qualification 8.8%, (11/125) and post-graduate qualification 15% (3/20). Educational qualification was, however, not associated with hypertension (Fisher's exact, $p = 0.157$).

The prevalence of hypertension was 4.42% (10/226) among media personnel with 0 – 10 years of work experience, 14.28% (7/49) among those with 11 – 20 years of work experience and 14.49% (10/69) among those with 20 or more years of work experience. Work experience was significantly associated with hypertension ($\chi^2 = 10.69$, $p = 0.1005$).

Of the 150 media personnel who self-reported that they did not attend media school, 10.0% (15/150) were hypertensive. On the other hand, of the 194 who attended media school, 6.18% (12/194) had hypertension. Attendance to media school was not significantly associated with hypertension ($\chi^2= 1.70$, $p=0.192$).

The prevalence of hypertension was 7.77% (14/180) among the media personnel with normal waist to hip ratio and 7.92% (13/164) among those with abnormal waist-to-hip ratio. There was no statistical significant association between waist-to-hip circumference ratio and hypertension among the media personnel ($\chi^2= 0.02$, $p=0. 0.959$) (Table 5). The religion, marital status, cholesterol levels, triglycerides and blood sugar levels did not have statistically significant association with hypertension (Table 5).

Table 5: Association between socio-demographic factors, anthropometric, biomarkers and hypertension among media personnel in the Greater Accra Region, 2019

Variable	Frequency (n=344)	HPT (%)	χ^2	p-value
Age group			13.79	<0.001
≤40 yrs	8	3.70		
>40 yrs	19	14.84		
Educational Level			*	0.157
Diploma	14	11.20		
Degree	10	5.56		
Post graduate	3	15.00		
Marital status			0.26	0.610
Married	15	7.25		
Single	12	8.76		
Religion			*	0.231
Christianity	27	8.82		
Work experience			10.68	0.005
0 – 10 yrs	10	4.42		
11 – 20 yrs	7	14.29		
≥21 yrs	10	14.49		
Waist to Hip ratio			0.02	0.959
Normal	14	7.78		
Abnormal	13	7.93		
Total Cholesterol			*	0.055
Desirable	10	5.26		
Borderline high	10	12.66		
High	1	12.50		
High Density Lipoproteins (HDL)			**	
Low risk	21	7.58		
Low Density Lipoproteins (LDL)			0.23	0.893
Optimal	5	5.81		
Near/Above optimal	8	7.92		
High	8	8.89		
Triglycerides			*	1.000
Normal	21	7.61		
High	0	0.00		
Blood Sugar			*	1.000
Normal	26	7.90		
Above normal	1	6.67		

χ^2 = Chi-squared *Fisher's exact HPT = Hypertension **No comparison

Table 6: Association between lifestyle characteristics and hypertension among media personnel in Greater Accra region, 2019

Variable	Frequency (n=344)	HPT (%)	χ^2	p-value
Moderate-intensity adequacy			*	0.135
Adequate	24	8.86		
Inadequate	3	4.11		
Vigorous-intensity adequacy			*	0.034
Adequate	25	9.62		
Inadequate	2	2.38		
Tobacco smoking			*	1.000
Yes	27	7.99		
No	0	0.00		
Alcohol intake			12.43	<0.001
Yes	21	13.46		
No	6	3.19		
Alcohol intake ≤ 3 months			*	0.035
None	9	4.50		
5-7days/week	1	6.25		
1-4days/week	2	9.52		
1-3days/month	12	13.79		
<once/month	3	15.00		
Frequency of adding salt to served food			*	0.894
Always				
Often	1	3.85		
Sometimes	2	9.09		
Rarely	5	6.94		
Never	9	7.44		
	10	9.71		
Frequency of adding salt to food when cooking			*	0.084
Always	26	8.78		
Often	1	2.08		
Frequency of eating processed food			*	0.646
Always	8	8.25		
Often	17	8.95		
Sometimes	2	3.77		
Rarely	0	0.00		
Stress level			*	0.841
Low	0	0.00		
Moderate	24	7.79		
High	3	10.34		
Variable	Frequency (n=344)	HPT (%)	χ^2	p-value
Weight status			*	0.404
Underweight	0	0.00		
Normal	7	5.56		
Overweight	16	10.74		
Obese	4	6.45		

χ^2 = Chi-squared

*Fisher's exact

HPT = Hypertension

The prevalence of hypertension was 32.87% (24/73) among media personnel with adequate moderate intensity physical activity and 29.76% (25/84) among those with vigorous intensity physical activity. The level of moderate intensity physical activity was not significantly associated with hypertension (Fisher's exact, $p=0.135$ (Table 6). Vigorous intensity physical activity was significantly associated with hypertension (Fisher's, $p=0.034$).

Media personnel who self-reported to take alcohol and had hypertension was 6.10%. Alcohol intake had a statistically significant association with hypertension ($\chi^2=12.43$, $p<0.001$). The amount of intake of alcohol in the last 3 months preceding the study was also significantly associated with hypertension (Fisher's, $p=0.035$)

Hypertension was higher among media personnel who were overweight 12.03%, (16/133) and obese 6.89% (4/58) (Table 6). Weight status, frequency of adding salt to food when eating, frequency of eating processed food, tobacco smoking and the level of stress were not significantly associated with hypertension (Table 4).

Factors associated with hypertension among media personnel in the Greater Accra region

At the unadjusted (crude) bivariate level, age group, work experience, vigorous-intensity physical activity level, intake of alcohol and the frequency of alcohol intake in the last 3 months prior to the study were significantly associated with hypertension among the media personnel. Compared with respondents aged ≤ 40 years old, the odds of having hypertension was about 5 times among media personnel aged >40 years old (cOR=4.53, 95% CI: 1.92 – 10.69). After controlling for work experience, vigorous-intensity physical

activity level, alcohol intake and frequency of alcohol intake, the odds of hypertension among media personnel aged >40 years old was about 3 times (aOR=3.25, 95% CI: 0.88 – 11.97) compared with those aged ≤40 years old (Table 7).

Media personnel who had 11 – 20 years of work experience had about 4 times the odds of having hypertension compared with those who had less than 11 years of work experience (cOR=3.60, 95% CI: 1.30 – 9.99). Similar odds were present among media personnel with work experience ≥20 years. However after adjusting for age group, vigorous-intensity physical activity level, alcohol intake and frequency of alcohol intake, work experience was not significantly associated with hypertension (Table 7).

Adequate vigorous-intensity physical activity was associated with 77% reduction in the odds of hypertension compared with inadequate vigorous intensity physical activity (cOR=0.23, 95% CI: 0.05 – 0.99). After adjusting for other factors, adequate vigorous-intensity physical activity was associated with 78% reduced odds of hypertension compared with inadequate vigorous-intensity physical activity (aOR=0.22, 95% CI: 0.05 – 0.99).

Similarly, alcohol intake and frequency of alcohol intake during the 3 months prior to the study were associated with increased odds of hypertension among the media personnel. However, after controlling for other factors, the associations were not significant though with higher odds of hypertension (Table 7).

Table 7: Factors associated with hypertension among media personnel in the Greater Accra region, 2019

Variable	HPT (%)	cOR	95% CI	p-value	aOR	95% CI	p-value
Age group							
≤40 yrs	3.70	Ref			Ref		
>40 yrs	14.84	4.53	1.92 – 10.69	0.001*	3.25	0.88 – 11.97	0.076
Work experience							
0 – 10 yrs	4.42	Ref			Ref		
11 – 20 yrs	14.29	3.60	1.30 – 9.99	0.014*	1.23	0.30 – 5.13	0.775
≥21 yrs	14.49	3.66	1.46 – 9.21	0.006*	1.22	0.30 – 4.89	0.782
Vigorous-intensity adequacy							
Adequate	9.62	0.23	0.05 – 0.99	0.048*	0.22	0.05 – 0.97	0.046*
Inadequate	2.38	Ref			Ref		
Alcohol intake							
Yes	13.46	4.72	1.85 – 12.01	0.001*	3.81	0.87 – 16.67	0.076
No	3.19	Ref			Ref		
Alcohol intake ≤3 months							
None	6.25	1.41	0.17 – 11.93	0.750	0.89	0.08 – 9.67	0.927
5-7days/week	9.52	2.23	0.45 – 11.10	0.326	0.75	0.10 – 5.87	0.784
1-4days/week	13.79	3.40	1.37 – 8.39	0.008*	1.14	0.28 – 4.54	0.856
1-3days/month	15.00	3.75	0.93 – 15.15	0.064	0.96	0.16 – 5.86	0.967
<once/month							

HPT = Hypertension statistically significant at 95% confidence interval cOR = Crude odds ratio aOR = adjusted odds ratio Ref = reference

CHAPTER FIVE

DISCUSSION

The study sought to determine the prevalence of hypertension among media workers in selected media houses in the Greater Accra Region of Ghana. A total of 344 media personnel participated in the study and the prevalence of hypertension was found to be 7.85%.

The level of prevalence was much lower than the 25.4% reported by Addo et al. (2012) in a population-based study among four community residents in Ga District of Ghana, and that of Fawad et al (2010) among journalist in Pakistan and a prevalence of 29.0% by Hu et al (2017) in the Jiangxi Province, China. This level of hypertension was also low as compared to the 22.4% reported from Nepal by Chataut et al (2011) on Risk Factors for Hypertension in Adults Living in Central Development Region of Nepal. The low prevalence found in the current study might be due to the low risk level of behavioral risk factors such as smoking and the low prevalence of overweight and obesity found among the study participants.

Smoking is known to cause deposition of fatty substances in the arteries causing narrowing of these blood vessels, leading to high blood pressure. Activation of the sympathetic nervous system, the amount of intra-abdominal and intra-vascular fat, sodium retention leading to increase in renal re-absorption, and the rennin-angiotensin system are considered to have important functions in the pathogenesis of obesity-related hypertension. Not smoking, not being overweight or obese are known to be associated with reduced odds of hypertension. Smoking was however, not statistically significant in the study.

The mean age of respondents was 38 years and the prevalence of hypertension was found among respondents who were forty years and above. This finding was similar to a study in Hohoe among rural and urban adults that found prevalence of hypertension among respondents who were within the ages of 40-49 (Kweku et al., 2017) and also similar to a study among male civil servants in Benin City (William , 2015). The low prevalence might have resulted due to less than half of the respondents being above forty years representing 37.21% of the entire sample. Age is associated with structural change in the arteries especially with large artery stiffness which affects blood pressure hence the prevalence of hypertension more common with increasing age.

About 45% of respondents had ever consumed an alcoholic beverage. Alcohol use by respondents was higher as compared to Sarfo et al (2018) in a hospital based study among Ghanaians. Prevalence of hypertension was 13.46% in respondents who take alcohol and this was similar to a study in among residents in Nepal that found risk of hypertension in alcohol use (Chataut et al., 2011). A study by Afrifa-Anane et. al (2015) in Accra among urban poor youth found alcohol to be 28.9%. Alcohol is known to contain calories which may contribute to unwanted weight gain which is a risk factor for high blood pressure. Alcohol intake and frequency of alcohol intake during the 3 months prior to the study was associated with increased odds of hypertension among respondents though the difference was not statistically significant.

Prevalence of moderate physical activity was 76% of respondents. Vigorous intensity physical activity had a reduced odds associated with hypertension. Physical activity may prevent development of hypertension through beneficial alterations in vasoconstriction regulation. Physical activity has been shown to reduce systolic blood pressure by 5mmHg. Higher levels of physical activity has shown to be associated with decreased levels of

diastolic blood pressure, in a study in Accra by Ernest et al (2015). Vigorous intense physical activity was significantly associated with hypertension in the study. Physical activity of respondents might be attributed to their busy schedule of going out of the office to cover stories for publication.

The overall overweight and obesity prevalence was 43.3% and 18% respectively. This was close to a study by Taylor et al (2015) in Accra that found prevalence of 36.1% in overweight whilst 18.7% were obese. The study prevalence was also similar to 36.5% and 24% for overweight and obesity found in a study by (Abban, 2013) among commercial long distance drivers in Cape Coast, Ghana. Sustaining a weight loss of 3 to 5 percent of body weight can significantly decrease the risk of hypertension. Overweight and obesity prevalence were however low in a study in Nadwoli among civil servants by Atuahene et al (2017) that found prevalence of 29.9% and 4.8% respectively.

The issue of overweight and obesity are linked to genetic background, hormones, different social background and environmental factors. These factors influences individuals differently and predisposition to hypertension due to overweight and obesity varies. Lifestyle devoid of physical activity is a risk factor for hypertension and coronary heart disease and other cardiovascular diseases (American Heart Association, 2016). Though overweight and obesity were not significantly associated in the study, individuals that are less active, less fit have a greater risk of developing high blood pressure (Nelson et al., 2015).

The average blood sugar level of the media personnel was 5.16mmol/l and 95.64% of the media personnel had normal sugar level. High sugar levels in the blood causes blood vessels to lose their ability to stretch, increases fluid retention and insulin resistance which increases the risk of hypertension. Serum lipid levels for total cholesterol, triglycerides,

high density lipoprotein and low density lipoproteins had about 99.64% desirable results. The majority of the respondents 68.59% had desirable levels. This was consistent with findings in a study in Nadwoli by Atuahene et al (2017), in which 97.8% of respondents had normal serum cholesterol levels and fasting blood sugar levels. This was however contrary to a study by Bhadoria et al. (2014) which reported higher mean serum cholesterol levels and high blood sugar levels. Also, Belue et al (2009) in Nigeria recorded 23% elevated total serum cholesterol and 51% elevated low density lipoprotein in Sub-Saharan countries. Low levels of serum cholesterol found in the study might be due to low prevalence of overweight, obesity and smoking among respondents. These modifiable risk factors have been found to increase lower density cholesterol levels. Fasting blood sugar and fasting lipids were however not significantly associated in the study.

Respondents had a mean moderate stress level of 87.97%. Prevalence of hypertension among respondents with moderate stress was 7.8%. However, findings were contrary to a study in Cape Coast, Ghana, by Abban et al (2013) that recorded 98.2% low stress levels among drivers. There was, however, no statistically significant association between level of stress and hypertension. Stressful situations can cause release of hormones that can result cause the heart to beat faster and narrowing of blood vessels. Stress has been linked with certain behaviors such as smoking, alcohol consumption and eating unhealthy foods. These behaviors risk factors are modifiable risk factors of hypertension. Moderate stress levels among respondents might be attributed to the high demand to meet deadlines to publish stories.

5.1 Study Limitation

The prevalence hypertension in the study cannot be attributed solely to the risk factors in the study. Other risk factors such as shift work, race/ethnicity and other chronic disease

among others were not assessed in the study. Also, getting access to media houses to agree for their staff to partake in the study was difficult.

There is the possibility of over and/or under estimation on variables such as physical activity, alcohol use and smoking by respondents. These factors are possible to have an effect on the final results.

5.2 Conclusion

Prevalence of hypertension among media workers in Greater Accra was low. The study found increasing prevalence of hypertension with increasing age of respondents. Media workers who were forty years and above were likely to have hypertension. More female respondents were overweight and obese as compared to their male counterparts.

Risk factors of hypertension were higher among print media than those in radio and television.

Risk factors such as overweight, obesity, alcohol use and inadequate physical activity and age were fairly high among respondents. These are modifiable risk factors that can be prevented to reduce the risk of getting hypertension.

5.3 Recommendations

Other risk factors of hypertension not investigated in this study should be studied to help in identifying their effect on hypertension and also to monitor and control the risk to hypertension.

Regular health screening and health education on hypertension prevention, treatment and complications should be incorporated into health programs of media workers to help prevent, identify and monitor of risk factors of hypertension among media workers.

Modifiable risk factors such as alcohol use, physical inactivity and overweight should be discouraged among media workers in an effort to prevent hypertension.

Stressful environmental conditions among workers and superiors should be minimized.

Workers should work within realistic timelines, annual leave should be compulsory for workers to rest.

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APPENDICES

Appendix I: Participants Information sheet and Consent

Project title:

Prevalence of Risk Factors of Hypertension among Media Workers in Selected Media houses in Greater Accra Region, Ghana.

Institutional affiliation:

Department of Epidemiology and Disease Control. School of Public Health, University of Ghana, Legon.

Introduction

My name is Abigail Brago Ofosehene, a student from the School of Public Health, University of Ghana. I am conducting a study on the prevalence of risk factors among media workers in Greater Accra Region. The purpose of the study is to determine the risk factors of hypertension (physical inactivity, alcohol, smoking, overweight and stress level) of hypertension among media workers in Greater Accra Region.

The study proposal was submitted to the Ghana Health Service Ethics Review Committee for review and approval. Permission was sought from the various Municipal Assembly, Health Directorate and the community leaders before the beginning of the study to determine the prevalence of risk factors of hypertension among media workers in Greater Accra Region.

Written informed consent was obtained from the participants.

The participants were thoroughly briefed on the nature and objectives of the study for them to decide participation in the study. The purpose of the study was explained to participants to enable them make informed decision and that the research will provide information to help improve their health.

Voluntary consent/ Withdrawal

The participants were made aware that participating in the study was voluntary and they can refuse to participate or withdraw from the study at any point in time without explanation. Awareness would be made to participants of the fact that there will be no direct benefits or risks involved in this study except that some of the questions may be a bit discomforting and a slight needle pain during sample taking. Importance of the study will be explained to the participants and confidentiality assured throughout the study.

Only willing participants were part of the study and interviews were conducted at their convenience. Data obtained was used only for the set objectives of this study. Code numbers were used identify the participants and data stored both electronically and in hard copies with access given only to the research team. Participants found to be hypertensive were counselled and referred to appropriate health facilities for further medical investigations and care.

Possible Risk and Discomfort

The study did not foresee any direct harm to research participants except for possible minor uneasiness when answering certain questions and needle pain during blood sample taking. Participants had the right to refuse to answer any question if they feel uncomfortable about it.

Possible Benefits

The participants were made aware of the fact that there will be no direct benefits. Participants will be given health education on hypertension and lifestyle modification after the interview. Participants who will have raised Blood Pressures will be encouraged and counselled to report at the health facility for full medical evaluation and management. The findings would benefit the District Health Management teams in planning for health care delivery in the districts and the media houses in assessing their modifiable risk factors of hypertension.

Confidentiality

Confidentiality of participants will be ensured and maintained throughout the study. Names of participants will not be captured on questionnaires. Data collected will be securely stored and will only be accessed by the research team. Disseminated of results from the study will not be linked to the identity of the participants.

Compensation

Participation in this study is solely voluntary and no monetary compensation to participants for accepting to be part of this study will be given.

Choice of Participation

Participants can choose to leave the study at any time and that their refusal not to participate will yield no penalty. If they agree to participate, they can withdraw consent and discontinue participation at any time. This will not affect them in any way.

Procedure

The study will involve the use of questionnaire to answer questions about hypertension. It will take about 30 minutes to answer the questionnaire. In addition, blood pressure, height, weight, waist and hip circumference will be measured to determine their levels. Blood sample will also be taken to determine levels of triglycerides.

Sterile instruments will be used in taking the sample to prevent injury to respondents. About 5mls of blood will be taken from respondent's vein and analyzed at the laboratory. I will be grateful for your participation in this study. The study is purely for academic research, which forms part of my work for the award of M.Phil. Epidemiology degree.

Risk and benefits

Participation in this study is voluntary and you can choose not to answer any individual question or the entire questions or taking the blood sample. You can withdraw from the study any time. I however encourage you to participate since your views are important to help determine the prevalence of hypertension among media workers.

Anonymity and Confidentiality

Information provides or investigations conducted would be handled with strict confidentiality and will be used for purely research purposes. No part of information provided will be shared with anyone who is not part of this study. Data analysis will also be done in a manner that will ensure anonymity.

Dissemination of Results

The results of this study will be mailed to you if you provide your email address below.

Before taking consent

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

If yes, questions to be noted below

.....
.....

If you have any questions later, you may contact Abigail Brago Ofosuhene 0261407099

Appendix II: Consent Form

I, declare that the purpose, procedure as well as risk and benefits of the study have been thoroughly explained to me in English and I have understood.

I hereby agree to answer the questionnaire

Signature of participants.....

Date

I agree to take part in the blood test

Signature of participant.....

Date

Interviewers' statement

I, the undersigned, have explained this consent form to the subject in English Language that he/she understands the purpose of the study, procedures to be followed, as well as the risk and benefits involved. The subject has freely agreed to participate in the study.

Signature of interviewer.....

Date

Address

Appendix III: Questionnaire

Prevalence of Hypertension among Media Workers in Greater Accra Region, Ghana, 2019

			Respondent's code				
	/			/			

Date

Kindly read the following questions carefully and answer them

Demographic information

1. Age

2. Sex: Male Female

3. Media Institution

Public b) Private

4. Type of media institution

Print media b) Radio c) Television

5. Marital status

Single b) Married c) Divorce d) Co-habitation e) Separated
f) Widowed

6. Religion

Christianity b) Muslim c) traditionalist

7. Educational status

Senior high school

First degree

Post-graduate

8. Have you attended a professional media training institution?

Yes

No

9. How long have you worked as a media person? a) 0-10yrs b) 11-20yrs c) more than 20yrs

Behavioral measurement/ risk factors

10. Do you currently smoke any tobacco products such as cigarette, cigar or pipe?

a) Yes b) No

If no go to question

11. Do you currently smoke tobacco products daily?

12. How often do you smoke tobacco products in a week?

13. How many sticks of cigarette do you smoke?

14. During the past 7 days, on how many days did someone in your home or in your workplace smoke when you were present?

15. Do you consume alcoholic beverage (such as beer, wine, spirits, local alcoholic beverages)?

Yes

No

If No go to question 19

16. Have you consumed alcohol in the past three months?

Yes

No

17. In the past three months, how frequent have you had at least one drink?

5-7 days per week

1-4 days per week

1-3 days per month

Less than once a month

18. During the past 30 days, how many days have you had at least one alcoholic drink?

The next question asks about consumption of fruits and vegetables. The pictures on the nutrition card shows examples of local fruits and vegetables that constitute a serving

19. In a typical week, how many days do you consume fruits?

20. How many servings of fruits do you eat on one of those days?

21. In a typical week how many of days do you eat vegetables?

22. How many servings of vegetables do you eat on one of those days?

The next questions ask about dietary salt which includes table salt, unrefined salt such as

sea salt, salty stock cubes and powders, soy sauce or fish sauce

Scenario	Always	Often	Sometimes	Rarely	Never	Don't know
23. How often do you add salt or salty salt such as soya sauce to your food right before you eat or as you are eating it?						
24. How often is salt, salty seasoning or salty sauce added in cooking or preparing food in your household?						
25. How often do you eat processed food high in salt? Foods that have been altered from their natural state, such as fast food from restaurant, packaged salty snacks, plantain chips and roasted corn?						

The next set of questions asks about time spent in doing different types of physical activities. Vigorous-intensity activities are activities that require hard physical effort and cause large increase in breathing or heart rate, moderate-intensity are activities that require moderate physical effort and cause small increases in breathing or heart rate.

26. Do your daily activities involve moderate to vigorous-intensity activity that causes large increase in breathing or heart rate like brisk walking for at least 10 minutes continuously? Example walking, cycling

Yes

No

If No, go to question 29

27. In a typical week, how many days do you do moderate-intensity activities as Part of your daily activities

28. How much time do you spend doing moderate- intense activities on a typical day?

Number of hours

29. In a typical week, how many days do you do vigorous-intensity sports, fitness or recreational (leisure) activities on a typical day?

Number of days

30. How much time do you spend doing moderate-intensity sports, fitness or recreational (leisure) activities on a typical day?

Number of hours

History of Raised Blood Pressure

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

Yes

No

32. Have you ever been told that you have high blood pressure or hypertension?

Yes

No

33. Are you currently taking any drugs (medications) for raised blood pressure prescribed by a doctor or health worker?

Yes

No

34. Have you ever seen a traditional healer for raised blood pressure?

Yes

No

35. Are you currently taking any herbal or traditional remedy for your raised blood pressure?

Yes

No

History of Diabetes

36. Have you ever had your blood sugar measured by a doctor or health care provider?

Yes

No

37. Do you have raised blood sugar?

Yes

No

38. Have you been told in the past 12 months that you have raised blood sugar?

Yes

No

39. Are you currently taking any drugs (medication) for diabetes prescribed by a doctor or health worker?

Yes

No

40. Have you ever seen a traditional healer for diabetes or raised blood sugar?

Yes

No

History of Raised Cholesterol level

41. Have you had your cholesterol (fat levels in your blood) measured by a doctor or health care provider?

Yes

No

42. Do you have raised cholesterol level?

Yes

No

43. Have you been told in the past 12 months that you have raised cholesterol level?

Yes

No

44. Are you currently taking any drugs (medication) for raised cholesterol levels prescribed by a doctor or health worker?

Yes

No

45. Have you ever seen a traditional healer for raised cholesterol level?

Yes

No

Stress Assessment

For each question choose from the following alternatives:

0-Never 1- almost never 2- sometimes 3- fairly often 4- very often

Scenario	Never	Almost never	Sometimes	Fairly often	Very often
46. In the last month, how often have you been upset because of something that happened unexpectedly?					
47. In the last month, how often have you felt that you were unable to control the important things in your life?					
48. In the last month, how often have you felt nervous and stressed?					
49. In the last month, how often have you felt confident about your ability to handle your personal problems?					
50. In the last month, how often have you felt that things were going your way?					
51. In the last month, how often have you found out you could not cope with all the things that you had to do?					
52. In the last month, how often have you been able to control irritations in your life?					
53. In the last month, how often have you felt that you were on top of things?					
54. In the last month, how often have you been angered because of things that happened that were outside your control?					
55. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?					

PHYSICAL MEASUREMENTS

Respondents ID

Device ID for height.....

Device ID for weight.....

Device ID for blood pressure.....

--	--	--

Weight kg

--	--	--

Height cm

--	--	--

Waist circumference cm

--	--	--

Hip circumference cm

BLOOD PRESSURE

Reading 1

--	--	--

a) Systolic mmHg

--	--	--

b) Diastolic mmHg

Reading 2

--	--	--

a) Systolic mmHg

--	--	--

b) Diastolic mmHg

Reading 3

--	--	--

a) Systolic mmHg

--	--	--

b) Diastolic mmHg

FASTING BLOOD SUGAR MEASUREMENT

During the past 12 hours, have you had anything to eat or drink aside water?

Yes

No

Time of day blood specimen was taken

--	--

a) Hours

--	--	--

b) Mins

--	--	--

c) Fasting blood glucose (mmol/L)

FASTING BLOOD LIPIDS MEASUREMENT

Have you taken any insulin or other medications that have been prescribed by a doctor or other health worker for raised blood glucose?

Yes

No

--	--	--

Total cholesterol (mmol/L)

During the past two weeks, have you been treated for raised cholesterol with drugs/medication prescribed by a doctor or health worker?

Yes

No

--	--	--

Triglycerides mmol/l

	.		
--	---	--	--

HDL mmol/l

	.		
--	---	--	--

LDL mmol/l

AppendixIV: Referral Form for Respondents with Raised Blood

Project Title: Prevalence of Risk Factors of Hypertension among Media Workers in Greater Accra Region, Ghana.

ID.....

Address/contact

Blood Pressure.....

This client had high blood pressure and He/she is, therefore, referred to your outfit for further assessment and treatment.

Investigator.....

Sign.....