ENSIGN COLLEGE OF PUBLIC HEALTH,

KPONG, EASTERN REGION – GHANA

EXPLORING THE RELATIONSHIP BETWEEN KNOWLEDGE OF THE RISK FACTORS FOR HYPERTENSION AND DIABETES AND THE HEALTH SEEKING-BEHAVIOUR OF BANK WORKERS IN ACCRA, GHANA

BY

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A THESIS SUBMITTED TO THE SCHOOL OF PUBLIC HEALTH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PUBLIC HEALTH

JULY, 2017

DECLARATION

I hereby certify that except for reference to other people's work, which I have duly cited, this project submitted to the Department of Community Health, Ensign College of Public Health, Kpong is the result of my own investigation, and has not been presented for any other degree elsewhere.

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DEDICATION

This thesis is dedicated to the memory of my late father, Togbui Kwame Asiemoah.

ACKNOWLEDGEMENT

First and foremost, my heartfelt gratitude goes to my mother, Madam Mercy Kuada without whose support, it would have been difficult to complete this MPH program. To my brothers Constant Sunu and Koku Sunu, and my sister Ama Serwa Asiemoah, I say thank you for your continuous support.

To my supervisor, Dr. Frank Baiden, words cannot describe how grateful I am for all the support and encouragement you have given me throughout my stay in the Ensign College of Public Health. My gratitude to my colleagues Marian Eliason and Adolphine Dzah.

To my entire family and friends, thank you for always believing in me and for the moral support in pursuit of my dreams.

My heartfelt appreciation also goes to the entire staff (teaching and non-teaching) for their amazing support to the student's body.

ABBREVIATIONS/ACRONYMS

BP – Blood Pressure

COPD - Chronic Obstructive Pulmonary Disorder

CVD - Cardiovascular Diseases

DALYs – Disability-Adjusted Life Years

DM – Diabetes Mellitus

GBD – Global Burden of Disease

LMIC – Low and Middle Income Countries

NCDs – Non-communicable Diseases

UHC – Universal Health Coverage

WHO – World Health Organisation

ABSTRACT

Introduction: Non-communicable diseases (NCDs) are leading causes of morbidity and mortality in low and middle income countries (LMIC). About 80% of morbidity in LMIC is accounted for by NCDs with majority of these deaths occurring after 60 years of age. In Ghana, non-communicable diseases (NCDs) constitute about 41% of non-fatal disease burden and yet there is currently inadequate research into knowledge and behavioural risk factors of NCDs in Ghana.

Methods: Self-administered questionnaires were distributed among staff selected from banking institutions in Ghana. A purposive sampling technique was used to select 100 banking institutions in Accra. A convenient sampling technique was used to select staff at banks with large numbers whiles branches with low numbers of staff were all included in the study. Descriptive, bivariate and multivariate analysis using logistic regression was carried out to explore effect of knowledge of risk factors of NCDs on weight and BP checking as proxy measures of health seeking behaviour. Outcome variables, weight and BP checking as a measure of health seeking behaviour were dichotomized into weight or BP check within the year (Regular/More Health seeking) and weight or BP check over 1 year (Less Health Seeking).

Results: Six hundred and sixty-nine (669) staff returned completed questionnaires. About 50.4% of respondents were males. The mean age of respondents was 31years (SD 5.99) and 55.41% were below 30 years of age. Analysis showed that 51.38%, 57.58%, 60.06%, 51.75%, 53.5% and 61.17% do not think weight, family history of hypertension, smoking and level of alcohol intake, the level of salt and sugar intake can affect the risk of developing hypertension or diabetes respectively.

Respondents who did not know that weight could affect their risk of developing hypertension or diabetes were less likely to have had a weight check within a year (OR=0.64, 0.45–0.92, 95% C.I. p=0.02). Females were more likely to have had a weight check within the year (OR=1.57, 1.05-2.21, 95% C.I. p = 0.03), and being single makes a respondent less likely to have done so (OR = 0.59, 0.37-0.95, 95% C.I. p = 0.03).

Independent predictors of Weight-checking (as a measure of health seeking behaviour) were knowledge of weight as a risk factor of developing hypertension and diabetes, gender and marital status.

Knowing that weight can affect the risk of developing hypertension or diabetes makes a respondent more likely to have had a BP check within the year (OR=0.65, 0.43-0.97, 95% C.I. p=0.03). A respondent with parents or siblings not having high BP was less likely to have had a BP check within the year (OR=0.59, 0.40-0.88, 95% C.I. p=0.01). Being a female makes a respondent more likely to have had a BP check within the year (OR=1.55, 1.06-2.26, 95% C.I. p = 0.02) and being single makes a respondent less likely to have done so (OR=0.39, 0.24-0.64, p < 0.01) as compared to married respondents.

Independent predictors of BP-checking (as a measure of health seeking behaviour) were knowledge of weight as a risk factor of developing hypertension and diabetes, parents or siblings having high BP, gender and marital status.

Conclusion: Majority of respondents do not have adequate knowledge on risk factors of NCDs, with most respondents not knowing that family history of hypertension or diabetes, smoking, level of salt and sugar intake can affect their risk of developing hypertension or diabetes. The health seeking behaviour of bank staff surveyed demonstrates an appreciation of the risk posed by obesity. Follow-up anthropological studies are needed to improve the understanding of the role of gender and marital status. Longitudinal studies are recommended.

Key words: NCDs, Hypertension, Diabetes, LMICs, Weight Checking, BP Checking.

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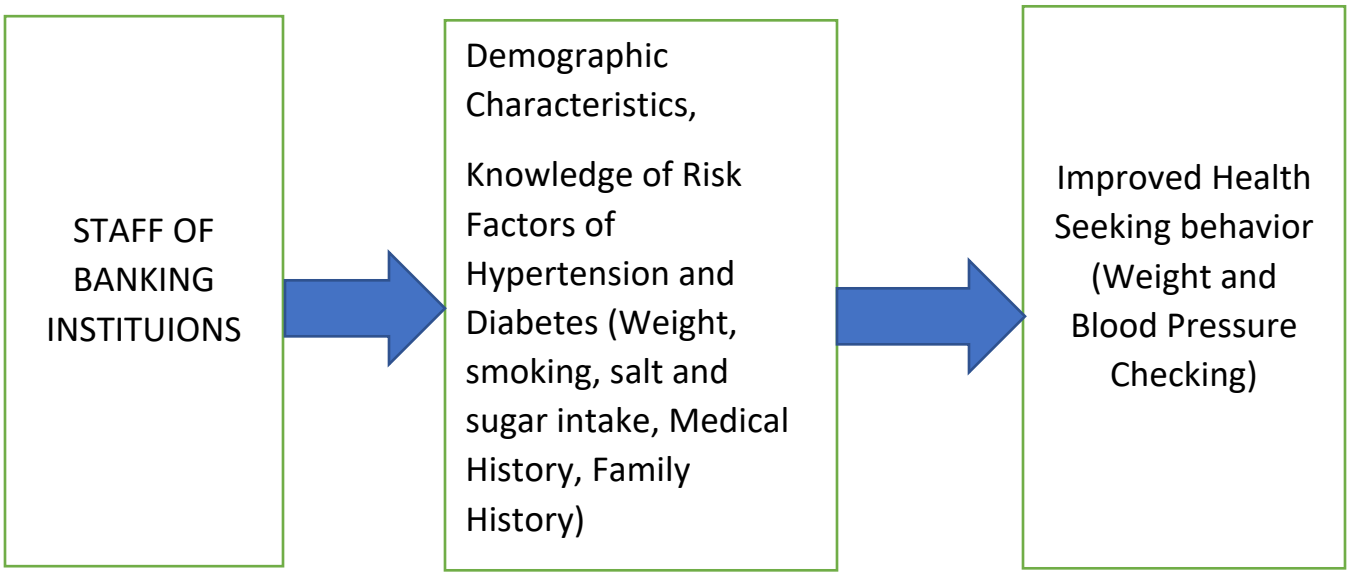
CONCEPTUAL FRAMEWORK



CHAPTER I

INTRODUCTION

Non-communicable diseases (NCDs) such as hypertension and diabetes are leading causes of morbidity and mortality in low and middle income countries (LMIC). About 80% of morbidity in LMIC is accounted for by NCDs with majority of these deaths occurring after 60 years of age[1]. This high and rising global burden of NCDs in LMIC has major impact on the health systems of these countries and may pose a major challenge to the achievement of universal health coverage (UHC)[2].

More than half of the global burden of disease currently is accounted for by NCDs with Africa expected to experience more deaths from NCDs than from communicable diseases by 2030. This trend of NCDs in Africa is explained mainly by the economic and socio-cultural changes that has led to less healthy lifestyles including improper diet, tobacco use, alcohol intake and lack of physical activities[3].

Most of the LMICs including Ghana are experiencing the epidemiological and demographic transition with corresponding increase in the burden of chronic diseases[4]. Urbanization associated with the current demographic changes comes with some associated risk factors as well such as stress, poor diet, obesity and a lack of physical activity which negatively impact health and a possible cause of the increasing burden of NCDs[1]. Other predisposing factors include occupations which promote sedentary lifestyles like sitting for long periods. Workers of financial institutions like banks who sit for long periods could be considered among groups at risk. If such workers do not consciously engage in physical activities, they become susceptible to overweight and obesity and with it chronic NCDs[5].

The NCDs of global attention include Cardiovascular Diseases (CVD), diabetes, Chronic obstructive pulmonary disorder (COPD) and cancers. These NCDs are results of some modifiable risk factors such as Tobacco use, poor diet, physical inactivity and alcohol. The WHO recently included Mental health as an NCD. The worsening burden of NCDs in the LMICs is associated with enormous cost to the economies of these countries[6].

Information on the distribution of NCDs and their risk factors from developed nations such as USA, Canada and UK, shows that type-2 diabetes, cardiovascular disease and their risk factors are higher in more disadvantaged social groups. Data from developing countries are less precise, with limited evidence of high rate of obesity initially in financially prominent groups and a later change to higher rates in socially disadvantaged groups with increasing economic development[7].

The Global Burden of Disease (GBD) reports an increase in the ranking of hypertension from fourth to the third leading risk factor of deaths in West Africa between 1990 to 2010. Sub-Saharan Africa is experiencing an increasing rate of urbanization, globalization, and associated nutrition transition, leading to a potential subsequent increase in NCDs such as hypertension and diabetes within this region. With the increasing levels of NCDs and its association with increasing industrialization and urbanization, and with the general knowledge of its behavioral risk factors, one would have thought that occupational health services would transition to ensure that the economic labor force escapes the dangers of NCDs associated with industrialization. This oversight of needed occupational health services occurs in spite of the determination that workplace health programs are among the most cost-effective ways to prevent NCDs. The United Nations Political Declaration on NCDs calls on the private sector to create ‘an enabling environment for healthy behavior among workers and promote safe and healthy working

environment. Among the formal sector workers who should have access to pre-employment screening and periodic medical screening, it is sad to not that awareness of hypertension is low with consequent low control rates[8].

Just as hypertension, diabetes mellitus (DM) continues to be one of the most important diseases contributing to the high prevalence of NCDs worldwide. Global prevalence of diabetes among adults was projected at 6.4% in 2010, affecting 285 million adults. With current trends, it is estimated that by 2030, prevalence of diabetes will be 7.7% with 439 million adults affected worldwide. Much of this burden will be in developing countries with an increase of 69% in the number of adults with diabetes[9].

Chronic NCDs have played a key role in the disease burden of Ghana for more than half a century now, yet it has now only begun to draw the attention of the nation on its impact on the economy[10].

1.1 General objective:

The goal of this research is to contribute to the global fight against NCDs by exploring how the knowledge of the risk factors for hypertension and diabetes influences the health-seeking behaviour of bank workers in Accra, Ghana.

Primary objectives

To determine the association between knowledge of the risk factors for hypertension and diabetes and health-seeking behaviour - weight checking and BP checking.

Secondary objectives

To explore the effect of family history of hypertension and diabetes on health seeking behaviour – weight checking and BP checking

To explore the effect of demographic characteristics on health seeking behaviour – weight checking and BP checking.

1.3 PROBLEM STATEMENT AND JUSTIFICATION

Non-communicable diseases (NCDs) account for more than half of the global burden of disease. This share of global burden is expected to continue to increase in the coming decades (WHO, 2015). The greatest increase is expected in Africa, where deaths from NCDs are expected to exceed deaths from communicable diseases by 2030[3]. In Ghana, communicable diseases, maternal, perinatal, and nutritional conditions currently constitute about 53% of non-fatal disease burden whereas non-communicable diseases (NCDs) constituted 41%. To adequately address the challenges posed by NCDs requires localised research into risk factors. There is currently inadequate research into knowledge and behavioural risk factors of NCDs in Ghana. As Ghana strives towards continued socioeconomic development through improved education, health, infrastructure, and technology and with the current trend in NCDs, it is important that enough data is available to enable the health system to shift to respond to the evolving demographic and epidemiological realities associated with NCDs[4].

CHAPTER II

LITERATURE REVIEW

2.1 Ghana

Ghana is located on the Gulf of Guinea of West Africa, a few degrees north of the Equator with an estimated population of 24.2 million and a male to female ratio of 95:100, according to the 2010 census. It shares borders on the north with Burkina Faso, on the west with Côte d'Ivoire, and on the east with Togo. Ghana lies just above the equator and falls within the Greenwich meridian line which passes through the seaport of Tema, about 24 km to the east of Accra, the capital. To the farthest coast to the south is at Cape Three Points, 4° 30' north of the equator. From this coast, Ghana extends inland for some 670 kilometres. The distance across the widest part measures about 560 kilometres. Half of the country lies less than 152 meters (500 ft.) above sea level, and the highest point is 883 meters (2,900 ft.). There is about 537-kilometer (334-mi.) coastline which is mostly a low, sandy shore backed by plains and scrub and intersected by several rivers and streams. A tropical rain forest belt, broken by heavily forested hills and many streams and rivers, extends northward from the shore, near the Cote d'Ivoire frontier. This area produces most of the country's cocoa, minerals, and timber. North of this belt, the country varies from 91 to 396 meters (300 ft.-1,300 ft.) above sea level and is covered by low bush, park-like savanna, and grassy plains. Volta Lake, the largest manmade lake in the world, extends from the Akosombo Dam in south-eastern Ghana to the town of Yapei, 520 kilometres (325 mi.) to the north. The lake generates electricity, provides inland transportation, and is a valuable resource for irrigation and fish farming[11]. The capital city of Ghana, Accra is a major commercial city with about 2million Ghanaians engaging in various activities from cooperate, service delivery and trading [11].

About 41.3% of Ghana's population is less than 15 years of age and 5.3% are aged above 64 years. Over the years, Ghana has seen rapid urbanization; As at 2010, an estimated 51% of the population lived in urban areas, a rapid increase from 44% in 2010[11].

2.2 Non-Communicable Diseases (NCDs)

Non-communicable diseases (NCDs) or chronic diseases are generally a class of diseases that are not passed from person to person. They usually progress slowly and have long durations. There are four main types of non-communicable diseases and this include cardiovascular diseases (e.g. atherosclerosis, heart attack and stroke), diabetes, cancers and chronic respiratory diseases. Even though NCDs are often associated with older age groups, evidence suggests that 16 million of all deaths attributed to NCDs occur before the age of 70 and a greater portion of these "premature" deaths (82%) occurred in low- and middle-income countries (WHO, 2015).

Today, (NCDs) account for more than 75% of deaths worldwide, giving an indication of the global burden of NCDs (CDC, 2016). Within the next decade, Africa is expected to experience the largest increase in deaths due to NCDs worldwide. In Sub-Saharan Africa, NCDs are projected to become the leading cause of death by 2030[12].

Deaths due to NCDs cut across the young and old population as well as low and high income countries worldwide. As such NCDs have a great effect on economies, undermining productivity while hiking healthcare expenditure. With an ageing and increasing global population and with current trends, the number of people affected by NCDs is expected to increase considerably[13]. NCDs are a major threat to the physical health and economic stability of many LMIC especially because this stage of their economic development affords them very few resources and time as

compared to higher income countries to deal effectively and efficiently with the increasing number of NCD cases. This makes NCDs are particularly challenging situation for such countries (WB, 2011).

The rising burden of chronic NCDs in LMICs like Ghana, has major implications on the ability of these countries to achieve universal health coverage (UHC). UHC is defined as the provision of primary healthcare services that are accessible, equitable and responsive to the needs of target communities. Two major challenges have been identified; first, many of LMICs have a double burden of infectious and chronic diseases. This dual burden weakens health systems that are already compromised. Current knowledge suggests that strong health systems must have the following six building blocks, which must work synergistically to provide universal health coverage: service delivery, human resources, medicines and technology, information systems, financing and governance. For many LMICs, health systems lack some or most of the elements of the building blocks. Sub-Saharan Africa (SSA), for example has 11% of the world's population, bears over 24% of global disease burden, but only has 3% of the global health workforce. The growing burden of NCDs poses further challenges to a limited and poorly distributed health workforce. Secondly, the impact of NCDs on communities is great. NCDs affect adults in their most productive age, affect poor communities disproportionately, push individuals and households further into poverty and present long-term psychosocial challenges[2].

2.3 Epidemiology of NCDs in Ghana

Major NCDs in Ghana include cardiovascular diseases (CVD), diabetes, sickle cell disorders, cancers, asthma and injuries. Deaths due to NCDs in Ghana are estimated to be around 86,200 yearly with 55.5% of these mortalities occurring in persons less than 70 years of age. Sex distribution of mortality due to NCDs occurring in ages less than 70 years is 69% among males and 59% among females. An estimated 50,000 deaths due to NCDs occur in males and 36,000 deaths occur in females. Age standardised NCDs death rate is 817 per 100,000 populations. In 2008, NCDs accounted for an estimated 34% deaths and 31% burden of disease in Ghana. Cardiovascular diseases are the leading cause of NCD deaths with an estimated 35,000 deaths representing 15% of total deaths. NCDs cause an estimated 2.32million disability-adjusted life years (DALYs) representing 10,500 DALYs lost per 100,000 populations (MoH, 2013).

2.4 Hypertension

Hypertension or high blood pressure as defined by the WHO, refers to a condition in which the blood vessels have persistently raised pressure. Blood is transported from the heart to all parts of the body through the vessels. Each heart beat pumps blood into the vessels. Blood pressure is created by the force of blood pushing against the walls of blood vessels as it is pumped by the heart. The higher the pressure, the harder the heart has to pump (WHO/WHD, 2013).

Hypertension is the most common cardiovascular disorder which affects approximately one billion people globally. It is a leading contributor to the global burden of disease and premature death, accounting for approximately 9.4 million deaths annually. In 2000, there was an estimated 972 million people with hypertension, with 65% of cases living in the developing world. Globally, the

burden of disease attributable to hypertension has substantially increased from about 4.5 percent representing almost 1 billion adults in 2000, to 7 percent in 2010. This high burden and increasing trend makes hypertension the single most important cause of morbidity and mortality globally and provides a strong indication about the urgent need of action to address the problem[14].

Hypertension was once regarded as a problem only in high-income countries but is currently a global problem, increasing the risk for cardiovascular diseases (CVD) in most nations regardless of socio-economic status. Over 80 % of the world's deaths from CVD occur in low and middle-income countries, reaffirming the diversified nature of the problem of hypertension in its current state. In some African countries, the prevalence of hypertension among adults has risen to rates similar to and sometimes exceeding that in many high-income countries. The increasing prevalence of hypertension in low income countries represent a major public health problem with associated economic and social impacts[15]. Recent reports show that the worldwide burden of hypertension is greatest in LMICs where about 1 in every 5 of the adult population is affected and this is supposed to increase. It is projected that by 2025, almost 3 out of every 4 people with hypertension will be living in LMICs. This indicate that the number of people affected by hypertension in LMICs are considerably higher compared to the developed world and are likely to increase as globalization and economic advancement brings about urbanization and longer life expectancy in these countries[14].

The effects of hypertension may be malignant, and may lead to a number of non-communicable diseases (NCDs) including stroke, myocardial infarction, cardiac failure, and renal failure among others. In sub-Saharan Africa (SSA), the World Health Organization (WHO) projects the number

of hypertension cases to increase from an estimated 80 million in 2000 to 150 million in 2025[16]. Cases of hypertension are on the rise globally with an estimated 30% increase in prevalence by 2025. LMIC may bear a higher burden of hypertension due to the demographic transitions being observed in these countries leading to nutritional transitions, poor health systems, increasing trends in sedentary lifestyle, increase in modifiable risk factors such as alcohol consumption, tobacco use, stress and physical activity[17]. High blood pressure or hypertension is the leading risk factor for heart failure, stroke and kidney failure, which normally occurs at younger ages. Hypertension comes along with a high economic impact, and in Africa it is felt directly by the individuals and the health care system through the high costs of treating complications; and indirectly through the loss of household incomes due to disability and death of these economically active younger adults. Hypertension itself is a modifiable risk factor whose management has contributed to the significant decline in associated morbidity and mortality in developed countries over the last thirty years. Blood pressure levels from young adulthood can predict the incidence of future cardiovascular events and more significant improvements in mortality and morbidity from blood pressure control has been reported among younger subjects when compared to older ones[8].

2.5 Diabetes

Diabetes mellitus refers to a group of metabolic disorders characterized by higher than normal blood glucose levels (hyperglycemia) resulting from defects in insulin secretion, insulin action or both. Insulin is a hormone produced by the beta cells of the pancreas and has the primary function of utilizing glucose from digested food as a source of energy. Diabetes mellitus is chronic hyperglycemia and can result in complications that can lead to visual impairment, blindness,

kidney disease, nerve damage, amputations, heart disease, and stroke. There are generally two forms of diabetes mellitus. In type 1 diabetes, the body does not produce insulin, and daily insulin injections are required. It is usually diagnosed during childhood or early adolescence. Type 2 diabetes is the result of failure to produce sufficient insulin or insulin resistance. In type-2 diabetes mellitus, hyperglycemia is managed with change in lifestyle such as reduced food intake, increased physical activity and oral medications or insulin[18].

Diabetes mellitus is regarded as the most prevalent metabolic disorder and is characterized by chronic hyperglycemia due to defect in insulin secretion by beta cells of Langerhans islets or resistance against insulin action. Globally, more than 300million people are suffering from diabetes mellitus and studies show that population aging, changes in lifestyle and improvement in detection techniques have contributed to the increasing number of cases. The prevalence of type 2 diabetes mellitus varies in different populations from less than 6% in most populations to more than 50% in Pima Indians. About 382 million people throughout the world suffer from diabetes with about 176 million of people still undiagnosed. It is predicted that this prevalence will rise to about 592 million by 2035. Diabetes mellitus can also lead to complications in most organs such as the heart, eye, kidney, and nervous system which results in high economic cost and burden Therefore, early diagnosis is very important[19].

Type-2 Diabetes Mellitus has become a global public health problem. Recent statistical data reveals that it has some new epidemiological characteristics. Firstly, it keeps a steady increase in developed countries, such as United States and Japan. Type-2 diabetes mellitus has also become a serious issue in developing countries. It is predicted that it will continue to increase in the next twenty years, and more than 70% of the patients will appear in developing countries, with the

majority of them being within the age of 45-64 years. Currently, seven out of top ten countries with the largest number of diabetes patients are lower middle-income countries, including India, China, Russia, Brazil, Pakistan, Indonesia, and Bangladesh, among which the prevalence rates are 12.1% and 9.7% in India and China, respectively. Secondly, although advancing age is a risk factor for Type-2 diabetes mellitus, rising rates of childhood obesity have resulted in increasing cases among children, teenagers and adolescents, which is a serious emerging of the epidemic and a new public health problem of significance[20].

2.6 Behavioural Risk Factors of NCDs

Prevalence of NCDs is on the increase in LMIC. This increase in prevalence has been linked to urbanisation and lifestyle changes[21].

There are many factors that could pre-dispose an individual to NCDs. Some are modifiable factors whiles others are not. Non-modifiable risk factors are those that cannot be changed by an individual and include age, sex and genetic make-up. The modifiable risk factors are those that are influenced by lifestyle that can be changed by the individuals or the collective efforts of society to improve health outcomes. These include alcohol consumption, tobacco use, poor diet and physical inactivity[13].

According to Yarahmadi *et al.* (2013), diabetes, obstructive pulmonary diseases, cancers and cardiovascular diseases share a common and preventable lifestyle related risk factors such as obesity and overweight, tobacco use, lack of physical activity and unhealthy diet as such a

comprehensive approach which includes a common focus on controlling this interrelated risk factors can help in preventing these diseases[21].

2.6.1 Nutrition

Caloric imbalance, that is differences between calories consumed and calories utilised, or in other words increasing intake of food coupled with low physical activity has been reported to be the leading cause of overweight and obesity which are leading pre-disposing factors to NCDs[5].

According to Musaiger *et al.,* (2011) in a study conducted in Arab countries, changes in lifestyle due to demographic and socioeconomic transitions have affected nutritional habits with the introduction of processed foods. Theses processed foods have been introduced mainly as a result of increased trading with Western and Asian countries. Just as is happening in most developing countries, the Arabian countries are also experiencing transition in nutrition typified by the replacement of traditional diets with refined foods and diets higher in fat content. This transition in diet has been linked with diet related chronic NCDs such as cancer, obesity, cardiovascular diseases, type 2 diabetes mellitus and osteoporosis[22].

The composition and constitution of human diets has changed considerably over time. Globalization and urbanization have made processed foods high in refined starch, sugar, salt and unhealthy fats cheaply and readily available and enticing to consumers – often more so than natural foods coupled with the shift towards more sedentary lifestyles, which has accompanied economic growth, the shift from agricultural economies to service-based economies, and urbanization in the developing world, overweight and obesity, and associated health problems, are on the rise in the

developing world. This spreading of the fast food culture, sedentary lifestyle and increase in bodyweight has led some to coin the emerging threat a "globesity" epidemic[13].

2.6.2 Physical Activity

Risk factors of NCDs are mostly lifestyle related[23]. For example, behavioural risk factors such as insufficient physical activity, use of tobacco, alcohol consumption and unhealthy diet are common underlying factors of most diseases as well as NCDs[1]. Physical inactivity can lead to overweight and obesity which is a risk factor to hypertension and other cardiovascular diseases[24]. A major public health concern today is the issue of obesity which is a major risk factor of most NCDs including cardiovascular diseases and type 2 diabetes. Urbanisation and improvement in living conditions coupled with occupation mostly regarded as high class occupations have led to appreciable reduction in physical activity resulting in low energy expenditure, whiles encouraging high energy intake in the form of food. This decrease in physical activity due to changes in modes of transportation and sedentary work environments is the major underlying cause of obesity among these high socioeconomic status (SES) group of people[5].

According to Afrifa-Anane *et al.,* (2015), prevalence of overweight among women between the ages 15 – 49 has increased from 25.5% to 30.5% between 2003 and 2008. Overweight and obesity which are common conditions associated with old age is now becoming common among the younger generations including adolescents as a result of changes in lifestyle such as low physical activity. In this paper as well, physical activity during childhood and adolescent is reported to have an effect on adult obesity and blood pressure. Physical activity during adolescence minimizes the risk of developing NCDs such as type 2 diabetes and cardiovascular diseases[25].

2.6.3 Alcohol and Tobacco Use

According to Parry *et al.*, (2012), alcohol has been linked as a risk factor to cancers, cardiovascular diseases and liver diseases. Alcohol is one of the leading risk factors of deaths and disability globally and accounts for about 3.8% of deaths and 4.6% of DALYs lost in 2004. Alcohol consumption is linked to about 8 different cancers, hypertension, haemorrhagic stroke, atrial fibrillation, pancreatitis and other forms of liver diseases, with the risk increasing with the volume consumed[26].

Another behavioural risk factor of NCDs is tobacco use. Heavy smokers have been shown to have an increased risk of developing cardiovascular diseases such as ischemic stroke as well as high serum lipid and lipoprotein concentrations. Between 2002 and 2030, it is projected that deaths due to tobacco use and its exposure will double from 3.4 million to 6.8 million in low and middle income countries but will reduce by 9% in high income countries[27].

2.6.4 Stress

Stress may be defined as circumstances referred to as stressors that an individual may find stressful[28]. A lot of personal and social challenges that cause physical and emotional challenges can lead to stress. These challenges rather lead to long lasting and detrimental physical and mental health. A lot of health challenges or diseases such as some cardiovascular diseases (coronary heart diseases, acute myocardial infarction etc.) have been linked to high levels of stress[28]. Stress may result from multiple factors or stressors such as work related stress which may have long lasting damaging impact on the health of an individual such as an individual's physical, psychological and social functioning[28].

Some studies conducted on NCDs over the last two decades have explored and explained causal factors of NCDs. Findings from these studies associate NCDs to be caused by a host of biological, social and physiological factors. These studies have shown a positive relationship between healthy lifestyles such as healthy diets, exercise and non-smoking with good social support. Mental health status such as depression, loneliness, happy life, concentration and good memory which are associated with the neurophysiology of the individual have also been linked with NCDs [23].

According to de Punder and Pruimboom (2015), stress induces inflammation by making the intestinal walls more permeable and increasing the availability of water, sodium and other energy rich substances to meet the increased metabolic demand introduced by the stressor. This although sometimes beneficial also leads to the transport of bacteria and their toxins across the now more permeable intestinal wall into the blood circulatory system. This increase the levels of endotoxins in the blood which may be the cause of onset and progression of NCDs such as type 2 diabetes and chronic heart failure[29].

2.7 Health Seeking Behaviour

Health is mostly the product of lifestyle, most of which are modifiable. Various lifestyles that affect our health include diet, smoking, alcohol consumption and physical activity. A lack of effort to practice good lifestyles such as no smoking, healthy diets, high physical activity and reduced/no alcohol consumption can result in non-communicable diseases[30]. There is evidence that positive health seeking behaviour such as dietary salt reduction, weight loss and diets that consists of largely fruits and vegetables are effective in lowering blood pressure[30].

Health seeking behaviour is affected by various factors which are mostly linked to an individual's self-perceived health and the availability of healthcare. Other factors that may affect an individual's ability to seek or utilize healthcare include one's experience, values and beliefs with the healthcare systems. Other studies have also shown that certain personal attributes which may predispose an individual to seek healthcare, the need for health services due to morbidity and financial capability to pay for healthcare, availability and proximity of health services are associated with healthcare utilization[31].

CHAPTER III

METHODOLOGY

3.1 Ethical Consideration

Ethical approval was obtained from the Ghana Ethical Review Board and the Ensign Ethical Review Board. Administrative approval was also sought from participating banks. The design of the study was such that it posed minimum to study participants. To ensure confidentiality, study participants were not required to indicate their names on either consent forms or on the questionnaire.

3.2 Study Site

The study was conducted within the Greater Accra region of Ghana. The Greater Accra region is home to over 4 million Ghanaians according to the population and housing census conducted in 2010 (GSS-PHC, 2010). The study was conducted among staff in banks located around two commercial districts of Accra. These are the Central Business City and Spintex Road. These sites were selected because of their high economic activities, and high concentration of banks and other financial institutions.

3.3 Study Design

The study design approach to this research was a descriptive cross-sectional study. The nature of this research requires this type of study design especially due to the time frame for the study.

3.4 Sample Population and Sample Size

Accra is the capital city of Ghana and is characterised by high economic activities. It typically houses head offices of almost all the major banks as well as branches.

This study was conducted within the context of a larger study into the risk of non-communicable diseases among workers of banks in Accra. The target sample size was estimated with the expectation to estimate the prevalence of risk of NCDs within a margin of error of 3.7%, at 95% confidence level and assuming a prevalence of 50% (for maximum variance) among a possible population of 10,000 bank workers.

(Source: http://www.raosoft.com/samplesize.html)

A list of banking institutions in Accra was obtained from the Accra Metropolitan Assembly. A purposive sampling technique was used to randomly select 100 banking institutions for the purpose of the research. Selected banks included some head offices and branches in the Accra metropolis. At head offices, a convenient random sampling was done to select study subjects due to the large numbers of staff. At the branch level, all the staff on duty were included in the study. No form of randomisation was done at the branch level due to the generally low number of staff as compared to the head offices, with some branches having as low as 6 staffs. A total of 669 bank workers participated in the study.

3.5 Study Tools

A standard questionnaire was developed using the WHO-NCD STEPwise approach to surveillance. The questionnaire covered such areas as demographic information, knowledge of NCD, family history, lifestyle, physical activity level and sources of stress.

3.6 Data Collection

Pre-testing

Questionnaires (Appendix 1) were first pre-tested among students of the Ensign college of Public Health to check for its user friendliness. After this initial pre-testing, it was realised that the questionnaire was too bulky and took too much time to complete. We also realised that some questions for instance “Time of last meal” could be captured under lifestyle instead of under “Nutrition”. The questionnaire was edited and some parts removed to make it more concise and easy to use. The questionnaire was again pre-tested at banks within the Ashaiman Municipal Assembly. This provided an opportunity to test the questionnaire among a population of similar characteristics to the study population. After the pre-testing, it was realised again that some questions were not easily understood. All necessary corrections were made and the questionnaire adopted for the research.

Administrative Procedure

Before the study was carried out, authorization was obtained from management of all participating banks to carry out the research among staff. The Human Resource manager or Branch Manager depending on the bank, informed staff of the study and provided them with the participant

information and consent form. It was made known to all participants that participation was voluntary and that they could opt out even if they had agreed to partake in the study. To protect the identity of staff, oral consent was accepted as an alternative to signed consent. This technique is more efficient because it improves accuracy of estimates.

At the head offices, the list of employees was obtained from the human resources department and a systematic sampling method was used to select 20 employees for inclusion in the study. The systematic sampling was carried out only for the head office staff whereas in the branches, all staff was included in the study. The participants were conveniently selected to participate after the importance of the survey had been explained to them and their consent obtained. Questionnaires were either given out to participants directly or for others they were given out through their managers or supervisors. Questionnaires were collected after some few hours if it was given out directly or collected after a maximum of one week if it was given out through managers/supervisors.

In some banking institutions, it was requested that a presentation be done on the study to staff of the participating bank to enlighten them on the importance of the research. These presentations were mostly done very early in the morning before the banks open to the public for business and included about 15-minute talk on the research and its relevance.

Questionnaire Administration

Interviews were conducted using questionnaires at the participants' bank/workplace. The questionnaires were self-administered due to the nature of work. Workers were offered agreed times to return completed questionnaires. The questionnaire was structured into six (6) parts. The first part of consisted of questions related to demographic profile. Questions then followed relating

to lifestyle, medical history knowledge and attitudes towards NCDs, knowledge and attitudes towards physical activities and source of stress and perceived stress. For the purposes of analysis however, the research will focus on demographic information and knowledge and attitudes towards NCDs.

3.7 Data Management

All completed questionnaires were checked and, if necessary, participating banks were revisited. Data entry was outsourced to a team of data entry operators. Questionnaires were sorted based on date, participating bank and time of return of completed questionnaire. All questionnaires were cross-checked after which data was entered. Data was captured using PS Pro software.

3.8 Data Analysis

Data will be analysed using STATA 2014 statistical software. Data was analysed in two parts; descriptive and analytical. Descriptive analysis considered the demographic characteristics of respondents. Respondents were described in terms of gender, age, marital status, ethnicity, religious background, educational level and whether the respondents have dependants or children below the ages of 12 and 5. Descriptive analysis provides background information on respondents in view of how it may affect the outcome variable.

The analytical aspect of the data considers health seeking behaviour in terms of respondents checking their weight or blood pressure (BP) as the outcome variable and explores the effect of demographic information, family history and knowledge of NCDs on health seeking behaviour. The outcome variables, weight and BP checking as a measure of health seeking behaviour were dichotomised into weight or BP check within the year (Regular/More Health seeking) and weight

or BP check over 1 year (Less Health Seeking). Univariate analysis was carried out on the various independent variables on the outcome variables. Univariate analysis that yielded more than one significant results were then analysed in multivariate regression model to determine independent predictors of the outcome variables. The results were entered into constructed tables below.

3.9 Limitations

Cross-sectional study design describes exposure and outcome at the same time and limits the determination of causal pathway between exposure and outcome. As such findings may be biased.

Nature of work of respondents made it difficult for cooperation of respondents. Some banking institutions refused to partake in the study because of a lack of time.

3.10 Assumptions

Knowledge of risk factors of NCDs (Hypertension and Diabetes) should lead to better health seeking behaviour – regular weight checking and BP checking.

CHAPTER IV

4.0 RESULTS

A total of 669 bank staff completed and returned the questionnaires. This represented a response rate of 95%.

4.1 Demography

The study population included all office based staff, both male and female of selected banks in the greater Accra region. A total of 337 representing 50.37% of respondents were males whiles 332 representing 49.63% constituted females.

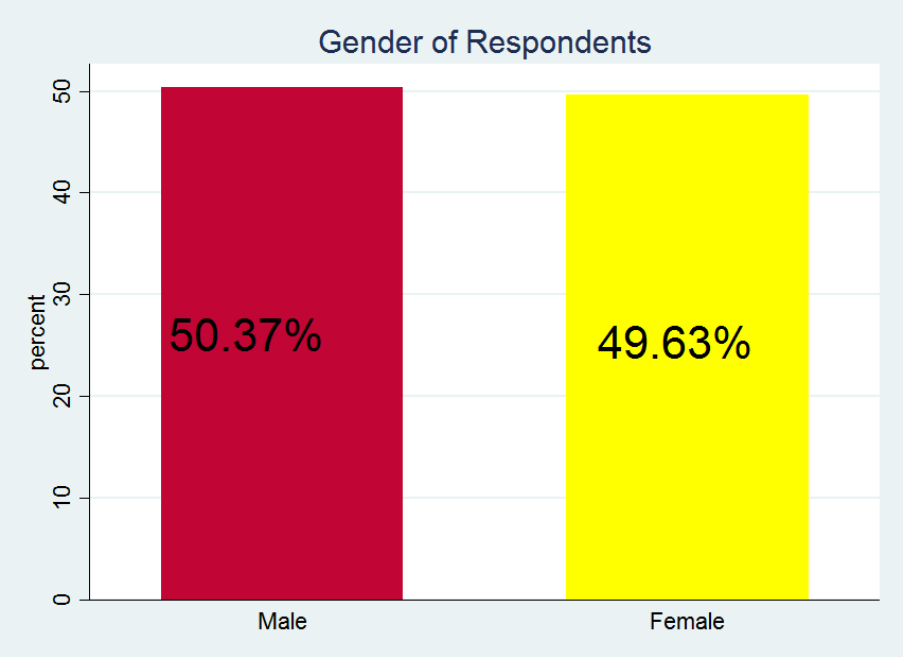


Fig. 1.0 Bar chart of Gender of respondents

The age of respondents ranged from 19 years to 58 years with a mean age of 31 years and standard deviation of 5.99.

The distribution of ethnic groups among study participants were as follows: 346 (51.87%) represented the Akan ethnic group, 150(22.49%) represented Ewes, 129(19.34) represented the Ga/Dangbe ethnic group whereas 42(6.30%) represented other ethnic groups made up of Dagbani, Grusi and non-Ghanaians.

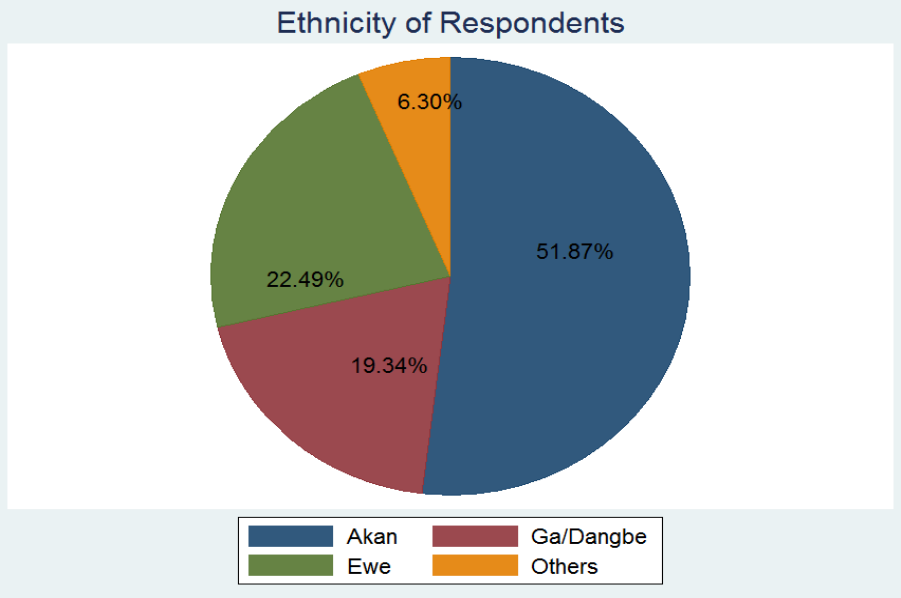


Figure 2.0 Ethnicity of Respondents

Majority of respondents, 362(54.35%) are single whereas 292(43.84%) represent the married group. Others such as respondents who were divorced or widowed consist of 12(1.80%).

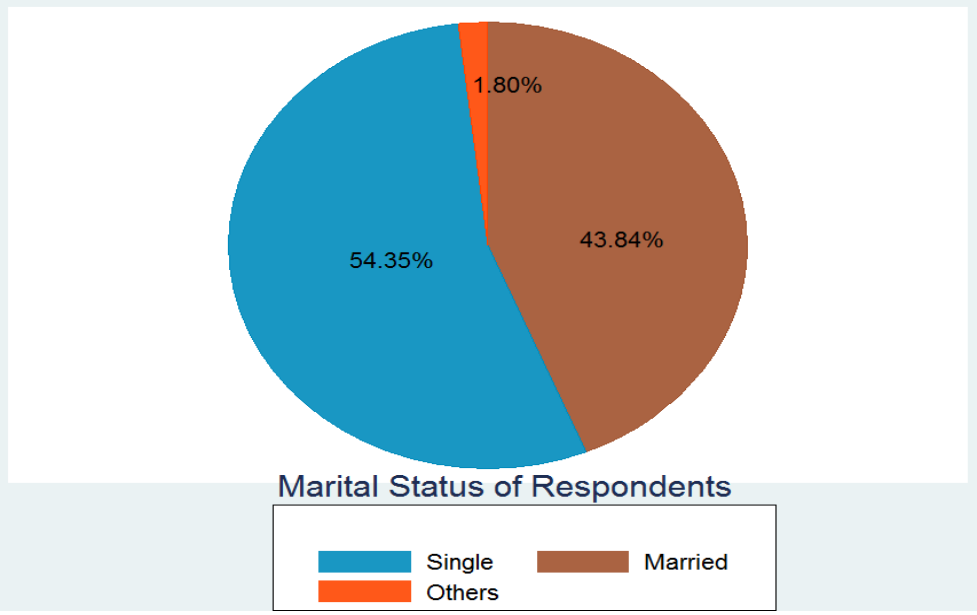


Figure 3.0 Marital Status of Respondents

Majority of respondents (74.81%) have had their last weight check within the year as compared to the minority (25.19%) who have had their last weight check over a year. Similarly, most them (73.60%) have had their last BP check within the year as against the minority (26.40%) who have had their last BP check over a year.

4.2 Effect of Knowledge of Risk Factors of NCDs on Weight-Checking (as indicator of health-seeking behaviour

Majority of respondents (51.38%) do not think their weight can affect their risk of developing hypertension or diabetes. Univariate analysis also revealed that those who do not think their weight can affect their risk of developing hypertension or diabetes were significantly less likely (OR=0.64, 0.45-0.92, 95% C.I. p = 0.02) to have had their last weight check within the year as compared to respondents who think their weight can affect their risk of developing hypertension or diabetes.

About 57.58% of respondents do not think their parents or close relatives having hypertension or diabetes pre-disposes them to the risk of developing hypertension or diabetes as compared to 42.42% who think otherwise. In univariate analysis, those who do not think a parent or sibling having hypertension or diabetes can affect their risk of developing the condition were less likely (OR=0.78, 0.55-1.12, 95% C.I. p = 0.18) to have had their last weight check within a year as compared to those who think their parents or siblings having the condition can affect their risk of developing it.

Majority of respondents (60.06%) do not think whether you smoke or not can affect your risk of developing hypertension or diabetes as compared to 39.94% who think otherwise. In univariate analysis, those who do not think whether you smoke or not affects your risk of developing hypertension or diabetes were more likely (OR=1.21, 0.84-1.72, 95% C.I. p = 0.30) to have had their last weight check within the year as compared to those who think smoking or not predisposes them to developing hypertension or diabetes.

Most of the respondents (51.75%) do not think level of alcohol intake has a bearing on their risk of developing hypertension or diabetes. In univariate analysis to determine the effect of this on health seeking behaviour (weight checking), the results show that those who do not think that the level of alcohol intake has an effect on the risk of developing hypertension are a little more likely (OR=1.13, 0.80-1.61, 95% C.I. p = 0.48) to have had their last weight check within the year as compared to the minority (48.25%) who think level of alcohol intake can affect risk of developing hypertension or diabetes.

A greater number of respondents (53.51%) think that level of salt intake can affect risk of developing hypertension or diabetes. In univariate analysis however, this didn't have much effect on the last time respondents checked their weight with those who do not think level of salt intake has a bearing on risk of developing hypertension and diabetes just a little less likely (OR=0.94, 0.66-1.34, 95% C.I. p = 0.75) to have had their last weight check within the year as compared to those who think level of salt intake can affect risk of developing hypertension or diabetes.

Homogeneous with knowledge on level of salt intake is that of sugar intake, with a greater number of respondents (61.17%) believing that level of sugar intake can affect the risk of developing hypertension or diabetes as compared to 38.83% who think otherwise. In univariate analysis, respondents who do not think level of sugar intake can affect risk of developing hypertension or diabetes were a just a little less likely (OR=0.94, 0.65-1.35, 95% C.I. p = 0.74) to have had their last weight check within the year as compared to respondents who think otherwise. Since there was only one significant variable, analysis ended at the univariate level.

Variable and category		Last Weight Check					
		Within A year	Over 1 year	Univariate OR (95% C.I.)	P-Value	Multivariate OR (95% C.I.)	P - Value
Do you think your Weight can affect your risk of developing hypertension or diabetes?	No	235 (70.57%)	98 (29.47%)	0.64 (0.45–0.92)	0.02		
	Yes	246 (78.85%)	66 (21.15%)	1.00			
Do you think your parents or close relatives having hypertension or diabetes can affect your risk of developing hypertension or diabetes?	No	274 (72.87%)	102 (27.13%)	0.78 (0.55–1.12)	0.18	N/A	
	Yes	216 (77.42%)	63 (22.58%)	1.00			
Do you think whether you smoke or not can affect your risk of developing hypertension or diabetes?	No	299 (76.28%)	93 (23.72%)	1.21 (0.84–1.72)	0.30	NA	
	Yes	192 (72.73%)	72 (27.27%)	1.00			
Do you think your level of Alcohol intake can affect your risk of developing hypertension or diabetes?	No	256 (75.96%)	81 (24.04%)	1.13 (0.80–1.61)	0.48	NA	
	Yes	234 (73.58%)	84 (26.42%)	1.00			
Do you think your level of Salt intake can affect your risk of developing hypertension or diabetes?	No	225 (74.26%)	78 (25.74%)	0.94 (0.66-1.34)	0.75	N/A	
	Yes	263 (75.36%)	86 (24.64%)	1.00			
Do you think your level of Sugar intake can affect your risk of developing hypertension or diabetes?	No	185 (73.71%)	66 (26.29%)	0.94 (0.65-1.35)	0.74	N/A	
	Yes	295 (74.87%)	99 (25.13%)	1.00			

Table 1.0 Effect of Knowledge of Risk Factors of NCDs on Weight Checking

4.3 Effect of Medical History on Weight Checking (as an indicator of health seeking behaviour)

Results for the effect of medical history on weight checking are presented in Table 2.0 below. Questions on medical history included whether any of the respondent's parents or siblings have high BP, whether parents or siblings have diabetes, whether respondent has been diagnosed of having hypertension or diabetes and whether respondent was on any medication if he/she was diagnosed with any of the conditions. Univariate analysis was then carried out to explore the effect of answers for the above questions on the respondent's ability to check his or her weight within a year or not. In univariate analysis, respondents whose parents or siblings do not have high blood pressure (BP) were less likely (0.85, 0.58-1.23, 95% C.I. p = 0.75) to check their weight compared to those whose parents or siblings have high BP. For respondents, whose parents or siblings had diabetes or not, there was no difference in the ability of respondents to check their weight within a year or above a year (OR=0.99, 0.63-1.59, 95% C.I. p = 0.99). Respondents who have not been diagnosed with hypertension or diabetes were less likely (OR=0.66, 0.30-1.46, 95% C.I. p = 0.30) to check their weight more regularly compared to those who were diagnosed with hypertension or diabetes. Similarly, those who were not on any medication for the above diagnosed conditions were less likely (OR=0.50, 0.19-1.32, 95% C.I. p = 0.16) to check their weight more regularly as against those on medication for hypertension or diabetes. Multivariate analysis was not carried out because of lack of significance of the results in the univariate analysis.

		Last Weight Check			
Variable and category		Within A year	Over 1 year	Univariate OR (95% C.I.)	P-Value
Does any of your parents or siblings have high BP?	No	310 (73.99%)	109 (26.01%)	0.85 (0.58–1.23)	0.75
	Yes	178(77.06%)	53 (22.94%)	1.00	
Does any of your parents or siblings have Diabetes?	No	400 (74.77%)	135 (25.23%)	0.99 (0.63–1.59)	0.99
	Yes	86 (74.78%)	29 (25.22%)	1.00	
Have you ever been diagnosed as having Diabetes or Hypertension?	No	452 (74.34%)	156 (25.66%)	0.66 (0.30–1.46)	0.3
	Yes	35 (81.40%)	8 (18.60%)	1.00	
Are you on any regular medication for the diagnosed disease?	No	455 (74.47%)	156 (25.53%)	0.50 (0.19–1.32)	0.16
	Yes	29 (85.29%)	5 (14.71%)	1.00	

Table 2.0 Effect of Medical History on Weight-Checking

4.4 Effect of Sociodemographic Information on Weight-Check (as an indicator of health seeking behaviour)

Table 3.0 shows results of effect of sociodemographic factors on health seeking behaviour, specifically on the last time a respondent checked his/her weight. In the univariate analysis, the results obtained shows that in terms of gender, females were significantly more likely (OR=1.57, 1.05-2.21, 95% C.I. p = 0.01) to seek health in terms of checking their weight more frequently (i.e. within a year) as compared to males. Age was categorised into two groups, those below 30 years and those above 30 years and results from univariate analysis showed that respondents who are 30 years and above were more likely (OR=1.60, 1.11-2.31, 95% C.I. p = 0.01) to check their weight more regularly (i.e. within the year) as compared to those who are below 30 years of age. Univariate analysis for marital status also showed that respondents who are single were less likely (OR=0.48, 0.32-0.70, 95% C.I. p < 0.01) to check their weight regularly as compared to the married people. Ethnicity and Religion had no effect on health seeking behaviour whereas respondents with one or two children or dependents under 12 years (OR=1.76, 1.16-2.66, 95% C.I. p <0.01) and those with 3 or more children or dependents under 12 years (OR=1.45, 0.75-2.78, 95% C.I. p = 0.27) were more likely to check their weight regularly as compared to those with no children at the univariate analysis level.

Significant associations in the univariate analysis were analysed in multivariate. These significant variables included gender, age, marital status and child/dependent under 12 years of age. In multivariate analysis, females were more likely (OR=1.52, 1.05-2.21, 95% C.I. p = 0.03) to seek health (i.e. check their weight within the year) as compared to male respondents, and respondents that are single were less likely (OR=0.59, 0.37-0.95, 95% C.I. p = 0.03) to check their weight regularly (i.e. within the year).

Variable and category		Last Weight Check					
		Within A year	Over 1 year	Univariate OR (95% C.I.)	P-Value	Multivariate OR (95% C.I.)	P - Value
Gender	Female	257 (79.08%)	68 (20.92%)	1.57 (1.01–2.24)	0.01	1.52 (1.05-2.21)	0.03
	Male	236 (70.66%)	98 (29.34%)	1.00		1.00	
Age	30 years and above	230 (79.58%)	59 (20.42%)	1.60 (1.11–2.31)	0.01	1.09 (0.70-1.71	0.70
	Below 30 years	260 (70.84%)	107 (29.16%)	1.00		1.00	
Marital Status	Single	248 (69.27%)	110 (30.73%)	0.48 (0.32–0.70)	<0.01	0.59 (0.37-0.95)	0.03
	Married	236 (82.52%)	50 (17.48%)	1.00		1.00	
Ethnicity	Ga/Dangbe	99 (78.57%)	27 (21.43%)	1.31 (0.80–2.14)	0.28	N/A	
	Ewe	108 (73.47%)	39 (26.53%)	0.99 (0.64-1.53)	0.96	N/A	
	Others	32 (76.19%)	10 (23.81%)	1.14 (0.54-2.42)	0.73	N/A	
	Akan	252 (73.68%)	90 (26.32%)	1.00			
Religion	Muslim	18 (66.67%)	9 (33.33%)	0.66 (0.29-1.51)	0.32	N/A	
	Christian	467 (75.08%)	155 (24.92%)	1.00			
Educational Level	Tertiary	470 (75.68%)	151 (24.32%)	1.80 (0.84-3.88)	0.13	N/A	
	Secondary	19 (63.33%)	11 (36.67%)	1.00			
Child or Dependant Under 12 years	3 and above	46 (77.97%)	13 (33.03%)	1.45 (0.75-2.78)	0.27	1.03 (0.49-2.18)	0.94
	One or two	168 (81.16%)	39 (18.84%)	1.76 (1.16-2.66)	<0.01	1.40 (0.86-2.25)	0.18
	None	279 (70.99%)	114 (29.01%)	1.00		1.00	
Child or Dependant Under 5 years	3 and above	20 (83.33%)	4 (16.67%)	1.88 (0.62-5.72)	0.26	N/A	
	One or two	163 (82.32%)	35 (17.68%)	1.75 (1.10-2.78)	0.02		
	None	181 (72.69%)	68 (27.31%)	1.00			

Table 3.0 Effect of Sociodemographic factors on Weight-Checking

4.5 Effect of Knowledge of Risk Factors of NCDs on BP-Checking (as indicator of health-seeking behaviour)

In univariate analysis to explore the effect of knowledge of risk factors on BP checking habit of respondents, those who do not think their weight can affect their risk of developing hypertension or diabetes were significantly less likely (OR=0.54, 0.38-0.78 95% C.I. $p < 0.01$) to have had their last BP check within the year as compared to respondents who think their weight can affect their risk of developing hypertension or diabetes.

Univariate analysis for those who do not think a parent or sibling having hypertension or diabetes can affect their risk of developing the condition were significantly less likely (OR=0.57, 0.39-0.82, 95% C.I. $p < 0.01$) to have had their last BP check within a year as compared to those who think their parents or siblings having the condition can affect their risk of developing it.

Those who do not think whether you smoke or not affects your risk of developing hypertension or diabetes were less likely (OR=0.82, 0.57-1.17, 95% C.I. $p = 0.28$) to have had their last BP check within the year as compared to those who think smoking or not predisposes them to developing hypertension or diabetes.

In univariate analysis to determine the effect of knowledge on level of alcohol intake on health seeking behaviour (BP checking), the results show that it did not have an effect on the last time respondent checked his/her BP, with those who do not think that the level of alcohol intake has an effect on the risk of developing hypertension are a 1.04 times more likely (0R=1.04, 0.74-1.40, 95% C.I. $p = 0.79$) to have had their last BP check within the year.

Those who do not think level of salt intake has a bearing on risk of developing hypertension and diabetes were less likely (OR=0.74, 0.52-1.05, 95% C.I. p = 0.09) to have had their last BP check within the year as compared to those who think level of salt intake can affect risk of developing hypertension or diabetes.

In univariate analysis for knowledge on level of sugar intake, respondents who do not think level of sugar intake can affect risk of developing hypertension or diabetes were a little more likely (OR=1.09, 0.76-1.57, 95% C.I. p = 0.63) to have had their last BP check within the year as compared to respondents who think otherwise.

In multivariate analysis, respondents who do not think their weight can affect their risk of developing hypertension or diabetes were less likely (OR=0.65, 0.43-0.97, 95% C.I. p = 0.03) to have had their last BP check within a year as compared to those who think their weight can actually have an effect of the risk of developing hypertension or diabetes with a P-value of 0.03. Respondents who do not believe that a parent of sibling having hypertension or diabetes can affect their risk of developing same were less likely (OR=0.70, 0.46-1.06, 95% C.I. p = 0.09) to have had their last BP check within the year (more regularly) as compared to those who think otherwise.

Variable and category		Last BP Check					
		Within A year	Over 1 year	Univariate OR (95% C.I.)	P-Value	Multivariate OR (95% C.I.)	P - Value
Do you think your Weight can affect your risk of developing hypertension or diabetes?	No	224 (67.47%)	108 (32.53%)	0.54 (0.38–0.78)	<0.01	0.65 (0.43-0.97)	0.03
	Yes	248 (79.23%)	65 (20.77%)	1.00		1.00	
Do you think your parents or close relatives having hypertension or diabetes can affect your risk of developing hypertension or diabetes?	No	259 (69.07%)	116 (30.93%)	0.57 (0.39–0.82)	<0.01	0.70 (0.46-1.06)	0.09
	Yes	223 (79.64%)	57 (20.36%)	1.00		1.00	
Do you think whether you smoke or not can affect your risk of developing hypertension or diabetes?	No	282 (71.94%)	110 (28.06%)	0.82 (0.57–1.17)	0.28	NA	
	Yes	200 (75.76%)	64 (24.24%)	1.00			
Do you think your level of Alcohol intake can affect your risk of developing hypertension or diabetes?	No	249 (73.89%)	88 (26.11%)	1.04 (0.74–1.40)	0.79	NA	
	Yes	232 (72.96%)	86 (27.04%)	1.00			
Do you think your level of Salt intake can affect your risk of developing hypertension or diabetes?	No	214 (70.63%)	89 (29.37%)	0.74 (0.52-1.05)	0.09	N/A	
	Yes	267 (76.50%)	82 (23.50%)	1.00			
Do you think your level of Sugar intake can affect your risk of developing hypertension or diabetes?	No	186 (74.40%)	64 (25.60%)	1.09 (0.76-1.57)	0.63	N/A	
	Yes	287 (72.66%)	108 (27.34%)	1.00			

Table 4.0 Effect of Knowledge of Risk Factors of NCDs on BP-Checking

4.6 Effect of Medical History on BP Checking (as an indicator of health seeking behaviour)

In univariate analysis for the effect of medical history on the ability of respondents to check their BP more regularly (last check within the year as against last check over 1 year), respondents whose parents or siblings do not have high blood pressure (BP) were significantly less likely (OR=0.52, 0.35-0.77, 95% C.I. $p < 0.01$) to check their BP regularly as compared to those whose parents or siblings have high BP. For respondents whose parents or siblings had diabetes or not, those whose parents or siblings do not have the condition were less likely (OR=0.87, 0.54-1.39, 95% C.I. $p = 0.56$) to check their BP within a year (more regularly) or above a year. Respondents who have not been diagnosed with hypertension or diabetes were less likely (OR=0.19, 0.06-0.63, 95% C.I. $p < 0.01$) to check their BP more regularly compared to those who were diagnosed with hypertension or diabetes. Similarly, those who were not on any medication for the above diagnosed conditions were significantly less likely (OR=0.25, 0.08-0.85, 95% C.I. $p = 0.02$) to check their BP more regularly as against those on medication for hypertension or diabetes. Multivariate analysis was carried out on significant variables of the univariate analysis which included parents or siblings having high BP, respondent being diagnosed of having diabetes or hypertension and whether respondent is on regular medication for the diagnosed disease. In multivariate analysis, respondents whose parents or siblings do not have high BP were significantly less likely (OR=059, 0.40-0.88, 95% C.I. $p = 0.01$) to have had their last BP check within the year as compared to respondents whose parents or siblings have high BP. Respondents who were diagnosed with diabetes or hypertension were not significantly less likely (OR=0.31, 0.09-1.06) to have had their last BP check within the year as compared to those who have been diagnosed with those conditions, similar to respondents who were not on any medication for the diagnosed disease (OR=0.45, 0.13-1.58, 95% C.I. $p = 0.06$) as compared to those on medication.

Variable and category		Last BP Check					
		Within A year	Over 1 year	Univariate OR (95% C.I.)	P-Value	Multivariate OR (95% C.I.)	P - Value
Does any of your parents or siblings have high BP?	No	291 (69.62%)	127 (30.38%)	0.52 (0.35–0.77)	<0.01	0.59 (0.40-0.88)	0.01
	Yes	189 (81.47%)	43 (18.53%)	1.00		1.00	
Does any of your parents or siblings have Diabetes?	No	391 (73.22%)	143 (26.78%)	0.87 (0.54–1.39)	0.56	NA	
	Yes	88 (75.86%)	28 (24.14%)	1.00			
Have you ever been diagnosed as having Diabetes or Hypertension?	No	438 (72.16%)	169 (27.84%)	0.19 (0.06–0.63)	<0.01	0.31 (0.09-1.06)	0.06
	Yes	41 (93.18%)	3 (6.82%)	1.00		1.00	
Are you on any regular medication for the diagnosed disease?	No	443 (72.50%)	168 (27.50%)	0.25 (0.08–0.85)	0.02	0.45 (0.13-1.58)	0.21
	Yes	31 (91.18%)	3 (8.82%)	1.00		1.00	

Table 5.0 Effect of Medical History on BP-Checking

4.7 Effect of Sociodemographic Information on BP-Checking (as an indicator of health seeking behaviour)

Results for univariate analysis for health seeking behaviour (BP checking) follows a similar trend to that of Weight Checking with female respondents more likely (OR=1.59, 1.12-2.27, 95% C.I. p = 0.01) to seek health in terms of checking their blood pressure (BP) within a year as compared to male respondents. Respondents with age below 30 years in the univariate analysis were more likely (OR=1.79, 1.25-2.58, 95% C.I. p < 0.01) to check their blood pressure more regularly (i.e. within the year) as compared to those who are below 30 years of age. For marital status, respondents who are single were less likely (OR=0.33, 0.22-0.49, 95% C.I. p < 0.01) to check their blood pressure regularly as compared to the married respondents. Ethnicity and Religion had no effect on health seeking behaviour. Respondents with tertiary level education were more likely (OR=2.22, 1.05-4.69, 95% C.I. p = 0.03) to check their blood pressure more regularly (within the year) as compared to those with secondary educational level. Respondents with one or two children or dependents under 12 years (OR=1.91, 1.27-2.87, 95% C.I. p < 0.01) and those with 3 or more children or dependents under 12 years (OR=2.04, 1.02-4.07, 95% C.I. p = 0.04) were more likely to check their blood pressure more regularly as compared to those with no children at the univariate analysis level.

Significant association in the univariate analysis included gender, age, marital status and educational level. These were entered into a logistic model for multivariate analysis. In multivariate analysis, female respondents were more likely (OR=1.55, 1.06-2.26, 95% C.I. p = 0.02) to seek health regularly (i.e. check their blood pressure within the year) as compared to male respondents, and respondents that are single were less likely (OR=0.39, 0.24-0.64, 95% C.I. p < 0.01) to check their blood pressure more regularly (i.e within the year).

Variable and category		Last BP Check					
		Within A year	Over 1 year	Univariate OR (95% C.I.)	P-Value	Multivariate OR (95% C.I.)	P - Value
Gender	Female	254 (79.15%)	71 (21.85%)	1.59 (1.12–2.27)	0.01	1.55 (1.06-2.26)	0.02
	Male	231 (69.16%)	103 (30.84%)	1.00		1.00	
Age	30 years and above	231 (79.66%)	59 (20.34%)	1.79 (1.25–2.58)	<0.01	1.04 (0.66-1.64)	0.86
	Below 30 years	251 (68.58%)	115 (31.42%)	1.00		1.00	
Marital Status	Single	233 (65.27%)	124 (34.73%)	0.33 (0.22–0.49)	<0.01	0.39 (0.24-0.64)	<0.01
	Married	244 (85.02%)	43 (14.98%)	1.00		1.00	
Ethnicity	Ga/Dangbe	93 (73.81%)	33 (26.19%)	1.03 (0.65–1.64)	0.89	N/A	
	Ewe	107 (73.29%)	39 (26.71%)	1.01 (0.65-1.56)	0.98	N/A	
	Others	33 (78.57%)	9 (21.43%)	1.34 (0.62-2.92)	0.45	N/A	
	Akan	251 (73.18%)	92 (26.82%)	1.00			
Religion	Muslim	20 (74.07%)	7 (25.93%)	1.01 (0.42-2.42)	0.99	N/A	
	Christian	460 (73.95%)	162 (26.05%)	1.00			
Educational Level	Tertiary	462 (74.40%)	159 (25.60%)	2.22 (1.05-4.69)	0.03	2.02 (0.86-4.78)	0.11
	Secondary	17 (56.67%)	13 (43.33%)	1.00		1.00	
Child or Dependant Under 12 years	3 and above	49 (81.67%)	11 (18.33%)	2.04 (1.02-4.07)	0.04	1.08 (0.48-2.41)	0.85
	One or two	167 (80.68%)	40 (19.32%)	1.91 (1.27-2.87)	<0.01	1.32 (0.81-2.15)	0.26
	None	269 (68.62%)	123 (31.38%)	1.00		1.00	
Child or Dependant Under 5 years	3 and above	22 (88.00%)	3 (12.00%)	4.01 (1.15-13.98)	0.02	N/A	
	One or two	166 (83.84%)	32 (16.16%)	2.84 (1.77-4.54)	<0.01		
	None	161 (64.66%)	88 (35.34%)	1.00			

Table 6.0 Sociodemographic factors on BP-Checking

CHAPTER V

5.0 DISCUSSIONS

NCDs continue to be a major concern globally and in Ghana. Most NCD research focus on identifying risk factors or health system preparedness to tackle this incoming burden. Since most risk factors of NCDs are modifiable and lifestyle related, it is not enough to only point out the risk factors but to assess the knowledge of target populations on NCDs and its risk factors. The process of behavioural change requires that the level of knowledge of the target population on the subject matter be explored. Even giving knowledge to people alone does not make them act on it. The BASNEF model of social and behavioural change teaches us that a person's health seeking behaviour depends on his/her beliefs, attitudes, subjective norms and enabling factors[32]. The purpose of this research is to explore the effect of the knowledge of the risk factors of NCDs (hypertension and diabetes) and health seeking behaviour (weight checking and blood pressure (BP) checking habits) of respondents within the context of a larger study on risk factors of NCDs in the fight against the rising burden of NCDs globally. The study design was cross-sectional due to the exploratory nature of this research and a lack of time to carry out higher forms of study. This study thus sets the basis for more detailed work to be carried out on how knowledge of the risk factors of NCDs could affect health seeking behaviours of staff of banking institutions and other related fields of occupation. The research explores generally the sociodemographic characteristics, family history of NCDs and knowledge of risk factors of NCDs and its effect on health seeking behaviour of workers of banking institutions.

5.1 Effect of Knowledge of Risk Factors of NCDs on Weight and BP Checking (as indicators of health seeking behaviour)

Majority of respondents do not think their weight (51.38%) or family history (57.58%) can affect their risk of developing hypertension or diabetes. This could imply that health education messages are not getting to target groups, or there is the need to redefine the scope, type and form of education on NCDs. Univariate analysis resulted in those who do not think weight can have an effect on their risk of developing hypertension or diabetes being less likely to have had a weight check within the year (i.e. more frequently) as compared to those who are aware of weight being a risk factor of developing these conditions with a p-vale of 0.02. This evidence suggests that a lack of knowledge or awareness of risk factors of NCDs among workers of banks does actually affect their health seeking behaviour (weight checking). The only independent predictor after univariate analysis was respondent's knowledge of weight as a risk factor of developing hypertension or diabetes. In a similar manner, a larger number of respondents do not think whether you smoke or not (60.06%) or level of alcohol intake (51.75%) can affect the risk of developing hypertension or diabetes.

In contrast to the earlier results under this section, majority of respondents believe that level of salt intake (53.51%) and level of sugar intake (61.17%) can affect their risk of developing hypertension or diabetes. These discrepancies in knowledge of risk factors of developing NCDs could be dangerous in the prevention of these conditions. This could also mean that population-wide approach in prevention of these diseases to some extent has worked, but high-risk target groups are having some misconceptions about some risk factors of NCDs. Health education targeted at high-risk populations is obviously lacking within the context of this research. However, in univariate analysis the knowledge on level of salt intake or level of sugar intake did not have any

effect on the health seeking behaviour of respondents. For instance, those who do not think level of salt intake did not have an effect on their risk of developing hypertension or diabetes were a little more likely to have had a weight check than those who actually think otherwise. This could mean that there is a mere lack of knowledge on risk factors by respondents.

The BP checking habits of respondents follows a similar trend. Respondents who think weight can affect their risk of developing hypertension or diabetes are significantly observed to be more health conscious by checking their BP more regularly as compared to those who think otherwise. Univariate analysis also showed that those who think their parents or siblings having either condition can affect their risk of developing hypertension or diabetes were also more likely to have checked their BP more regularly as compared to those who think otherwise. Adjusting for all other factors, multivariate analysis however showed that knowledge about weight being a risk factor was actually the independent predictor of health seeking behaviour (BP checking).

5.2 Effect of Medical History on Weight and BP Checking (as indicators of health seeking behaviour)

Majority of respondents did not have medical history of hypertension of diabetes or hypertension. Since these NCD conditions take long time to develop and since no clinical measurements of NCDs were taken, it may be catastrophic to assume that the study population is healthy and free from these conditions. Invariably, medical history of respondents had little or no bearing on regular weight checking habit. In some cases, (for example whether a respondent's parents or siblings has diabetes or not) weight checking habits of respondents whose family or siblings has diabetes and those who do not was almost 1:1. Those who were diagnosed of having hypertension or diabetes and those who were on medication for hypertension or diabetes were more likely to have had a

weight check within the year. Considering the fact that overweight and obesity are linked to the development of hypertension and diabetes, this occurrence is expected. Weight loss is recommended by physicians in the management of hypertension and diabetes and as such the regular weight checking habits of people diagnosed with these conditions is not surprising. In a related study, weight loss has been shown to improve glycaemic control in type-2-diabetes mellitus and a reduction in risk factors of cardiovascular diseases[33].

Regular BP checking was significantly more likely among respondents whose parents or siblings had hypertension or diabetes as compared those who did not have any history as such. Family history is a predisposing risk factor of developing hypertension and diabetes, and health education programs encourage families with history of these conditions to be more health conscious. A study in Gambia to examine whether a family history of high-risk groups for major NCDs was a significant risk factor for the conditions among family members resulted in evidence that family history poses a significant risk factor to family members developing these conditions and encourages health professionals to include direct family members in health education[34]. Regular BP checking was significantly more likely among people diagnosed with hypertension or diabetes and among people on medication for these conditions. This is expected since those with hypertension and diabetes are expected to visit a health facility more often or monitor their blood pressure for effective management of the condition.

5.3 Effect of Sociodemographic Information on Weight and BP Checking (as indicators of health seeking behaviour)

The study found out that females generally are more health conscious and seek more health by checking their weight more regularly as compared to their male counterparts. Weight gain is perceived as a sign of good living, increased wealth and prosperity in Ghana. With increasing education and awareness of risk factors associated with overweight, it is a reasonable assumption that most educated people of which our study population falls within, are becoming more health conscious. Women generally are becoming more health conscious due to their regular visits to health facilities for maternal and gynaecological care. Social stigmatization of women perceived to be obese or overweight through name callings such as "cargo", "obolo", "oboshi" among others has made women more conscious of their weight and this could be a contributing factor to the higher weight checking habits of female respondents as compared to the males. This results also indicates that most women are more conscious of their health and do not desire overweight. A study in Accra, Ghana on the "Perception and experiences of overweight among women in the Ga East District, Ghana" corroborates this assertion, with over 70% of respondents not desiring overweight due to adverse experiences of poor self-image, decreased social lifestyle, increased disease risks and feeling tired always[35]. Another study at the Korle Bu Teaching Hospital, Accra in 2006 also indicated that majority of Ghanaian women were interested in living healthy lifestyles and were willing to reduce their body size to reduce the risk of obesity-linked illnesses[36].

The study also found that respondents who are single were less likely to have had their weight checked within the year as compared to married respondents. This significant finding shows that married people are more health conscious and are more likely to be more health seeking than single

people. Being married can be believed to provide a fair advantage of emotional and partner support. With much education on healthy living, married people with children may, in the process of setting good examples for their children adopt healthy lifestyles. Husbands are likely to point out and help their partners manage their weight and vice versa. Other studies carried out in the United States on "spousal concordance in health behaviour change" reveals that when one spouse improves his or her behavior, the other spouse is likely to do so as well[37].

The results follow same for BP checking ability of respondents, with females and married respondents more likely to check their BP more regularly as compared to males and single respondents. Stress of family life and work has prompted most married couples to have portable BP monitoring device which are normally kept at home. Marital status to some extent is also dependent on age, and from the results, increase in age concurs with regular weight and BP checking.

CHAPTER VI

6.1 CONCLUSION

Knowledge of a person's weight as a risk factor of developing hypertension, parents or siblings having high BP, being married and being a female increases the odds of health seeking behaviour – regular weight checking and BP checking. Majority of respondents do not have adequate knowledge on the risk factors of NCDs, with most respondents not knowing that family history of hypertension or diabetes, smoking, level of salt and sugar intake can affect their risk of developing hypertension or diabetes. This should inform policy makers on strategies of health education on NCDs, to combine population based and high-risk group approach in education on NCDS.

6.2 RECOMMENDATIONS

It is recommended further studies be carried out on a larger scale with bank workers and other related professions with sedentary lifestyles.

Policy makers should re-define the scope and method of health education on NCDs to address both high risk populations as well as the general population.

Education on the need and importance of NCD research work should be communicated to management and staff of high risk professions to help in collaboration of respondents for easier research.

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APPENDIX 1.0

QUESTIONNAIRE: Date of Interview (dd/mm/yy): _ _ /_ _ /_ _

TOPIC: A SURVEY ON BEHAVIOURAL PATTERNS INCLUDING NUTRITION, PHYSICAL ACTIVITY AND STRESS OF MANAGERIAL LEVEL STAFF OF SELECTED BANKING INSTITUTIONS IN GREATER ACCRA, AND THEIR RELATIONSHIP WITH DEVELOPMENT OF NCDs

INSTRUCTIONS: *Please write in the box or space provided the number that matches your response.*

A. SOCIODEMOGRAPHIC DATA

1	**Gender**	1.Male 2.Female	☐	A1
2	**Age**	☐☐yrs		A2
3	**Place of Residence**	----------		A3
4	**Marital Status**	1.Married 2.Single 3. Cohabitating 4. Divorced 5. Widowed 6. Other	☐	A4
5	**Ethnicity**	1.Akan 2.Ga/Dagwe 3.Ewe 4.Dagbani 5.Grusi 6. Non-Ghanaian 7. Other: _____	☐	A5
6	**Religion**	1. Christian 2. Muslim 3. Traditionalist	☐	

7	**Highest Level Of Education**	1. Secondary	2.Tertiary	□	A7
8	**Current position at workplace**	_____			A8
10	**How many children/dependants aged under 12 yrs live with you**			□	A10
11	**How many children/dependants aged under 5 yrs live with you**			□	A11

B. LIFESTYLE

JS1	About what time do you leave home for work each day?	1. Earlier than 5am	
		2. Between 5-6am	
		3. Between 6-7am	☐
		4. Between 7-8am	
		5. Later than 8am	
JS3	About what time do you leave the office each day?	1. Earlier than 4pm	
		2. Between 4-5pm	
		3. Between 5-6pm	☐
		4. Between 7-8pm	
		5. Later than 8pm	
JS4	About what time do you retire to bed each day	1. Earlier than 8pm	
		2. Between 8-9pm	
		3. Between 9-10pm	☐
		4. Between 10-11pm	
		5. After 11pm	
JS5	What time do you usually eat your last meal each day?	1. Before 6pm	
		2. Between 6-7pm	
		3. Between 7-8pm	☐
		4. After 8pm	
JS6	Of the three meals, which one is often heaviest for you?	1. Breakfast	☐
		2. Lunch	
		3. Supper	

C. MEDICAL HISTORY

C1	Does any of your parents or siblings have high blood pressure? ***1**. Yes* ***2**. No* ***3**. Don't know*	☐
C2	Does any of your parents or sibling have diabetes? ***1**. Yes* ***2**. No* ***3**. Don't know*	☐
C3	Have you ever been diagnosed as having diabetes or hypertension? ***1**. Yes* ***2**. No* ***3**. Don't know*	☐
C4	Are you on any regular medication for a diagnosed disease? ***1**. Yes* ***2**. No* ***3**. Don't know*	☐

D. KNOWLEDGE AND ATTITUDE TOWARDS NCDs

D1. Do you think the following can affect your risk of developing hypertension or diabetes?

D1a. Your weight?	**1**.Yes	**2**.No	**3**.Don't know	☐	
D1b. Parent(s) or close relative having hypertension or diabetes?	**1**.Yes	**2**.No	**3**.Don't know	☐	
D1c. Whether you smoke or not?	**1**.Yes	**2**.No	**3**.Don't know	☐	
D1d. Level of alcohol intake	**1**.Yes	**2**.No	**3**.Don't know	☐	
D1e. Your level of salt intake?	**1**.Yes	**2**.No	**3**.Don't know	☐	
D1f. Your level of sugar intake?	**1**.Yes	**2**.No	**3**.Don't know	☐	
D1g. How long ago did you last check your weight?	1. Within past 3 months 2. Between 3-6m ago 3. Between 6-12m ago 4. Over a year ago 5. Can't remember			☐	
D1h. How long ago did you last check your BP?	1. Within past 3 months 2. Between 3-6m ago 3. Between 6-12m ago 4. Over a year ago 5. Can't remember			☐	

E. KNOWLEDGE AND ATTITUDES TOWARDS PHYSICAL ACTIVITIES

E1. How do you normally commute to and from work?	**1**. Walking **2**. Bicycle **3**. Own/Exclusive car	☐	

	4. Public transport **5**. Other: _____		
E2. What is the walking distance between where you park or the vehicle stops and your seat in the office	**1**. Within 5mins **2**. Between 5-15mins **3**. Between 15-30mins **4**. More than 30mins	☐	
E3. In total, about how much time do you usually spend walking on a typical day	**1**. Less than 15mins **2**. 15-30mins **3**. 30-60mins **4**. More than 60mins	☐	
E4. Does any part of your work involve activity that causes large increases in breathing or heart rate? for at least 10 minutes continuously	**1**.Yes **2**.No	☐	
E5. Do you regularly attend any fitness/sporting club or gym?	**1**.Yes **2**.No	☐	
E6. Are you a member of any fitness/sporting club or gym?	**1**.Yes **2**.No	☐	
E7. Does your workplace offer paid membership of fitness/sporting club or gym?	**1**.Yes **2**.No	☐	
E8. Would you utilise fitness/sporting/gym facilities if your workplace paid for it?	**1**.Yes **2**.No	☐	

F. SOURCE OF STRESS AND PERCEIVED STRESS

Please the scale below to response to the questions indicated in the table

0: I have never experienced this symptom

1: I suffer from it sometimes (about once per month)

2: I have suffered from it more than once per month but not more than once a week

3: I often suffer from it (more than once per week)

1	Do you often have headaches?	___	F1
2	Do you suffer from tension or stiffness in the neck, shoulders, jaw, arms, hands, legs or stomach?	___	F2
3	Do you have nervous twitches?	___	F3
4	Do you feel your heart beating stronger or faster than usual sometimes?	___	F4
5	Do you have abnormal heart beats (heart pounding)?	___	F5
6	Do you sometimes have difficulty breathing?	___	F6
7	Do you suffer sometimes from dizziness or light-headedness?	___	F7
8	Do you feel like you have a lump in your throat or having to clear it?	___	F8
9	Do you often suffer from flu, hoarseness?	___	F9
10	Do you often suffer from indigestion, nausea, stomach-ache?	___	F10
11	Do you often suffer from diarrhoea, constipation?	___	F11
12	Do you bite your nails?	___	F12
13	Do you have difficulties falling asleep, or sleeping for a whole night?	___	F13
14	Do you feel tired in the morning?	___	F14
15	Do you have your hands or feet cold?	___	F15
16	Do your teeth tend do gnash? Do your jaws hurt?	___	F16
17	Do you tend to sweat a lot?	___	F17
18	Are you irritable or angry?	___	F18
19	Do you have any pains (back, stomach, head, muscle)?	___	F19
20	Do you think you might be suffering from anxiety, worry, agitation, nervousness?	___	F20

THANK YOU VERY MUCH