

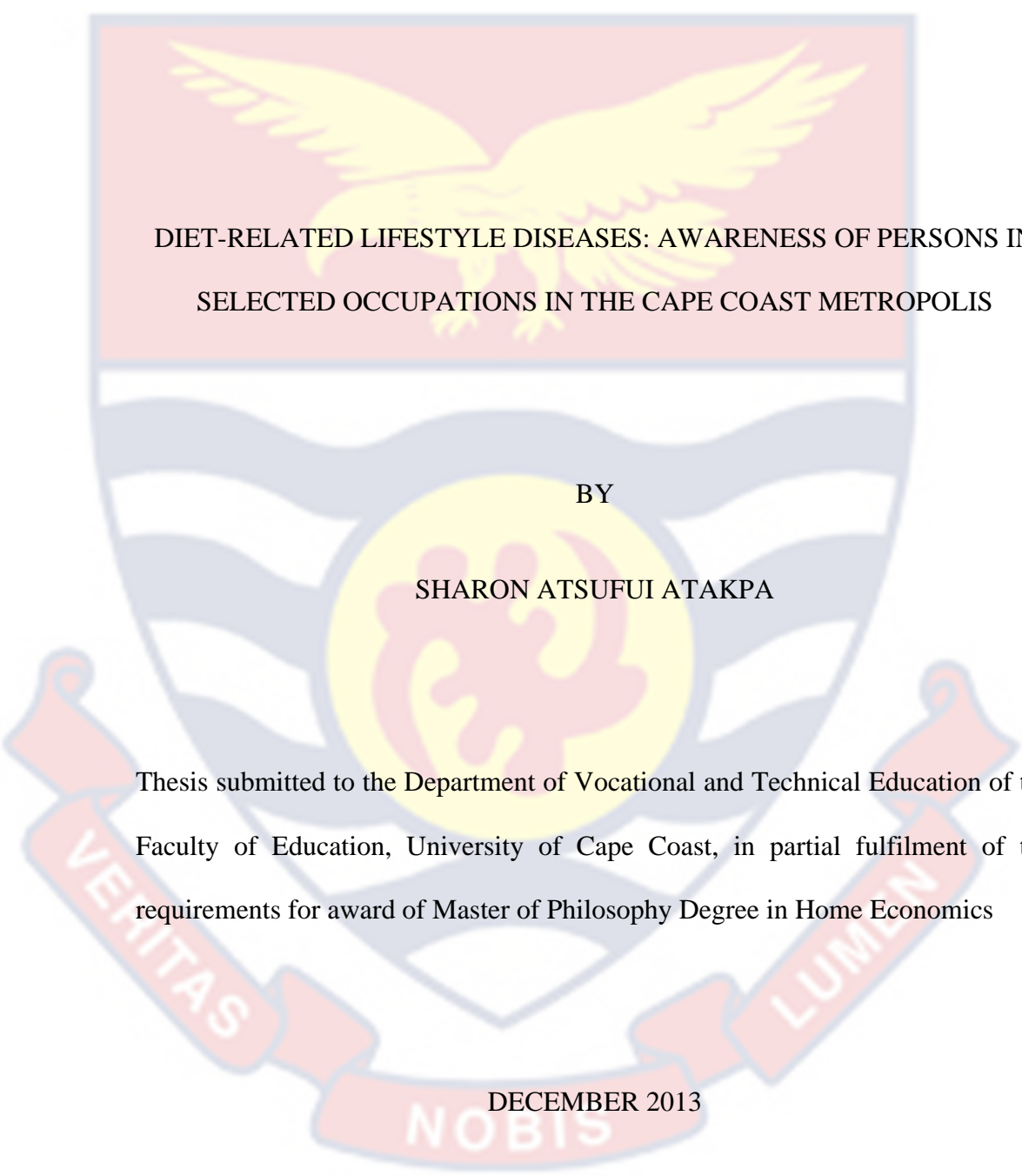
UNIVERSITY OF CAPE COAST



DIET-RELATED LIFESTYLE DISEASES: AWARENESS OF PERSONS IN
SELECTED OCCUPATIONS IN THE CAPE COAST METROPOLIS

SHARON ATSUFUI ATAKPA

UNIVERSITY OF CAPE COAST



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SELECTED OCCUPATIONS IN THE CAPE COAST METROPOLIS

BY

SHARON ATSUFUI ATAKPA

This thesis submitted to the Department of Vocational and Technical Education of the Faculty of Education, University of Cape Coast, in partial fulfilment of the requirements for award of Master of Philosophy Degree in Home Economics

DECEMBER 2013

DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature: Date:

Name: Sharon Atsufui Atakpa

Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature: Date:

Name: Mrs. Christina Offei-Ansah

Co-Supervisor's Signature: Date:

Name: Dr. Faustina Amoako-Kwakye

ABSTRACT

Diet and lifestyle are major factors thought to influence susceptibility to many diseases. The purpose of the study was to assess the level of awareness of people in selected occupations in the Cape Coast Metropolis on diet related lifestyle diseases. It aims at examining the knowledge of persons about diet-related lifestyle diseases, lifestyle practices of persons in relation to diet-related lifestyle diseases, association between level of knowledge of diet-related lifestyle diseases and lifestyle practices, differences in knowledge of diet-related lifestyle diseases among persons with different socio-demographic factors, and differences in lifestyle practices among persons with different socio-demographic factors

A descriptive survey design was adopted for the study. A total of 378 respondents were sampled for the study. Multi-stage sampling procedure was used to sample 377 workers. An interview schedule was used as instrument for collecting data. Descriptive statistics and chi-square test of independence were used to analyse the data.

The study found that respondents did not have full knowledge about the constitution of diet-related lifestyle diseases as well as their causes. The recent diet-related lifestyle diseases that are common in the Metropolis were blood hypertension, kwashiorkor, ulcer, obesity and diabetes. Similarly, the number of people adopting alcohol as a lifestyle practice increases as the ages increase. The study recommends that the Metropolitan Directorate of Health should educate the populace on the constitution and the causes of diet-related lifestyle diseases.

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Special thanks to Ms. Anita Mensah for painstakingly assisting in the final arrangement and editing of this work.

My sincere appreciation and thanks go to my parents Mr. and Mrs. S. K. Atakpa and my siblings, Shirley, Jerry and Atsu, for always supporting me and encouraging me with their best wishes.

DEDICATION

To my dear parents, Mr. Stephen Kofi Atakpa and Mrs. Rejoice Mansa Atakpa.



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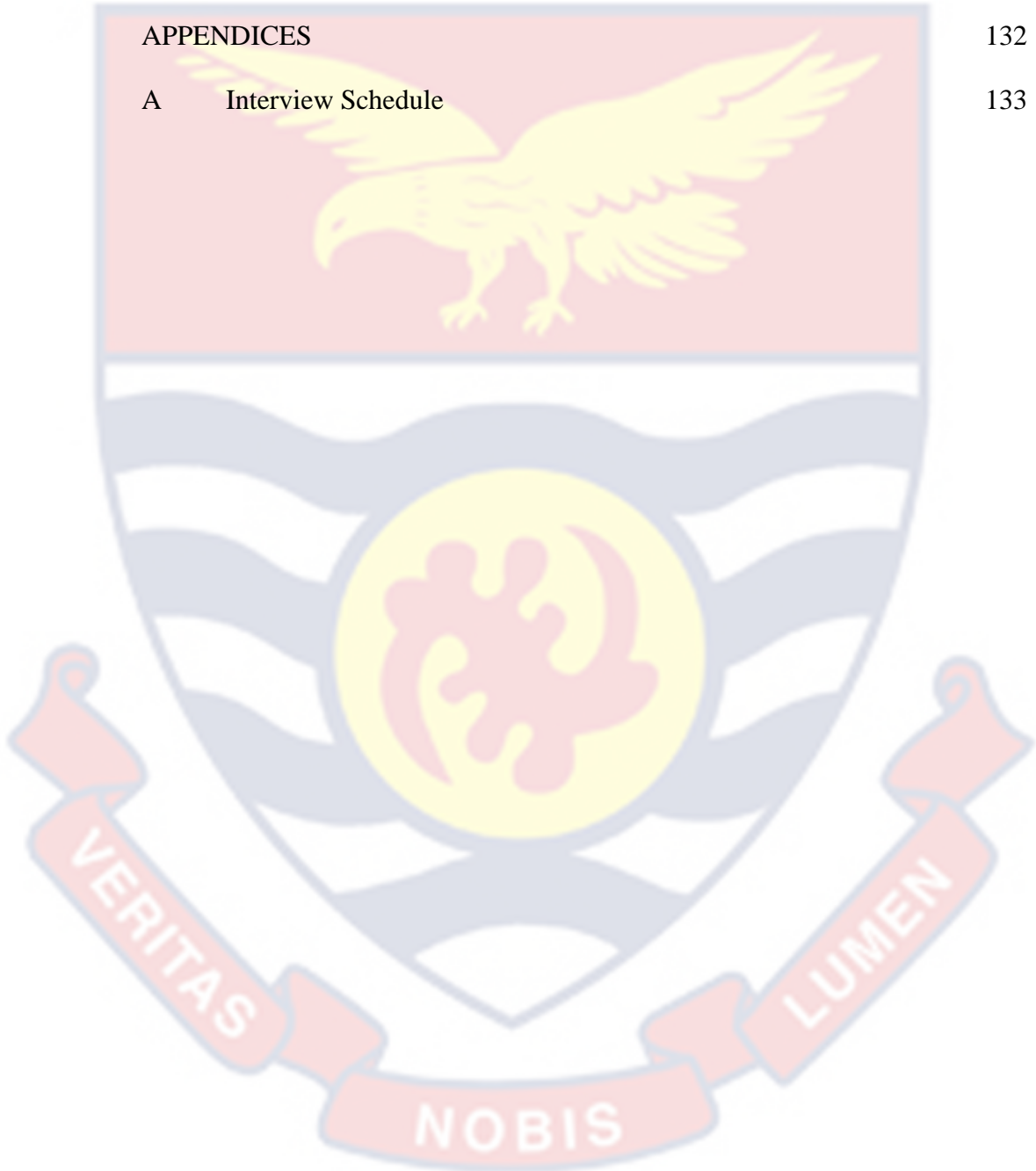
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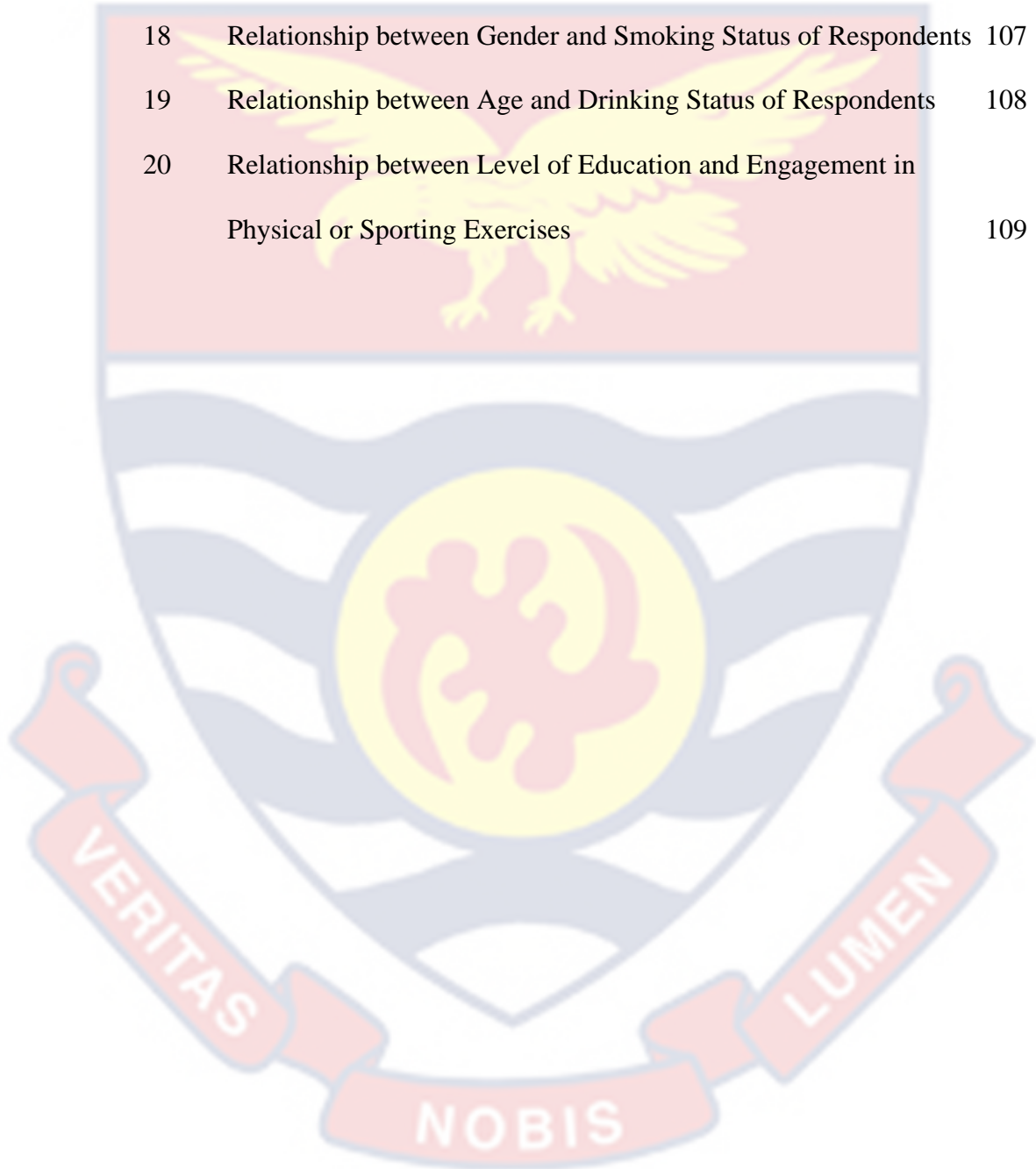
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LIST OF ACRONYMSThe background of the page features a large, faint watermark of the University of Cape Coast crest. The crest is a shield with a yellow eagle with outstretched wings in the upper half. The lower half is divided into three horizontal bands: a blue band with a white wave-like pattern, a white band with a blue wave-like pattern, and a yellow band with a red circular emblem. A red ribbon scrolls across the bottom of the shield, containing the Latin motto "VERITAS LIBERABIT VOS A LUMEN".

BMI	Body Mass Index
BTT	Birth to Twenty
CCMA	Cape Coast Metropolitan Assembly
CHD	Coronary Heart Disease
CRH	Central Regional Hospital
CVDs	Cardiovascular Diseases
FAO	Food and Agriculture Organisation
GYTS	Global Youth Tobacco Survey
IFPRI	International Food Policy Research Institute
IFPRI	International Food Policy Research Institute
IOTF	International Obesity Task Force
NaCl	Sodium Chloride
NCD	Non-Communicable Disease
NCDs	Non-Communicable Diseases
RDAs	Recommended Dietary Allowances
TV	Television
WCRF	World Cancer Research Fund
WHO	World Health Organisation

CHAPTER ONE

INTRODUCTION

Background to the Study

Lifestyle diseases are health conditions such as obesity, cardiovascular diseases (CVDs), cancers, diabetes mellitus and stroke that are attributable in part to lifestyle choices, including diet, smoking and lack of exercise. Lifestyle diseases, also sometimes called diseases of longevity or diseases of civilisation interchangeably, are diseases that appear to increase in frequency as countries become more industrialised and people live longer. They can include Alzheimer's disease, asthma, atherosclerosis, cancer, chronic liver disease or cirrhosis, Chronic Obstructive Pulmonary Disease, Type 2 diabetes, heart disease, metabolic syndrome, Crohn's disease nephritis or chronic renal failure, osteoporosis, acne, stroke, depression (drug addiction, and/or alcoholism) and obesity. These illnesses used to be considered the diseases of industrialised countries, so-called "Western diseases" or "diseases of affluence". They are internationally known as Non-Communicable Diseases (NCDs) and chronic diseases, which form part of the degenerative diseases group.

NCD are no longer "diseases of affluence" and no longer limited to the developed countries. Developing countries now suffer the major impact of NCD. The World Health Organisation (WHO) Report of 2000 indicated that NCDs, in 1998, accounted for almost 60.0% of all deaths and 43.0% of global

burden of diseases with 75% of total deaths resulting from NCDs occurring in the developing countries. The WHO estimates indicated that 3.5 million people worldwide would die annually from NCDs such as heart disease, stroke, obesity, diabetes and cancers (WHO, 2004). Today, lifestyle diseases are a major public health problem worldwide. In 2005, the WHO estimated that 61.0% of all deaths, 35 million and 49.0% of the global burden of disease were attributable to chronic diseases. By 2030, the proportion of total global deaths due to chronic diseases is expected to increase to 70.0% and the global burden of disease to 56.0%. The greatest increase is anticipated in the African and Eastern Mediterranean regions.

Ghana is now caught in the tangled-web of both non-communicable and communicable diseases like malaria, HIV/AIDS and tuberculosis and this situation poses a huge health threat to the people. The combination of non-communicable, with the already huge load of communicable diseases in a third world country like Ghana, is heavy enough to decimate national efforts, peace, productivity and economic gains within a twinkle of an eye (Addo, Smeeth & Leon, 2009).

Lifestyles play an important role in determining chronic diseases and lifestyle changes are likely to be responsible for a significant proportion of their increase over time. Diet and lifestyle are major factors thought to influence susceptibility to many diseases. Drug abuse, tobacco smoking, and alcohol drinking, as well as a lack of exercise may also increase the risk of developing certain diseases, especially in later life. Smoking alone is estimated to be responsible for 22.0% of cardiovascular diseases in industrialised countries, and for the vast majority of some cancers and chronic respiratory

diseases (WHO, 2002). Alcohol abuse is deemed to be the source of 8.0% - 18.0% of the total burden of disease in men and 2.0% - 4.0% in women. Overweight and obesity account for an estimated 8.0% - 15.0% of the burden of disease in industrialised countries, while high cholesterol accounts for 5.0% - 12.0% (WHO, 2002).

Furthermore, rapid changes in diets and lifestyles that have occurred with industrialisation, urbanisation, economic development and market globalisation have accelerated over the past decade (WHO/Food & Agriculture Organisation [FAO], 2003). This is having a significant impact on the health and nutritional status of populations, particularly in developing countries and in countries in transition. While standards of living have improved, food availability has expanded and become more diversified, and access to services has increased, there have also been significant negative consequences in terms of inappropriate dietary patterns, decreased physical activities and increased tobacco use, and a corresponding increase in diet-related chronic diseases, especially among poor people.

Changes in the world food economy are reflected in shifting dietary patterns, for example, increased consumption of energy-dense diets high in fat, particularly saturated fat, and low in unrefined carbohydrates (WHO, 2002). These patterns are combined with a decline in energy expenditure that is associated with a sedentary lifestyle, motorised transport, labour-saving devices in the home, the phasing out of physically demanding manual tasks in the workplace, and leisure time that is preponderantly devoted to physically undemanding pastimes. Robbins, Powers and Burgess (2006) also added that as a result of scientific discovery, technology, industrial growth, and

automation, lifestyles have changed entirely. Remote controls are now used to change television channels and to open gates and garage doors. Appliances are now being used to wash clothes and dishes. People ride vehicles to work places, school and ironically, even while playing golf.

People wonder why they grow fat and out of shape. This so called 'good life' has created sedentary living, changes in eating habits (fast foods, increased fats, sugar and processed food intake), stress, alcohol and drug abuse, obesity and other lifestyle diseases. The WHO/FAO (2003) report also added that as a result of these changes in dietary and lifestyle patterns, chronic NCDs including obesity, diabetes mellitus, CVDs, hypertension and stroke, and some types of cancer are becoming increasingly significant causes of disability and premature death in both developing and newly developed countries, placing additional burdens on already overtaxed national health budgets.

Modern dietary and physical activity patterns pose risks such as the transfer of infectious diseases across countries and from one population to the other. These risks affect disease patterns globally. While age, sex and genetic susceptibility are non-modifiable, many of the risks associated with age and sex are modifiable. Such risks include behavioural factors (e.g. diet, physical inactivity, tobacco use, alcohol consumption); biological factors (e.g. dyslipidemia, hypertension, overweight, hyperinsulinaemia); and finally societal factors, which include a complex mixture of interacting socioeconomic, cultural and other environmental parameters (WHO, 2002).

Diet has been known for many years to play a key role as a risk factor for chronic diseases. What is apparent at the global level is that great changes

have swept the entire world since the second half of the 20th Century, inducing major modifications in diet, first in industrial regions and more recently in developing countries. Traditional, largely plant-based diets have been swiftly replaced by high-fat, energy-dense diets with a substantial content of animal-based foods. But diet, while critical to prevention, is just one risk factor (WHO, 2002).

Physical inactivity, now recognised as an increasingly important determinant of health, is the result of a progressive shift of lifestyle towards more sedentary patterns, in developing countries as much as in industrialised ones. The combination of these and other risk factors, such as tobacco use, is likely to have an additive or even a multiplier effect, capable of accelerating the pace at which the chronic disease epidemic is emerging in the developing countries (WHO, 2002).

The harsh truth is that a high percentage of diseases and disability affecting Ghanaians today is preventable. It has been projected that by 2020, chronic diseases of lifestyle will account for almost three-quarters of all deaths worldwide, and that 71.0% of deaths due to ischaemic heart disease (IHD), 75.0% of deaths due to stroke, and 70.0% of deaths due to diabetes will occur in developing countries (WHO, 1998).

In 2005, non-communicable diseases accounted for an estimated 60.0% of deaths worldwide and 80.0% of deaths in low-income and middle-income countries (WHO, 2010). Five of the key risk factors for chronic disease (high blood pressure, high concentrations of cholesterol, overweight and obesity, physical inactivity and tobacco use) are closely related to physical activity and diet.

According to the Central Regional Health Directorate's Annual Report (2009), in the Cape Coast Metropolis, lifestyle diseases are noted to be among the top-10 diseases prevalent in the area and studies of these diseases to identify the level of risk and associated risk factors are essential. Cardiovascular diseases, which accounted for 7.4% of deaths, were ranked as the number one killer disease in the Metropolis in 2009 and diet-related NCD cases continued to rise from year to year (Central Regional Health Directorate's Annual Report, 2009).

Statement of the Problem

Global changes have brought about changes in behaviours of individuals; these changes in behaviours have also come to affect the health of the people in diverse ways. The changes in behaviours have brought about an increase in NCDs and their associated risk factors. Dietary behaviour refers to eating patterns that people engage in, as well as behaviours related to consuming foods, such as shopping, eating out, or portion size (Breslow & Cengage, 2002). Dietary behaviour differs from some other types of health behaviour in that it is, in its basic forms, essential for life. Some dietary behaviour, such as drinking alcoholic beverages, is not necessary to sustain life. Although most people may know about the health consequences of unhealthy diets, many of the public health goals for dietary behaviour have not been met.

Nutrition has come to the fore as a major modifiable determinant of chronic disease, with scientific evidence increasingly supporting the view that alterations in diet have strong effects, both positive and negative, on health throughout life (WHO/FAO, 2003). Most importantly, dietary adjustments

may not only influence present health, but may determine whether or not an individual will develop such diseases as cancer, CVDs and diabetes much later in life. In many developing countries, food policies remain focused only on undernutrition and are not addressing the prevention of lifestyle diseases (WHO/FAO, 2003).

According to the Central Regional Health Directorate's 2009 Annual Report, the prevalence of diet related NCDs increased markedly from the year 2008. Diabetes rates rose from 6430 cases in 2008 to 7196 cases in 2009 and hypertension cases rose significantly from 29124 to 40274 in the year 2009. These high rates raises questions of whether residents in the region are aware of the effects and the role that their diets play in their being afflicted by these diet-related diseases.

Casual observation and comments from consumers in Ghana always reveal that food prices have generally increased and the Cape Coast Metropolis is no exception. Owing to the high prices, nutrient-dense foods such as meat and other animal products have become costly. There seems to be a reliance on the cheap less nutrient-dense foods which mostly supply carbohydrates and fats, thus changing peoples' food habits. Apart from these, the influence of advertisements on processed foods, including fats and oils, coupled with working mothers have also contributed in changing the eating patterns of people. Most families are forced to eat late in the evening, while watching television and then go to bed immediately, thus contributing to weight increase. The problem is whether people are aware that these practices do lead to NCDs if continued over a period. If they are aware, it is important to assess the extent of their awareness, their sources of information and their

preparedness to change their lifestyles in connection with their meals and meal practices.

People generally underestimate their future risk of lifestyle diseases. This underestimation is of substantial concern because action should be an outcome of knowledge. The relationship between lifestyle and health is clear, but adopting healthy lifestyle habits seems to be difficult for many. It is therefore necessary to assess the knowledge of residents in the Cape Coast Metropolis on the relationship between diet and lifestyle diseases.

Purpose of the Study

The purpose of the study was to assess the awareness level of people in selected occupations in the Cape Coast Metropolis on diet related lifestyle diseases.

Research Questions

1. What knowledge do persons in the selected occupations in Cape Coast Metropolis have about diet-related lifestyle diseases?
2. What are the lifestyle practices of persons in selected occupations in Cape Coast Metropolis in relation to diet-related lifestyle diseases?
3. What is the association between level of knowledge of diet-related lifestyle diseases and lifestyle practices?
4. Do persons in selected occupations in Cape Coast Metropolis differ in knowledge of diet-related lifestyle diseases by socio-demographic factors?
5. Do persons in selected occupations in Cape Coast Metropolis differ in lifestyle practices by socio-demographic factors?

Significance of the Study

The findings of this study will be useful in several ways. First, the strength and development of any nation, organisation or institution hinges on the health of its work force. This study will therefore create awareness on healthy dietary lifestyles. If the findings and the recommendations are studied, it will help in drawing workable programmes for the Ministry of Health, particularly, the Public Health and the Nutrition Divisions, which if put into practice will help cut down the threat of the diseases drastically. It will help policy makers in the formulation of policies regarding intervention programmes, health education campaigns/programmes and healthy living.

The findings and recommendations of this study will be of much assistance to nutritionists, dieticians and public health officials to use as a source of information in their health education programmes. This study is also meant to bring to the attention of residents in the Cape Coast Metropolis, particularly 'Keep Fit Clubs' that healthy lifestyles and good dietary practices is the yardstick to the promotion of good health and longevity. Lastly, this study will be a basis for further research works.

Delimitation of the Study

The study was confined to the Cape Coast Metropolis. This is because covering the entire country would not permit the researcher to complete the research in a specific timeframe. However, regarding the fact that all the districts in the country have similar characteristics, with people of different ages, gender, socio-economic status, ethnicity being common in all the districts, the findings of this study could be objectively generalised for all districts in Ghana.

The focus of this study was to assess if residents in the Metropolis were aware of the role that diet plays in the acquisition of lifestyle diseases. It therefore did not include medicinal implications of dietary practices and food supplements.

Limitations of the Study

Leedy (1997) points out that during the research process, data contaminated by bias of one sort or another cannot be avoided altogether. Although processes were put in place to eliminate or reduce it, it is however, unethical to fail to acknowledge the possibility of such limitations.

The study was limited by the lack of databases for some working categories, especially in the informal sector. As a result, the study was unable to assign the appropriate sampling proportions to all the working groups. Another limitation was poor addresses for the informal businesses. Some informal businesses did not have addresses, while others had changed locations. This prevented sampling of the sample units before data collection to eliminate sampling biases. The study therefore adopted accidental sampling.

Definition of Terms

Health – It is a state of complete physical, mental and social well-being and not merely the absence of infirmity (WHO, 1998).

Diet – The sum total of food consumed by a person.

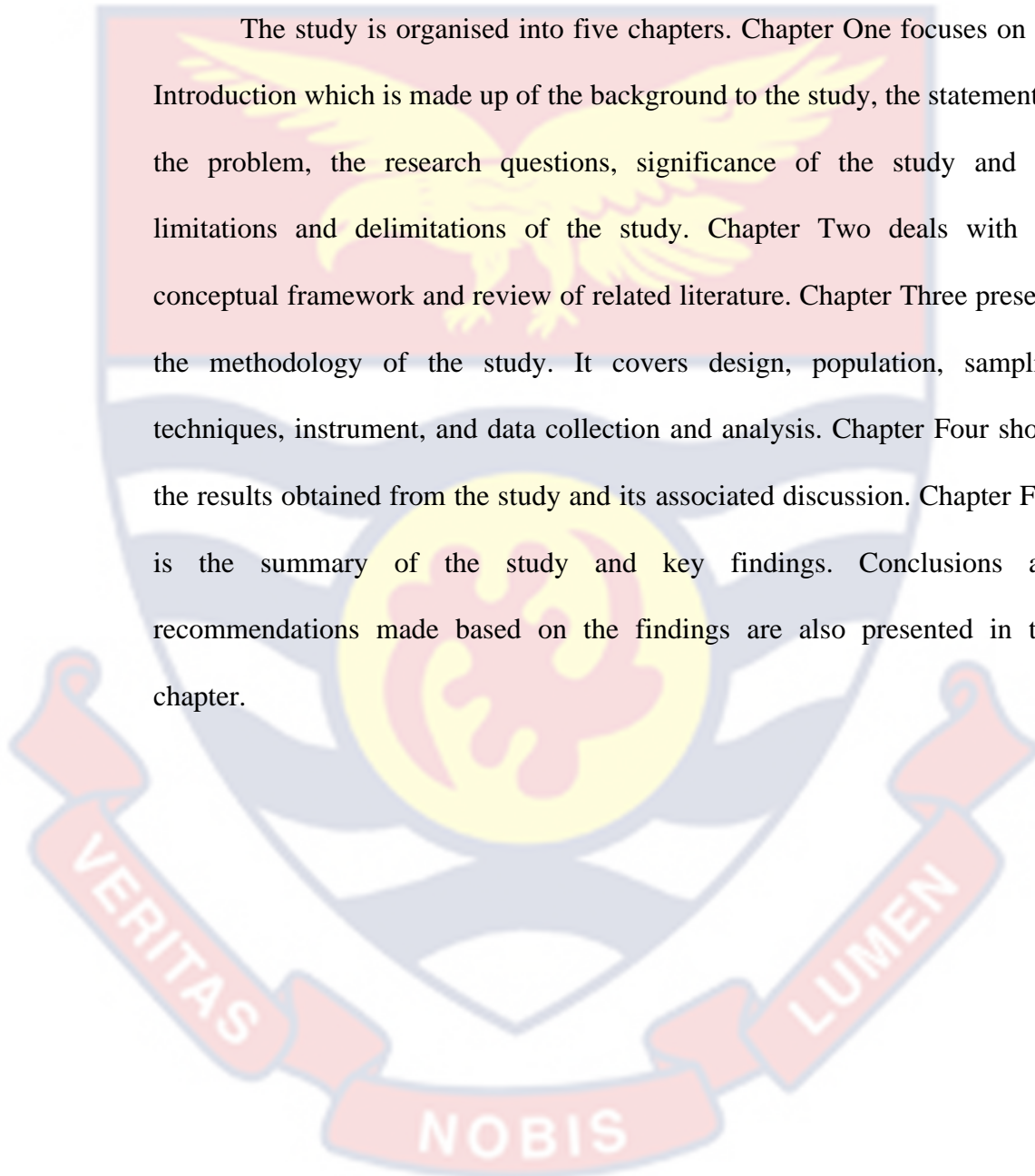
Lifestyle – A way of life or style of living that reflect the attitudes and values of a person or group.

Lifestyle disease – Health conditions such as obesity, cardiovascular diseases, cancers, diabetes mellitus and stroke that are attributable in part to lifestyle choices including diet, smoking and exercise.

Unhealthy diet – It constitutes the consumption of foods with high fats, oils and salt contents; less consumption of vegetables, fruits; and less time period between the taking of diet and sleeping.

Organisation of the Rest of the Study

The study is organised into five chapters. Chapter One focuses on the Introduction which is made up of the background to the study, the statement of the problem, the research questions, significance of the study and the limitations and delimitations of the study. Chapter Two deals with the conceptual framework and review of related literature. Chapter Three presents the methodology of the study. It covers design, population, sampling techniques, instrument, and data collection and analysis. Chapter Four shows the results obtained from the study and its associated discussion. Chapter Five is the summary of the study and key findings. Conclusions and recommendations made based on the findings are also presented in this chapter.



CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter reviews literature on the theories, concepts and empirical issues related to diet-related lifestyle diseases. The chapter starts with the theoretical framework.

Theoretical Framework

The study adopted the theory of planned behaviour and nutrition transition theory.

The Theory of Planned Behaviour

The theory of planned behaviour by Ajzen (1991) assumes that the best prediction of behaviour is given by asking people if they are intending to behave in a certain way. He noted that the intention will not express itself in behaviour if it is physically impossible to perform the behaviour or if unexpected barriers stand in the way. The theory was intended to explain all behaviours over which people have the ability to exert self-control. The key component of the theory is behavioural intent; behavioural intentions are influenced by the attitude about the likelihood that the behaviour will have the expected outcome and the subjective evaluation of the risks and benefits of that outcome (Stern, 2005). Azjen (1991) used three determinants to explain behavioural intention:

1. The attitude (opinions of oneself about the behaviour);
2. The subjective norm (opinions of others about the behaviour);

3. The perceived behavioural control (self-efficacy towards the behaviour).

According to the theory, attitudes, subjective norms and perceived behavioural control predict the intention, which in turn predicts the behaviour. Sniehotta (2009) contended that background variables, as demographical factors, are supposed to influence the behaviour through the three determinants and the intention. Attitudes, subjective norms and perceived behavioural control, explain the behavioural intention before the behaviour takes place (Dutta-Bergman, 2005). The intention is a good predictor of the actual behaviour. The theory also says that the perceived behavioural control is an estimate of the skills needed for expressing the behaviour and the possibility to overcome barriers. The actual behaviour leads to feedback about the expectations of the behaviour.

Furthermore, Ajzen (1991) stated that for a good and predictive value of the model, it is necessary that the several model variables are defined on the same level of specificity. For example, when investigating the explaining diet related lifestyle diseases, prediction will not be found in the attitude toward the environment, but in the attitude diet related lifestyles and how they cause diseases. The implication of the theory is that an individual's behaviour in diet related lifestyles is influenced by his/her attitudes, subjective norms and perceived behavioural control and intentions. However, all these are greatly premised on the level of awareness or knowledge one has in diet related lifestyle diseases and the options or choices or control an individual has over them. As a result, the socio-economic factors of individual play a critical role in the attitudes and behaviours of individuals.

The theory of planned behaviour assumes that consumers make decisions by calculating the costs and benefits of different courses of action and choosing the option that maximises their expected net benefits. The theory belongs to the so-called group of 'rational choice models' (Stern, 2005). It builds on the following key assumptions:

1. Individual self-interest is the appropriate framework for understanding human behaviour; rational behaviour is the result of processes of cognitive deliberation;
2. Internal factors, especially the attitude, play the most important role.

The policy interventions that flow from the theory are relatively straightforward. Policy should seek to ensure that consumers have access to sufficient information to make informed choices (Amjad & Wood, 2009). The theory of planned behaviour has been subject to an extended critique. This critique is based on the following important claims and arguments.

1. It is well known that human behaviour is extremely complex and consists of social, moral and altruistic behaviour as well as simply self-interested ones. More often, behaviour is embedded in collective and social decision-making contexts and other contextual factors. These factors continually shape and constrain individual preference.
2. Compared to affective processing models, the theory of planned behaviour overlooks emotional variables such as threat, fear, mood and negative or positive feeling and assesses them in a limited fashion.
3. Habits and routines - which is referred to as procedural rationality. Bypass cognitive deliberation and undermine a key assumption of the model.

Nutrition Transition Theory

The nutrition transition theory was propounded by Drewnowski and Popkin in 1997. The theory concerns the broad changes in the pattern of human diet that have occurred across time and space. Over the years, there has been increasing evidence that the structure of dietary intakes and the prevalence of chronic disease around the world have been changing at an increasingly pace (Popkin, 2002). Therefore, the world is witnessing rapid shifts in diet and chronic disease, with resultant important changes in health profiles. The theory suggests that dietary changes proceed in five temporal stages (Drewnowski & Popkin, 1997; Popkin, 2002). The transitions are however not restricted to particular time periods of human history.

1. **Collecting Food:** It is the first of the nutrition pattern. This diet, which characterises hunter and gatherer populations, is high in carbohydrates and fibre and low in fat, especially saturated fat (WHO/FAO, 2003). Activity patterns are very rigorous and high in pre-colonial societies and obesity among hunter-and-gatherer societies is rare. The consumption of fruits, vegetables and bush meat was the main sources of food. In this society, life expectancy at birth is very low. Infant and child mortalities are also high with infectious and parasitic diseases as the major disease burden. This society is also characterised by snake bites. The prevalence of chronic disease in such society is believed to non-exist (Popkin, 2001).
2. **Famine:** In this pattern, the variety of food becomes much less diverse. This is because of changes in diet and it varies across cultures and periods of acute scarcity. The consumption of fruits, vegetables, and

animal protein increases, and starchy staples reduces since the population increased more than the available foods. During the later phases of this pattern, social stratification intensifies, and dietary variation increases according to gender and social status (Popkin, 2006). The types of physical activities here are still vigorous and high but there is a little change in activity levels during this period. This is because of extinction of food and there is less to do without food. Therefore, infectious and parasitic disease becomes the dominant disease burden of this society.

3. Receding Famine: In this pattern, there is a logical assumption by Popkin (2001) that man needs to sustain and eradicate hunger by engaging in famine. The consumption of fruits, vegetables, and animal protein increases, and starchy staples become less important in the diet. Matsudo (1997) declares that activity patterns start to shift and inactivity and leisure become part of the lives of more people. In this society, the morbidity pattern begins to change from being most communicable (infectious and parasitic diseases) to the introduction of chronic diseases. This is as a result of improvement in life expectancy at birth as a result of the introduction of vaccines, personal hygiene and environmental cleanliness (Ahenkora, 1999).
4. Nutrition-Related Non communicable Disease: The evolution of chronic disease as a major disease burden started in the nutrition-related non-communicable disease pattern. In this pattern, there is a huge change in the food consumption with the help of technology and modernisation (Popkin, 2001). As countries experience rapid

urbanisation, they are losing two of their most important health assets: healthy diets and the high levels of physical activity. In most high-income societies and increasingly, in portions of low income societies, a diet high in total fat, cholesterol, sugar, and other refined carbohydrates and low in polyunsaturated fatty acids and fibre is often accompanied by an increasingly sedentary life (Matsudo, 1997). The result is an increased prevalence of obesity which is an immediate risk factor to the degenerative diseases characterised in Omran's (1971) final epidemiologic stage. In this pattern also life expectancy at birth increases significantly with evolution of medical advances and improvement in nutrition.

5. Behavioural Change: A new dietary pattern appears to be emerging as a result of changes in diet, evidently associated with the desire to prevent or delay degenerative diseases and prolong health (Drewnowski & Popkin, 1997). These changes are established in some countries and require intensive governmental policies which may constitute a large-scale transition in dietary structure and body composition. If such a new dietary pattern would take hold, it may be very important in enhancing successful aging and thereby postponing infirmity and increasing the disability-free life span.

Broad shifts in population size and its age composition coupled with disease patterns are occurring around the world as a result of nutrition transition (Chopra, 2002). Popkin (2002) indicated that there are two former sets of dynamic shifts which are demographic and epidemiological transitions preceding the nutrition transition. These historic processes of change precede

or occur simultaneously with the nutrition transition. According to Mendez and Popkin (2004), the nutrition transition is closely related to these transition models (demographic and epidemiologic transitions). Dietary and physical activity changes reflected in nutritional outcomes such as changes in average stature and body composition are referred to as the nutrition transition (Popkin, 2002). The increasing consumption of fats, sweeteners, energy-dense foods, and highly processed foods compared to traditional diets characterised by higher intake of cereals and root crops.

The demographic transition: the shift from a pattern of high fertility and high mortality to one of low fertility and low mortality (typical of modern industrialised countries) is theoretically related to the epidemiologic transition, first described by Omran (1971). The shift in epidemiological transition is from a pattern of prevalent infectious diseases associated with malnutrition, periodic famine, and poor environmental sanitation to a pattern of prevalent chronic and degenerative diseases associated with urban-industrial lifestyles.

Accompanying this progression is a major shift in age-specific morbidity patterns and a consequent increase in life expectancy. Interpretations of the demographic and epidemiologic transition share a focus with the nutrition transition on the ways in which populations move from one pattern to the other. Matsudo (1997) also emphasised that large shifts have occurred in dietary and physical activity patterns. These changes are reflected in nutritional outcomes, including changes in average stature and body composition. Modern societies seem to be converging on a diet high in saturated fat, sugar, and refined foods and low in fibre, often termed the “Western diet” (Sawaya, Martins & Martins, 2008).

Sawaya et al. (2008) continued that “Western diet” is associated with the cause of chronic diseases which reduce disability-free time. Dietary and activity changes parallel major changes in health status as well as major demographic and socioeconomic changes. Chronic disease emerges early in these shifts, as does the aged population and level of morbidity and mortality.

Conceptual Framework

This section presents a framework for analysing the awareness level of people in diet related lifestyle diseases. From Figure 1, on the next page, an individual’s attitude to behaviour and perceived behavioural control depend on the level of knowledge one has over the issue. As a result, an individual’s food habit or diet related lifestyle depends on his or her level of knowledge over health implications on nutrition. However, the nutrition transition theory postulates that an individual’s diet related lifestyle is also influenced by some socio-economic factors such as type of occupation, level of income, level of education and sometimes gender. Thus, between one’s level of knowledge in nutrition and his or her adoption of food habit are the socio-economic factors.

Socha, Chambers, Zahaf, Rawnda and Fiddler (2011) indicated that the socio-economic factors either give individual more dietary choices or restrict the individual over variety of food choices. The kind of diet-related lifestyle influences the health-related outcomes associated with an individual. However, the nature and extent of the health related outcomes are influenced by the physical activity of the individual.

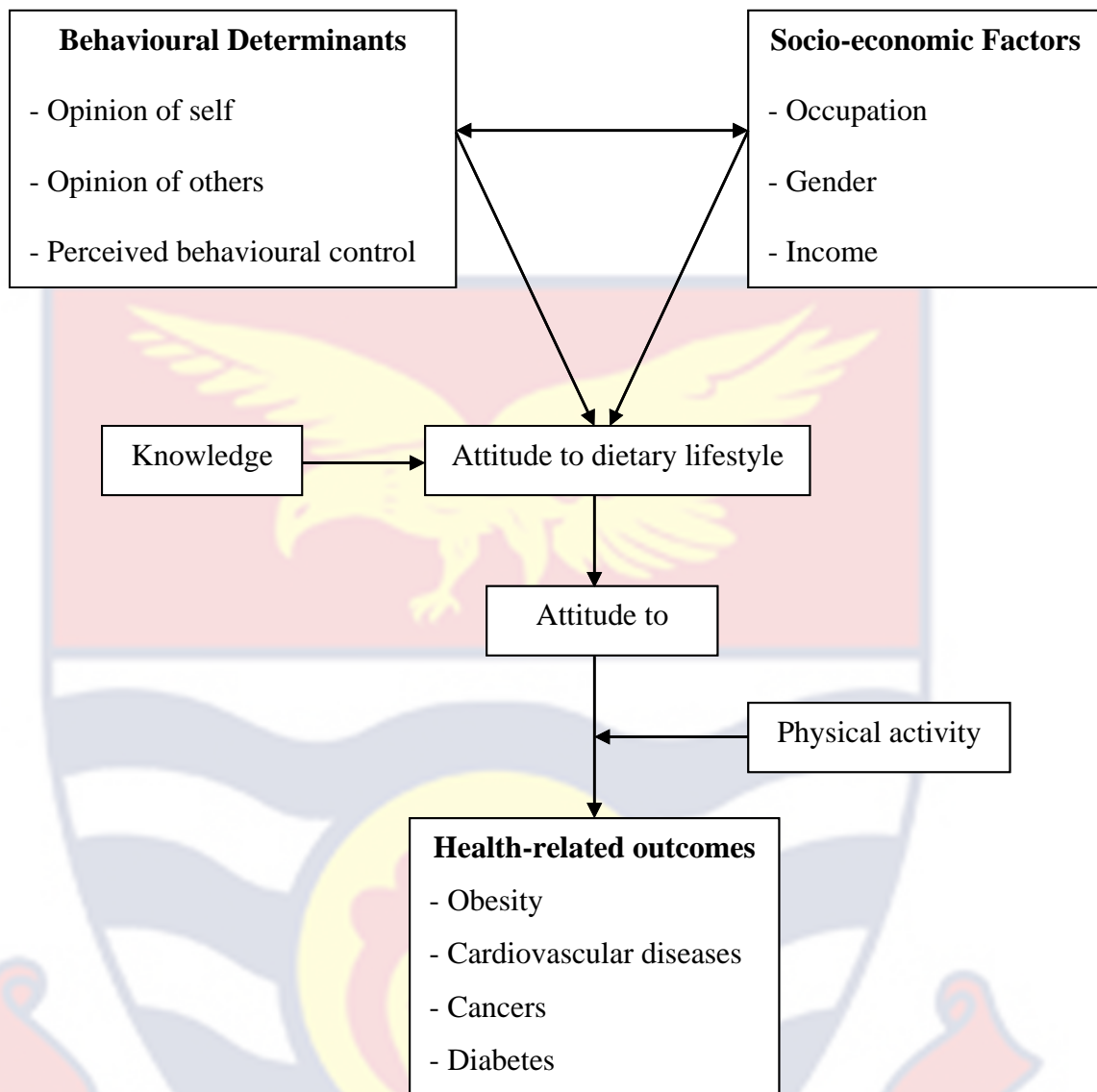


Figure 1. Model for analysing the awareness level of people in diet-related lifestyle diseases

Source: Author's construct, 2012

As part of the operationalization of this framework for the study, the socio-economic background characteristics of the respondents were analysed. The study also sought the perceptions of the respondents on diet related lifestyle diseases. Similarly, the study assessed the influence of the socio-economic factors of the respondents on diet related lifestyle diseases.

Shifts in the Structure of Diet

According to Popkin (1998), food supplies, in general, are becoming less dependent on local production and evidently more diverse, and frequently monotonous diets based on starchy staple grains and roots are becoming replaced by diets that include much more fat, more foods of animal origin, and often more sugary food and drink, much of which is produced elsewhere in the country or imported. At the same time, the shift toward diets that are notably more energy-dense, containing much more fat, more added sugar, and sometimes more alcohol, with a marked reduction of starchy staples is evidently having the effect of increasing the incidence of diet-related chronic diseases (Popkin, 1999).

According to Darton-Hill, Nishida and James (2004), there is a marked decline in cereal and starchy roots available for consumption, the items that provided much of the energy in the diet of people in past centuries, except for increases among lower-low income and a slight increase among upper-low income countries. These aggregate trends mask a marked shift away from so-called coarse and higher-fibre grains to rice and wheat, which are usually refined (Guo, Popkin & Zhai, 1999).

In addition, there is a marked increase in availability of eggs and dairy products (Popkin & Doak, 1998). This is important, since eggs and dairy products are important sources of saturated fats. Indian consumption of ghee, a particularly highly saturated fat product, is important in that high consumption of saturated fat is closely related to chronic diseases. Trends in the consumption of meat and dairy products, which are major sources of saturated fat, are very alarming since they have large adverse effects on a range of

chronic diseases. Projections from the International Food Policy Research Institute (IFPRI) show very rapid annual growth in consumption of meat and dairy products and also total consumption from 1993 to 2020 (Delgado, Rosegrant, Steinfeld, Ehui & Courbois, 1999).

For China, meat and dairy consumption are projected to increase at a three percent and 2.8 percent rate per year. The rates of increase for other East Asian countries are about two percent, and for Southeast Asia about 2.8 percent (Delgado et al., 1999). Fruit and vegetable availability has increased markedly for the high- and upper-low income countries. It remains very high for small islands and is improving slightly for the middle- and lower-low income countries.

According to Chopra, Galbraith and Darnton-Hill (2002), food availability increases are most marked for most countries for both added animal fats and vegetable oils. The levels of availability are particularly high for edible vegetable oils, which vary in origin from the red palm oils to coconut oils to corn, soybean, and cottonseed oil from country to country. In Sri Lanka and the Philippines, for example, coconut oil is a major source of saturated fat. In Malaysia, more edible oil comes from red palm oil, which has a higher P:S (polyunsaturated to saturated fat) ratio, a more healthful alternative (Drewnowski & Popkin, 1997).

Also, while the processing of these edible oils varies greatly, there is no systematic research on their composition. Increased edible oil is a key reason for the marked increases in energy density of diet (Guo et al., 1999). Chopra et al. (2002) found that the availability of sugar, added in food production and at home, is increasing among the middle- and high-income

countries and is high in all countries. These trends in food availability indicate a marked shift in the structure of the food supplies and diets of people. In general, people's diets now contain less starchy staple grains and roots, and more fat, sugar, and foods of animal origin. There are parallel changes in availability of total energy and in macronutrients. These trends match fairly well more accurate household- and individual-level data on trends in sources of energy (Hawkes, 2007).

In summary, food supplies and diets are rapidly changing in nature, in ways that have both positive and negative outcomes. On one hand, adequate and more diverse diets improve micronutrients status and so decrease incidence of deficiency diseases. Allen and Gillespie (2000) stated that dairy foods and foods of animal origin contain nutrients that can improve the nutritional quality of otherwise monotonous diets. But on the other hand, the rapid shift toward more energy-dense diets containing more fat, more saturated fat, often more sugar, and more foods of animal origin is evidently contributing to the increasing incidence of chronic diseases.

Shifts in Physical Activity Patterns

Reduced moderate-to-vigorous physical activity by persons of all ages and corresponding habitual inactivity accompany the nutritional transition (Popkin, 1998). One of the most inexorable shifts with modernisation and industrialisation is the reduction of physical activity at work and home for both men and women. According to Hawkes (2006), as occupations shift from agriculture and manual labour to manufacturing and the service sector, levels of energy expended naturally drop. Few studies have measured the equally profound shifts in activity within any occupation. In China, these shifts toward

reduced activity within the same occupation have been related to increased obesity (Paeratakul, Popkin, Ge, Adair & Stevens, 1998).

The shift away from walking and cycling to mass transit and cars represents a major change in regular physical activity and thus energy expenditure. Increased inactivity outside work is also apparent. One of the most remarkable changes in developing countries is an explosion of new information sources and ways of reaching households in the most isolated villages and towns (Allen & Gillespie, 2000). According to Prentice (2006), the expansion of mass media has the potential to play a major role as a source of consumer knowledge and attitudes. The percentage of households that own televisions has increased dramatically. Lang and Rayner (2007) found that habitual television watching affects diet and activity patterns.

Diets may change as a result of exposure to advertising and role models in the programmes themselves, and as a result of snacking while watching Television (TV). Also, watching TV is itself a sedentary activity, and displaces more active leisure time activities. Lang and Rayner (2007) found a positive relationship between TV use and obesity.

Urbanisation

During the last half century, there has been a large shift of population from rural to urban areas throughout the economically developing world (Popkin, 1999). According to Sharma (2010), as people move into cities, their food supplies, diets, and body composition change. High levels of obesity are particularly apparent in lower- and middle-income countries. Urban occupational structures, transportation and food market systems, housing

markets, and concentration of population combine to create quite different patterns of food supply and demand and time allocation (Popkin, 1999).

According to Kuhnlein, Receveur, Soueida and Egeland (2004), this results in over nutrition, which means that people eat more than they need, which leads to overweight, obesity, and other major chronic diseases such as heart disease. They found out that, rapid urbanisation results in the coexistence of malnutrition and obesity within many households in developing countries. The urban diet, even in very low-income countries and among the poorest areas of cities, contains much more energy from fats and sugar (Story, 1999). The food is much more likely to be processed, and most often consists of more highly refined cereals and sugars and fewer unrefined, staple foods than the rural diet.

Even poor people in urban areas can afford processed foods relatively high in fat and also in refined starches and sugars. Edible oil, in particular, can be very cheap. This enables people on low incomes to prepare meals that approximate to those eaten only by higher-income groups in previous decades (Drewnowski & Popkin, 1997). Further, the higher intake of processed food incorporates much more salt in the urban diet, another factor linked with higher rates of hypertension in many countries (Socha et al., 2011).

In general, urban diets are more diverse than those eaten by rural people, and contain more animal food generally (and therefore more animal protein), and often more micronutrients (Story, 1999). However, Prentice (2006) emphasised that the effect of relatively energy-dense diets and physical inactivity is to increase the incidence of overweight, obesity, and other diet-related chronic diseases

Diet-related Chronic Diseases

According to Cannon (1992), the nature and quality of diet affect the risk of acquiring a number of chronic diseases, including those that have for half a century been the major causes of premature death in the economically developed world. Such diseases vary in severity. They include diseases that are disagreeable, notably tooth decay and various gut disorders; that are disabling, such as adult-onset diabetes, obesity, and osteoporosis; and that are deadly, notably cardiovascular disease (with its precursors, hyperlipidaemia and angina), cerebrovascular disease (and its precursor, hypertension), and cancer (Committee on Diet and Health, Food and Nutrition Board, Commission on Life Sciences and National Research Council, 1989).

A report by the World Cancer Research Fund [WCRF] (1997) specifies the major cancers the risk of which is modified by food and nutrition (including alcohol), and to physical activity and body composition; these include cancers of the mouth, throat, and oesophagus, lung, breast, endometrium, stomach, colon, and rectum. Some of these cancers are also caused by non-dietary factors, notably use of tobacco with cancers of the mouth, throat, oesophagus, and lung. Similar reports have focused on diet-related factors and CVDs (Committee on Diet and Health, Food and Nutrition Board, Commission on Life Sciences and National Research Council, 1989; Labarthe, 1998; WHO, 1990).

It is possible that additional chronic diseases are related to diet. The cancer report cited above lists other cancers for which the evidence of relationship with diet is inconclusive. Some scientists propose mechanisms that indicate that chronic diseases of any system of the body, including the

nervous system, may be affected by diet and associated factors, although epidemiological research on such diseases is unconvincing (WHO, 1990).

A report by Trowell and Burkitt (1985) proposed that chronic diseases tend to emerge and become epidemic as a result of a transition to diets to which human physiology is not adapted, in a predictable order. Thus, overweight and obesity, adult onset diabetes, and cerebrovascular disease become public health problems within a generation, and severe gut diseases, notably colon and rectal cancer, emerge later, whereas Coronary Heart Disease (CHD) and breast cancer may take two generations to become epidemic (International Obesity Task Force [IOTF]/WHO, 2000).

Diets that Increase the Risk of Chronic Diseases

According to Sharma (2010), there is a confluence of risks for various specific chronic diseases linked with certain diet and lifestyle patterns. Broadly, diets that increase the risk of chronic diseases are relatively high in total fat, saturated fat, sugar, salt, alcohol, refined grains, and foods of animal origin, whereas diets that protect against chronic diseases are relatively high in minimally processed grains, legumes, fibre, vegetables, fruits, and other foods of plant origin (Kuhnlein et al., 2004). Estimates of the extent to which chronic diseases can be reduced by appropriate diets and lifestyles have been made for cancer, and cluster around an estimate of 30% to 40% (WCRF, 1997).

Paeratakul et al. (1998) also noted that plant-based diets that are also monotonous, very high in starchy staple grains or roots, with few vegetables and fruits or foods of animal origin, increase the risk of deficiency diseases. Such “poverty diets” (WCRF, 1997) emphasise the need for plant-based diets

to be varied and not too high in grains or roots of one type. Perhaps the most important aspect of these findings is that the linked demographic and nutritional transitions produce lifestyle shifts that to date are associated with rapid increases in the risk of major diet-related chronic diseases. According to Hawkes (2006), there is a wide range of evidence linking changes in food supplies, diets, and associated factors with chronic disease incidence.

Obesity: The Effect of Diet and Physical Activity on the Risk of Chronic Diseases

There is a massive and growing literature on the causes of overweight and obesity. Obesity, itself a disease, also increases the risk of other major chronic diseases, notably CHD and some cancers (Chopra et al., 2002). Appropriate approaches to obesity in adult life remain a matter of debate, but Darton-Hill et al. (2004) contended that there is an established consensus, reflecting the identification of biological mechanisms, that energy-dense diets increase the risk of overweight and obesity. An IOTF/WHO report (2000) defines physical inactivity and that the incidence of overweight and obesity as a function of the relative energy-density of diets and levels of habitual physical inactivity. Bray and Popkin (1998) also show that nutrient-dense diets with relatively low energy density and regular physical activity not only predict relatively low levels of obesity, but are also effective approaches in obesity reduction, and also will reduce the risk of other pathologies, such as adult-onset diabetes, CVDs and certain cancers.

Obesity is now a major public health problem. A generation ago, obesity was identified as a major problem perhaps only in the western Pacific islands. But a number of national surveys from several developing countries show that the problem is greater than heretofore understood (IOTF/WHO,

2000). It is also evident that overweight short of obesity (body mass indices between 25 and 30) are precursors of obesity and also can increase the risk of other diseases such as diabetes, hypertension, and CHD, among others (Bell, Keyou & Popkin, 2000).

Major Chronic Diseases

Cardiovascular disease (CVD) refers not just to heart conditions (coronary artery disease; valvular, muscular, and congenital disease), but also hypertension and conditions involving cerebral, carotid, and peripheral circulation (Monteiro, Conde & Popkin, 2004). Typically diabetes is placed in a separate category. The patterns of food supplies and of food and nutrition that modify the risk of CVD are also well known; and the governments of many countries in the economically developed world, and later some countries in the developing world, have issued dietary and other recommendations designed to control incidence of CVD (WHO 1990; Labarthe 1998).

The basic finding is that varied diets that are high in vegetables and fruits, in starchy staple foods (preferably in minimally processed form), and correspondingly relatively low in energy density, fats, saturated fats, sugar, and salt are most protective against heart disease (WHO, 1990). Such diets approximate those traditionally eaten in many countries, where public health problems have been those of food insecurity, undernutrition, and monotony of diets. However, when people have enough to eat and diets are varied, diseases of undernutrition are not major public health problems.

Additionally, there is conclusive evidence that regular physical activity maintained throughout life, together with nutrient-dense diets, protects not only against obesity (and therefore indirectly against heart disease), but also

gives direct protection against diseases of the cardiovascular system (Brody, 2002). This finding has very important implications for developing countries, where protective diets and lifestyles are not yet, as in developed countries, largely phenomena of the past. According to Labarthe (1998), inappropriate diets are a major determinant of the risk of cerebrovascular diseases, including high blood pressure and stroke. Dietary recommendations for preventing these pathologies are much the same as those for obesity and coronary heart disease, except for the added focus on consuming a lower salt diet for stroke and hypertension.

Cancer is a major chronic disease. Perhaps remarkably, there is also now consensus that in broad terms, the same diets and associated lifestyles that protect against obesity, diabetes, and cerebrovascular and CVDs, also protect against cancer or, to be more precise, major cancers of the epithelium and hormone-related cancers that evidently become or remain epidemic as a consequence of the demographic-nutritional transitions (WCRF, 1997). These cancers include those of the lung, breast, endometrium, colon, and rectum, and cancers that may be associated also with traditional diets, such as those of the mouth, throat, oesophagus, and stomach (Monteiro et al., 2004).

A major review of the literature on food, nutrition, and the prevention of cancer, taking a global perspective (WCRF, 1997), includes a comprehensive set of dietary and associated recommendations. This review is notable in a number of ways. First, following other reports on diet and cancer, it quantifies the extent to which cancer incidence may in time be reduced by appropriate diets and associated lifestyles, proposing a range of 30% to 40% as an educated guess, based on a broad analysis of epidemiological findings.

At 1995 levels, a decreased incidence of cancer of 30% and 40% corresponds to 3–4 million annual cases of cancer worldwide (WCRF, 1997).

Thus, the pattern of food, nutrition, and physical activity that protects against cancer also protects against other chronic diseases, and has no deleterious effect on any other type of disease (Monteiro et al., 2004). Current diet recommendations emphasise foods and dietary patterns more than individual dietary macro- and micro-constituents. Food-based dietary guidelines are now generally accepted (WHO/FAO, 2003). In broad terms, diets that are most protective against chronic diseases – and most of all in generally sedentary populations – are mostly made up from foods of plant origin, are varied and high in nutrients but relatively low in energy, and include substantial amounts of vegetables, fruits, legumes, and minimally processed grains and other starchy staples (Caballero, 2005).

Correspondingly, such diets are relatively low in fat (especially saturated fat) and sugar, low in salt and alcohol, and in general contain modest amounts of foods of animal origin. WCRF (1997) emphasised the importance of year-round variety in diets, and also the value of small amounts of meat, fish, poultry, and dairy foods, especially when otherwise diets might be monotonous.

Food Habits

People make choices with regards to their health daily. Sizer-Webb, Whitney and DeBruyne (1999) describe the daily choices that have the power to affect our health, such as what to eat, when to exercise and how to treat the body and the mind as lifestyle choices. People who consistently make poor

lifestyle choices on a daily basis stand a high risk of suffering from lifestyle diseases.

The term diet refers to the sum total of food consumed by a person. It also includes a person's pattern of eating and drinking. A balanced diet contains food from several food groups and supplies the body with the energy and essential nutrients it needs. Dietary reference intake values provide a range of dietary recommendations, including the Recommended Dietary Allowances (RDAs), which provide the daily intake needed to meet the needs of nearly all healthy persons. Dietary recommendations, and how they are represented, vary around the world. However, diet conveys a common message – balance, variety and moderation in food choices.

Food is used to satisfy hunger, provide comfort and relief from boredom or anxiety, as a status symbol, as well as in the performance of various rituals and rites (Oniang, Mutuku & Malaba, 2003). Better nutrition and healthy living require an understanding of factors that have influence on what we eat. Food habits are among the oldest and most entrenched aspects of many cultures that exert deep influence on the behaviour of people.

Food habits can be defined as the typical behaviour of a particular group of people in relation to food (Barasi, 1997). They provide an important signal of identity of the group thereby determining the food choices, as well as eating times and number of meals, size of portions, methods of food preparation and who takes part in the meal. To Amoako-Kwakye (2010), food must be available or accessible before one can eat it and the factors that prevent food from being accessible are mainly physical and economic. Amoako-Kwakye further contends that there is no guarantee that when food is

in abundance, people will make choices and eat quality food. The practice of these eating habits over a long period of time form the food habits of a group of people living together. Food habits are a product of the environmental influences on a culture and in general are resistant to change (Barasi, 1997).

Rodriguez (2004) explained that food habits are influenced by many factors, including income, culture, religion, geographic location/ environment, social and political influences. These factors determine what a person will eat. There is also some preference in addition to personal liking of food. Every individual has unique likes and dislikes concerning foods. These preferences develop over time, and are influenced by personal experiences such as encouragement to eat, exposure to a food, family customs and rituals, advertising, and personal values. For example, one person may not like banku or akple, despite the fact that they are a family favourite.

Culture provides guidelines regarding acceptable foods, food mix or combinations, eating patterns, and eating behaviours. Compliance with these guidelines creates a sense of identity and belonging for the individual. Within large cultural groups, subgroups exist that may practice variations of the group's eating behaviours, though they are still considered part of the larger group.

Social influences also affect a person's food choices. Members of a social group depend on each other, share a common culture, and influence each other's behaviours and values. A person's membership in particular peer, work, or community groups impacts food behaviours. For example, a young person at a party may eat certain foods when accompanied by friends.

Religious obligations and prescriptions range from a few to many, from relaxed to highly restrictive. This will affect a follower's food choices and behaviours. For example, in some religions specific foods are prohibited, such as pork among Jewish and Muslim adherents. Within Christianity, the Seventh-day Adventists discourage "stimulating" beverages such as alcohol, whereas it is not forbidden among Catholics.

Eating habits are also developed by foods which a consumer is able to buy. Money, values, and consumer skills all affect what a person purchases. In many parts of world economic situation direct the consumer what to buy and what not to. The price of a food, however, is not an indicator of its nutritional value. Cost is a complex combination of a food's availability, status, and demand. Therefore economic conditions may change and influence eating habits of consumers.

The influence of the environment on food habits derives from a composite of ecological and social factors. Foods that are commonly and easily grown within a specific region frequently become a part of the local cuisine. However, modern technology, agricultural practices, and transportation methods have increased the year-round availability of many foods, and many foods that were previously available only at certain seasons or in specific areas are now available almost anywhere, at any time.

Political factors also influence food availability and trends. Food laws and trade agreements affect what is available within and across countries, and also affect food prices. Food labelling laws determine what consumers know about the food they purchase (Rodriguez, 2004).

Barasi (1997) stated that the acquisition of food habits is largely unconscious, since they are acquired at a young age, which incidentally ensures transmission between generations. Foods which are associated with good times are often preferred to those which do not have these connotations.

Familiar food is satisfying and reassuring, particularly the traditional foods of childhood, which evoke deep seated emotional response. Oniang et al. (2003) further stated that many African countries have in the past three generations experienced extensive changes on food supplies and in household diets. Exotic (untraditional) foods now dominate many urban areas in Ghana. Even in the rural areas, the range of traditional domestic foodstuff have been considerably reduced partly due to increased cost of production and processing, and long laborious domestic preparation methods. Although food habits are resistant to change, they are not static. They are slow and difficult to change because food has important psychological associations with the family and the community.

Modern Changes in Feeding in Ghana

Food is importantly a part of popular culture and the beliefs, practices, and trends in a culture affect its eating practices. Different people have different perception and attitude toward diet and as a result they receive different consequences for their dietary patterns. Popular culture includes the ideas and objects generated by a society, including commercial, political, media, and other systems, as well as the impact of these ideas and objects on society (Maltby, 1989).

For instance, there has been an increasing trend in Ghana toward consumerism, a trend which is reflected in more people eating away from home: the use of dietary and herbal supplements; foods for specific groups

(dieters, women, athletes, footballers, older adults); the use of convenience and functional foods; and ethnic diversity in diets. The term *functional food* is often used in reference to foods that have nutrients (or non-nutrients) that might protect against disease. The term is used when referring to foods that have been fortified, have specific phytochemicals or active microorganisms added, or have been developed using genetic engineering techniques.

However, all foods can support health in some way, and there is no legal definition of *functional food*. In addition, the actual benefit of these foods, if any, can vary and is open to interpretation. For example, both a candy bar and orange juice may have additional calcium added, and can therefore be called functional foods. The consumer must determine the benefit of such items. On the other hand, *convenience foods* is to satisfy individuals who want to eat well at home but are short on time or do not want to prepare elaborate meals, many eateries also offer take-out meals or items. Fully or partially prepared “TOTE” (take-out-to-eat) foods, including home-delivered meals, are generally referred to as *convenience foods*. As more women (the traditional preparers of family meals) enter the labour force, people’s desire to save time increases along with the use of convenience foods.

Mainstream populations in developing countries want high-calorie, high-fat foods, as well as simple, natural, and fresh ingredients. Internationally, there has been an “Americanisation” of diets through the growth and use of fast-food restaurants and convenience foods (Popkin & Doak, 1998) and Ghana is not new to this. There has been a rapid growth of formal sit-down restaurant, cafes and fast food eateries in major towns and cities of the country. Today, fast food places range from expensive restaurant

style services usually located in wealthy neighbourhoods, shopping districts or at petrol stations and serving up market clientele, to affordable kiosk versions (termed 'check check') usually located within markets, lorry stations and along busy roads serving the less wealthy.

Burgers, French fries (fried potatoes), pizza, fried rice and pastries are some of the common meals or foods on offer at these restaurants. They also serve a wide variety of alcoholic, non- alcoholic, exotic and carbonated drinks. These present a diet high in fat, carbohydrates and sugar. There is also an increasing upsurge of foreign restaurants such as Chinese and Indian restaurants which serve foods from their respective countries. Fast-food restaurants have become very common, and are visited by all types of people. The growth and popularity of fast food has come to be known as the "Papaye" of Ghana.

In developing countries there is still a need for some basic foods to be well analysed, therefore, governments and the food industry are working to develop products which can reduce international food exports and nutrient deficiency problems (Sizer et al., 1999). Therefore, Schlosser (2001) argued that the proportion of money spent on food eaten away from home, as well as the number of restaurants, has been steadily increasing since the second half of the 20th Century.

Health Implications of Modern Food Habits in Ghana

Modern feeding and food habits have brought a number of life threatening nutritional disorders to Ghanaians, Africans, and the world in general. These disorders include obesity, hypertension, CVDs, cancers and diabetes mellitus. These diseases fall in the lifestyle diseases group. These

diseases are widespread, as countries become industrialised and people live longer. The way these begin is dangerous such that it takes years to develop and then becomes so much a part of our lives that it cannot be easily cured even with allopathic medicines. The fact that people's diet is changing day by day, from high nutritional food, towards junk food, has contributed to the era of lifestyle diseases.

The Ghana Health Service (2003) noted that hypertension affects nearly one out of every five Ghanaian adults. The 2008 Ghana Demographic and Health Survey by the Ghana Health Service shows that 1 in 10 Ghanaian women are malnourished and 3 in 10 women are overweight or obese. That is, there are more obese women (30.0%) than malnourished women (9%) in Ghana. Reduction in physical activity and exercise has also added to the scenario. Substance abuse, especially tobacco smoking and alcohol drinking may also increase the risk of certain diseases later in the life. Thus, some people in Ghana are becoming susceptible to hypertension due to unhealthy lifestyles (Cappuccio & Macgregor, 1991). But unlike other diseases, lifestyle diseases can be barred, as its influence can be weakened by changing our lifestyles, improving diet and making the environment healthier.

Risk Factors Associated with Lifestyle Diseases

There are several risk factors associated with lifestyle diseases. These include behavioural and nutritional/dietary factors.

Behavioural Factors

It is widely accepted that chronic non-communicable diseases are largely due to preventable and modifiable behavioural risk factors such as lack of

exercise, unhealthy diet, tobacco use and alcohol consumption. We tend to eat high fat foods and put taste and convenience ahead of nutrition.

Nutritional/Dietary Measures

According to WHO (2000), diet and nutrition is a major modifiable determinant of chronic non communicable diseases, with scientific evidence supporting the view that alterations in diet and activity have effects on health throughout life. Cheap and readily available processed foods coupled with reduced physical activity create a condition of over-nutrition resulting in overweight or obesity. It is now emerging that this diet is the cause of many of the diseases being encountered today (McDowell, 2010). NCDs are linked to high consumption of energy dense foods, made of animal origin and of foods processed or prepared with added fat, sugar and salt.

Results of observational studies and clinical trials document an association between Sodium Chloride (NaCl) intake and blood pressure (Hajja & Kotchen, 2003). The effect of NaCl on blood pressure increases with age, with the height of the blood pressure, and in persons with a family history of hypertension. Among population groups, age-related increments of blood pressure and the prevalence of hypertension are related to NaCl intake (Elliott, Pilcher, Fergusson & Stewart, 1996).

A study by Chopra et al. (2002) indicates that majority (93.2%) of the subjects (190) incorporated into a study of risk factor profile of NCDs in an industrial productive had low daily intake of vegetables and fruits. Excess blood glucose levels predispose in a way to the development of diabetes, which is basically influence by lifestyle. A study by Baridalyne, Anita, Lakshmy, Ritvik and Bela in 2003 into profile of biochemical risk factors for

NCDs in urban, rural and peri-urban Haryana, India documented 11.4% of men in urban areas having fasting blood glucose above the cut off.

Physical Inactivity

In context with weight gain, another factor that contributes to increased risk of non-communicable diseases is physical inactivity. This is associated with increased levels of obesity, breast cancer, colon cancer, osteoporosis, stress, anxiety and depression (WHO, 2010). Physical inactivity is one of the major underlying causes of mortality in the world. It has been shown that moderate amounts of physical activity (frequency, duration and intensity) are associated with health benefits, and can help reduce various chronic diseases related to lifestyle.

Physical inactivity is known to be a major public health problem of concern in 2000 as physical activity levels of people of all ages tended to decrease (Centres for Disease Control and Prevention, 2001). The Centres reported that among the youth in America aged 12 and 13 years 69.0% were regularly active. However, the number dropped to 38% for young people between the ages of 18-21 years. A physically inactive child is more likely to become a physically inactive adult, which is inactivity also known as sedentism – it begins early in life, making the promotion of physical activity slow and could lead to chronic diseases of lifestyle (Frantz, Phillips & Amosun, 2003).

Patterns of activity among children are imperative (Summerfield, 1998). The prevalence of physical inactivity among youth worldwide has increased. At the international level, 67.0% of young children in Canada did not meet the average physical activity guidelines to achieve optimal growth

and development (Canadian Fitness and Lifestyle Research Institute, 1998). In the United States of America, Guo et al. (1999) reported that nearly 50% of American young people aged between 12 and 21 years did not engage in vigorous physically active lifestyles on a daily basis.

In the Health Survey in England 1997, 22% boys and 30% girls were reported as being physically inactive between age 10 and 15. In the 16-24 year age group, 39% of the males were reported as inactive and 62% of the females were reported as inactive. In some Sub-Saharan countries, prevalence of physical inactivity has been recorded. A study in South Africa report from Birth to Twenty (BTT) 2002 indicated that more than 40.0% of young people do not participate in regular physical activity. The BTT study found that physical activity was less common among girls than boys and among those with lower income and less education.

Tobacco Use

The urbanised lifestyle such as use of tobacco is one of the most modifiable risk factors and preventable causes of death for NCDs. Smoking, which is believed to be the number one major single known cause of non-communicable diseases (Toustad & Andrew-Johnston, 2006) is widespread around the world. Estimate of the WHO indicates that roughly about 30% of the global adult male populations are smokers. The WHO attributes some 10 million deaths each year by 2020 to tobacco. It is estimated that by 2030 smoking will kill one in six people globally, if current trends continue. This will include seven million people in developing countries.

Tobacco use has been associated with premature mortality amongst users, with cardiovascular disease (i.e. stroke and heart attack) causing most

deaths (WHO, 2000). While the prevalence of tobacco use in many industrialised nations is reducing, there is a growing epidemic of smoking in the developing world. In many African countries, there is paucity of data on the epidemiology of tobacco and smoking. Based on the available data however, in African countries, it appears smoking among adults is more common among males and the poor (Pampel, 2002). An estimated 4.8 million deaths cases worldwide in 2000 was believed to have occurred due to tobacco smoking, particularly occurring in developing countries (Ezzat & Lopez, 2000).

In sub-Sahara Africa, data on national smoking prevalence ranges from 20% to 60% among men. Rate of smoking among certain sub-Saharan African youth has been documented. A prevalence rate of 1.4% in Zimbabwe, 1.5% in Nigeria, 34.4% in Cape Town, South Africa which exhibit a steadily increase and that must need an attended (Townsend, Flisher, Gilreath & King, 2006). In Kenya, a study into a Global Youth Tobacco Survey document a rate of 7.2% cigarette smoking among school-going children and 8.5% of other tobacco related products (Global Youth Tobacco Survey [GYTS] Collaborating Group, 2003).

Studies have shown that an estimated 50% adolescents who start smoking become regular smokers (WHO, 2000). About 50% of those who continue to smoke during adulthood die from diseases associated with smoking (MacKay & Ericksen, 2002). Various categories of smoking exist which must be considered in estimating an extent of smoking related infections. A study into prevalence and determinants of adolescent tobacco smoking in Addis Ababa, Ethiopia indicate an overall prevalence of 2.9% of

which 4.5% males and 1% females were current smokers. The same study also reports an estimated 15.1% males and 5.7% females' ex-smoking status among the population (Emmanuel, Abdurahman & Adamson, 2007). On comparative assessment, several studies document a higher prevalence of smoking among males than females (GYTS Collaborating Group, 2003).

In Ghana specific, little is known about prevalence of smoking. Before the year 2003, no National data was available on prevalence of smoking among adults. The 2003 Ghana Demographic Health Survey by the Ghana Health Service (2008) estimated smoking prevalence in men aged 15 to 19 to be only 0.7% (Anon, 2003). GYTS Collaborating Group also documented smoking prevalence rate of 4.8% among 1,917 Ghanaian school children between the ages of 11-16 years in 2000. Males smoker were more than females (5.3% versus 3.8 %) (Wellington, 2002).

A study by Addo et al. (2006) on changes of smoking patterns among Ghanaian civil servants over three decades revealed a smoking prevalence rate of 6.1% and 0.3% in men and women, respectively. The age-standardised prevalence of cigarette smoking among the 1,015 participants was 3.9%. Among the participants, men with age-standardised prevalence of 7.3% and 0.5% for women were considered to be ex-smokers. The study also obtained an average number of cigarettes smoked per day among the proportion of respondent being current male smokers to be 4.3 sticks. About 82% of men reported smoking 5 or less cigarettes in a day while 18% reported smoking 6 to 10 sticks of cigarettes per day. None of the participants smoked more than 10 cigarettes in a day.

Biological Factors

It has been suggested that some populations are susceptible to chronic disease because of inherited genes (also referred to as “genotype”). This may be only partly true as our genotype is affected by our diet (McDowell, 2010).

The Barker hypothesis formed in 1997 found a relationship between birth weight, subsequent growth and development, and the emergence of risk factors for chronic diseases. A recent study by McDowell has shown that impaired growth in infancy and rapid childhood weight gain after age two years is related to an increased risk to develop cardiovascular events later in life confirms this hypothesis.

Blood Pressure

Hypertension (high blood pressure) and dyslipidemia are two of the major traditional risk factors for CVDs. Blood pressure is considerably lower in children than in adults and increases steadily throughout the first two decades of life. In adults, cross-sectional and longitudinal surveys have shown that systolic and diastolic blood pressure increase progressively with age. For example, in the WHO MONICA survey, systolic blood pressure increased by about 0.29 to 0.91 mm Hg per year in men and 0.6–1.31 per year in women (Wolf, Tuomilehto, Kuulasmaa Domarkiene, Cepaitis et al., 1997). This increase remains stable and possibly declines after age 50 for diastolic but not for systolic blood pressure, leading to a steep increase in pulse pressure; a key risk factor for cardiovascular outcome (Franklin, Jagoe, Edwards, Whiting & Unwin, 1999). These trends have been demonstrated in both genders and most ethnic groups (Hajjar & Kotchen, 2003).

Many studies also document an increase in hypertension prevalence with age (Cent, 2005). In the United States based on NAHNES 1999–2002, hypertension prevalence increased from 6.7% in persons 20 to 39 years to 65.2% in persons 60 years or older. The greatest increase in hypertension prevalence between 1988–1991 (57.9%) and 1999–2000 (65.4%) occurred in individuals who are 60 years or older (Hajjar & Kotchen, 2003).

According to a study in Ghana by Charles and Ellis (2006), on Pre-hypertension in the Ashanti Region, West Africa: An opportunity for early prevention of Clinical Hypertension; documented 40% and 29% as a prevalence of both pre-hypertensive and hypertensive respectively with Pre-hypertension being more in non-hypertensive males than non-hypertensive females particularly people aged around 35 years.

A family history of hypertension is associated with an increase in the prevalence and incidence of hypertension (Galderisi, Benjamin, Evans & D'Agostino, 1993). Young children of parents with hypertension are at increased risk of hypertension, and they show higher levels of systolic blood pressure than those of parents with no hypertension. In a study of 745 subjects followed for 10 years (baseline mean age = 12 years), subjects with a family history of hypertension in one or both biological parents were associated with higher systolic blood pressure, and a higher rate of increase of systolic blood pressure over time (Dekkers, Treiber, Kapuku & Snieder, 2003).

Dyslipidemia is an abnormal amount of lipids (e.g. cholesterol and/or fat) in the blood. In developed countries, most dyslipidemias are hyperlipidemias; that is, an elevation of lipids in the blood, often due to diet and lifestyle.

Environmental Factors

Urbanisation is an important factor in the aetiology of obesity, and a major risk factor for NCDs. It accelerates the changes in diet, physical inactivity and increases access to tobacco products and high fat foods which are all risk factors of NCDs (Vorster, 2000). Levels of tobacco smoking, for example, are influenced by price, access, the efficacy of tobacco control legislation, promotion by the industry, cultural influences and educational levels.

Diet and physical inactivity are modifiable risk factors associated with changes in lifestyle. Diets of the African population tend to differ between rural and urban dwellers. Studies have shown that rural dwellers' diets are low in fat and sugar but high in carbohydrates and fibre (Steyn, Burger, Monyeki, Alberts & Nthangeni, 2001), while their urban counterparts show high fat and low fibre and carbohydrate intake (Bourne, Lambert & Steyn, 2002) which is typical of a Western diet. Fat consumption is affected by the price and accessibility of high fat foods and the perception that a large individual has greater authority or affluence. Popkin (1999) suggests that the shift from an agricultural economy to industrialisation is one of the major economic changes that are associated with nutrition transition.

Urbanisation, industrialisation and globalisation are bringing about enormous changes in social systems and environments and increasing exposure to unhealthy lifestyles and behaviour. In Pacific island countries, rapid urbanisation and the transition to a cash economy have changed traditional occupational patterns and increased the demand for imported foods,

which are generally less healthy than traditional foodstuffs and tend to be low in fibre and high in fat.

Lifestyle-related Diseases

Chronic lifestyle-related diseases, such as CVDs and cancer, account for millions of deaths each year and are the leading causes of mortality in industrialised countries. Overall mortality rates have decreased in most industrialised countries, and trends in risk factors explain part of this general decrease. However, concurrent social inequalities in mortality rates have increased. The paradox is that social disparities in mortality rates do not seem to be paralleled by increasing gaps at the risk factor level.

The latency period between exposure to risk factors and changes in mortality rates can explain part of the apparent discrepancy in their trends, but other methodological issues are also likely to play a role. Most health surveillance systems have long time spans between surveys, limiting their ability to disentangle small risk factor changes from seasonal and sampling fluctuations. A thorough understanding of the relation between risk factors and disease requires long-term commitments to surveillance and monitoring efforts.

Obesity

The WHO defines overweight as a Body Mass Index (BMI) between 25.0 kg/m² and 29.9 kg/m² and obesity as a BMI of 30.0 kg/m² or greater. BMI is the weight of a person divided by their height squared (kg/m²) and is useful as an indicator of degree of body fatness in populations. By the 2000 WHO criteria, a BMI <18.5kg/m² is considered underweight, 18.5–24.9 kg/m² ideal weight and 25–29.9kg/m² overweight or pre-obese. The obese

category is sub-divided into obese class I (30–34.9kg/m²), obese class II (35–39.9kg/m²) and obese class III (\geq 40kg/m²).

BMI values and cut offs are useful tools for estimates of overweight and obese populations but are less useful in determining risk of other lifestyle diseases as a result of obesity. BMI gives an idea of size and in some populations this is an indication of body fatness but measurement of body fat mass and where the fat is situated gives better indications of the risk of developing diseases like type 2 diabetes, cancer and cardiovascular disease.

Obesity, an excess of body fat, can be simply viewed as a consequence of having too much energy being taken in (in the way of food) compared to energy expenditure (including energy used in physical activity). Reduction in total energy intake (kilojoules) and at the same time an increase in physical activity will therefore help to reduce obesity and the risk of the other lifestyle diseases. Obesity is increasing in prevalence in developed and developing nations and is a problem across all age groups. There are more and more children who are obese and this has psychological, social and short and long-term health implications.

The recent increase in overweight and obesity in the United States (Flegal, Carroll, Ogden & Johnson, 2002) both in adults and children may explain, in part, the associated increase in hypertension prevalence over the past decade. Not only how much fat there is but also where the excess body fat is located on the body affects risk. Excess visceral fat (around the organs), also known as abdominal fat, places individuals at higher risk of lifestyle diseases.

There is presently a global epidemic of obesity in all age groups and in both developed and developing countries. In 1995, there were an estimated

200 million obese adults worldwide. As of 2000, the number of obese adults had increased to over 300 million. In developing countries, it is estimated that over 115 million people suffer from obesity-related problems (WHO, 2003). A study by Berber, Gómez, Fanghänel and Sánchez (2002) on anthropometric indexes in the prediction of type 2 diabetes mellitus, hypertension and dyslipidaemia in a Mexican population indicated an adjusted prevalence of being overweight in men and women (BMI>25) and obesity in men (BMI>30) to be 25.1% in men and 14.9% in women.

Similarly, the Mexican National Chronic Conditions Survey disclosed a higher prevalence of DM to be 7.2% in both gender. In the study, a higher prevalence of being overweight but a lower prevalence of obesity with regard to the presence of chronic conditions was obtained when compared with the Third National Health Examination Survey (overweight 39.4% in men and 24.7% in women; obesity 19.9% in men and 24.9% in women) (Flegal et al., 2002).

There is some debate about how much physical activity needs to be increased to be effective. In order to lose weight, the amount and intensity of physical activity needs to increase energy expenditure above intake. For optimal health, at least 30 minutes a day of moderate intensity e.g. brisk walking activity is needed. It is even more beneficial if the exercise is more vigorous e.g. running, lifting heavy loads or undertaken for a longer period of time (WHO/FAO, 2003). Several studies have shown that any increase (time or intensity) in physical activity is beneficial to health. A steady increase in physical activity and a reduction in sedentary time that can be maintained and

built on are probably more beneficial than a large increase that is not sustainable.

Evidence for the importance of reduction of sedentary time has been provided in a number of large, epidemiological studies. Over a six-year period, the Nurses' Health Study showed that sedentary activities, for example watching TV, were associated with an increase in the risk of developing obesity and type 2 diabetes (Hu et al., 2003). In a meta-analysis of United States weight loss studies, Anderson, Konz, Frederich and Wood (2001) found that six studies included found that over a prolonged period, those who reduce weight by combining diet and physical activity are significantly better at maintaining their weight loss after between 2 and 3.3 years than those who exercised less. About 27% of those who lost weight in the low exercise group maintained their weight loss compared with about 54% in the group that had a high physical activity level (Anderson et al., 2001).

Obesity is associated with many of the lifestyle diseases that are hugely increasing the burden on society including type 2 diabetes, cardiovascular disease, hypertension, some cancers, osteoporosis, hip and knee problems (Visscher & Seidell, 2001). Manson and Spelsberg (1994) estimated that obesity contributes up to 75% to the risk of type 2 diabetes. The reason why obesity contributes to many diseases may be because of the extra strain the fat puts on the body's metabolism. It may also be partly due to the fact that obese/overweight individuals tend to have a high fat, high sugar, hypercaloric diet and a sedentary lifestyle.

Obesity may have many origins – lifestyle, genetic, environmental, and metabolic. The environmental and lifestyle causes can be changed in the short

to medium term. Genetic and metabolic factors may be able to be changed with evolution or possible genetic engineering in the future (Rodriguez, 2004).

There have been many studies done on ways to reduce body weight in the obese and overweight. The cornerstones of most of these (and the many fad diets suggested for this purpose) are hypocaloric diets and /or increases in physical activity. What foods supply the energy and how much physical activity is required are where most of the debate lies. Most dietary opinion lies in one of two camps. Some favour a diet that supplies most of its energy from carbohydrates (50-70%), less from fats (25-30%) and the rest from protein. Some favour a diet that supplies more energy from protein and less from carbohydrate. The major health agencies and public health bodies in most developed countries suggest a diet that has 45-55% energy from carbohydrate, less than 30% from fat and the rest from protein.

The diets that have a higher carbohydrate, lower protein component are less expensive, satisfying (because they have more food for the same amount of calories), and include plentiful fruits and vegetables which may have a protective effect for lifestyle diseases. The large amount of carbohydrate may, however, lead to an increase in plasma triglycerides, which may be a risk factor for CVD (Hajjar & Kotchen, 2003). The higher protein diets are more expensive, may be high in fats (particularly saturated fats and cholesterol which are found in foods of animal origin) and tend to be low in fruit and vegetables.

Long-term prevention of obesity will be the most effective strategy but there are billions of people worldwide who are already obese or overweight.

How to enable them to lose weight and, just as importantly, maintain the weight loss, is another challenge for the public health sector.

Globalisation and Changes in the Food Supply

Globalisation policies have had important impacts on both the food supply and demand for that food (largely through employment) (Ali, 2000). On the supply side, globalisation has contributed to changing the structure of the food supply system. According to Adair and Popkin (2005), the decline of tariffs on agricultural products, the withdrawal of support to most commercial farmers and the deregulation of the input and services markets created both adjustment pressures and benefits. Overall they increased the degree of concentration in the food system. The following trends are particularly noteworthy:

1. Shift of production out of grain to livestock in marginal production areas, and an increase in intensive farming in high potential areas, particularly horticultural production
2. More farmer involvement in risk management by means of storage, forward contracts and diversification
3. Strengthening the role of organised markets and producer responsiveness to price signals
4. Accelerating the establishment of new enterprises in agriculture and downstream food processing sectors and foreign trade (Blouin, Bhushan, Murphy & Warren, 2007).

Concurrent with these changes on the supply side, changes in employment affected demand. According to Ali (2000), the rapid dismantling of tariffs has resulted in sharp declines in employment, especially in the textile

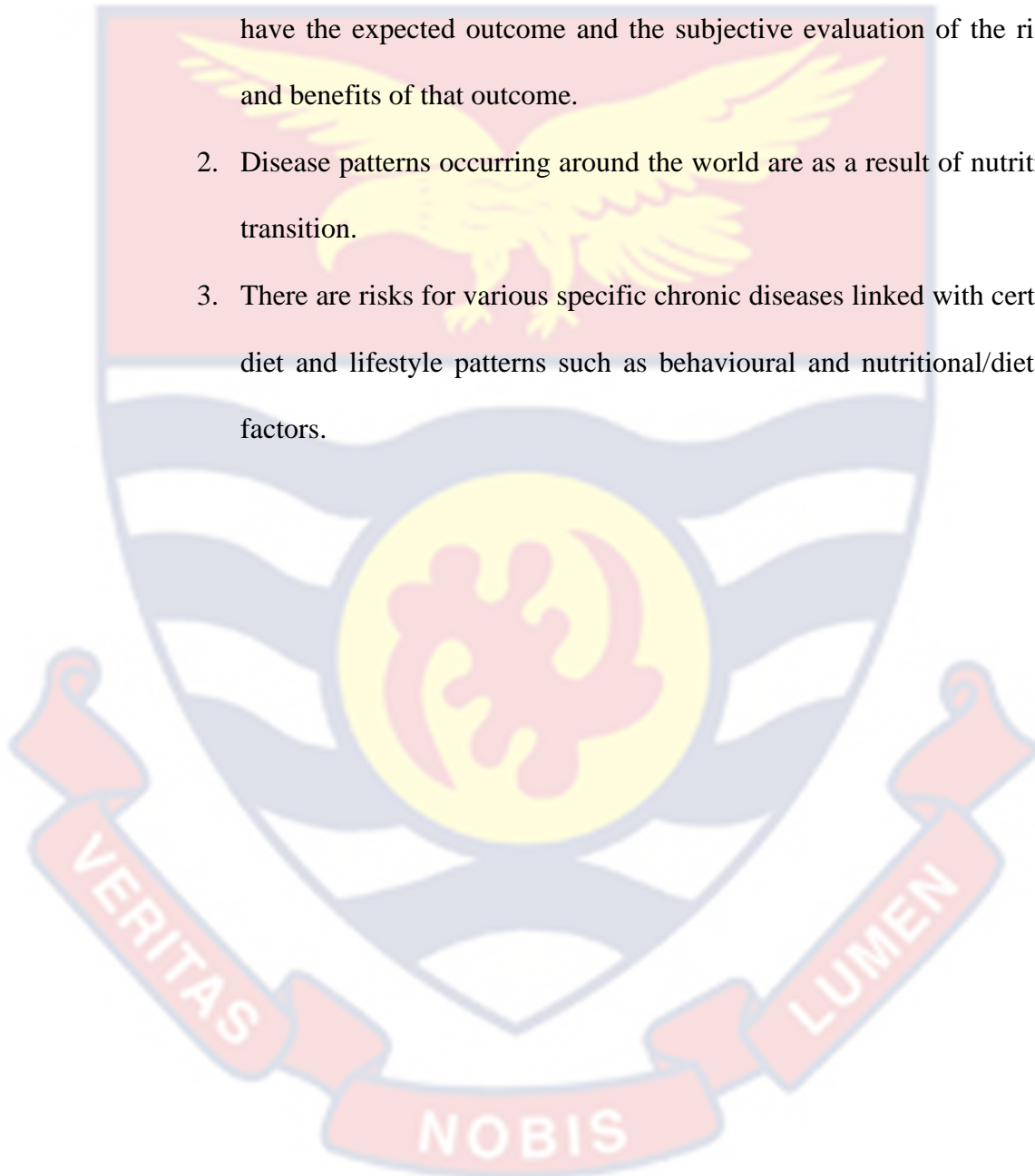
and manufacturing sector. Change has also occurred in the food industry, where there has been widespread outsourcing of low-skilled and skilled work to labour brokers (Adair & Popkin, 2005).

Blouin et al. (2007) argued that these changes in supply and demand have combined to affect the availability and accessibility of food. Take the example of the changes in the wheat industry (the second largest arable crop in South Africa, after maize). Milling has become increasingly concentrated. Following deregulation, ownership and control of enterprises involved in baking has shifted substantially. These changes have affected food prices. These changes have also stimulated dietary changes, particularly an increase in the consumption of fat, and increasing differences between urban and rural diets (Bruinsma, 2003).

Until a couple of decades ago the African population consumed a typical traditional diet in which the fat intake was only 16% of the total calories. By 1990 the fat intake in an urban African community had increased to 26% (Mendez & Popkin, 2004). When these data were analysed further, it was shown that those people who had lived in cities for most of their lives already consumed a typical westernised diet with 30% of calories from total fat, while those who had spent less than 20% of their lives in the city only consumed 22.5% of calories from total fat (Ezzati, Vander Hoorn, Lawes, Leach, James & Lopez, 2005). Remarkably similar findings have been reported recently from the North West Province. The proportion energy from fat in the diet ranges from 22% in rural population to 31% in the settled urban population (Blouin et al., 2007).

Summary of Literature Review

1. Best prediction of behaviour is given by asking people if they are intending to behave in a certain way, and behavioural intentions are influenced by the attitude about the likelihood that the behaviour will have the expected outcome and the subjective evaluation of the risks and benefits of that outcome.
2. Disease patterns occurring around the world are as a result of nutrition transition.
3. There are risks for various specific chronic diseases linked with certain diet and lifestyle patterns such as behavioural and nutritional/dietary factors.



CHAPTER THREE

METHODOLOGY

This chapter presents the methodology of the study. It includes the research design, study population, sample and sampling procedure, research instrument, method of data collection, pre-testing, fieldwork, ethical considerations and data analysis. The chapter also gives a brief description about the study area.

Research Design

The descriptive survey design was adopted in this study. This design is a method of obtaining information from various groups or persons mainly through questionnaire or personal interviews. According to Amedahe (2002), in descriptive research, accurate description of activities, objects, processes and persons is the objective. He noted that descriptive research deals with interpreting and describing the relationship among variables. Descriptive research seeks to find answers to questions through the analysis of relationships between or among variables.

Creswell (2002) noted that a descriptive survey is a kind of research which specifies the nature of a given phenomenon. It determines and reports the way things are. Descriptive research thus, involves collecting data in order to test hypothesis or answer research questions concerning the current status of the subject of study. The study adopted descriptive research design to combine

both qualitative and quantitative techniques to describe the awareness of people on diet-related lifestyle diseases in the Cape Coast Metropolis.

Population

The study population comprised both formal and informal workers in the Cape Coast Metropolis. It is estimated that there are a total of 13,734 people engaged in informal business activities in the Metropolis and 18,385 are into formal businesses (Cape Coast Metropolitan Assembly [CCMA], 2012). This implies that the total population of the study was 32,119.

Sample and Sampling Procedure

According to Krejcie and Morgan (1970), as cited in Sarantakos (2005), a population of 32,119 requires a sample size of 379 to ensure representativeness. Multi-stage sampling procedure was used to sample workers for the study. With this sampling process, the population was first categorised under formal and informal workers. The formal workers were further grouped under civil servants, health, education and financial sector workers. The informal workers were also grouped under traders, hair dressers, dressmakers, transportation and communication, fishing, farming, construction, garage and wood workers.

Due to the lack of proper databases on some of the various categories of workers, especially those in the informal sector, equal proportion of respondents was sampled from each category. Hence, 29 respondents each were accidentally sampled from each category of workers. The implication was that 116 respondents were sampled from the formal workers, while 261 were sampled from the informal workers. Due to the equal representation, a

total of 377 respondents were captured for the study. This constituted 99.7% of the original sample size of the study.

With the selection of health workers, Central Regional Hospital (CRH) was purposively sampled, while the Adisadel Clinic was randomly sampled for the study. The CRH was purposively sampled because it was the last referral health facility in the primary health care system as well as the biggest health facility in the region. With the selection of education workers, Oguaa Senior High School and Cape Coast Polytechnic were randomly sampled. The lottery method was used to sample the schools. The names of all schools in the Metropolis were written on equally sized papers and folded into a bowl. The papers were shuffled to make sure they were not in any pre-determined position. The first draw was made without replacement and the name of the school was noted. The second draw was also made.

Ghana Commercial Bank Limited and Zenith Bank Limited were sampled randomly from the financial institutions, while the CCMA and the Ministry of Agriculture were randomly sampled for the civil servants. The lottery method was used for all random sampling procedures.

Due to the small sizes of the informal businesses as well as the lack of proper sampling frames, accidental sampling was used to sample respondents for the study. With the accidental sampling procedure, the researcher interviewed the informal business operators as and when the researcher met them in an area within the Metropolis. Table 1 presents the number of respondents sampled from the various categories of formal sector workers.

Table 1: Number of Respondents Sampled From the Formal Sector Organisations

Category	Population	Sample
CCMA	103	15
Ministry of Agriculture	37	14
Zenith Bank Limited	19	14
Ghana Commercial Bank	64	14
Central Regional Hospital	962	15
Adisadel Clinic	41	14
Oguaa Senior High School	128	15
Cape Coast Polytechnic	1529	15
Total	2847	116

Source: Author's construct, 2012

The apportioning of the respondents between organisations in a particular category was based on size. Thus, the bigger institutions were assigned 15, while the smaller ones were assigned 14. The sampling frames (in the form of lists of workers) were obtained from the human resource sections of the various formal institutions. Each list of workers was entered into MS Excel 2003 version and random numbers were generated to sort the list of workers. The first sets of workers that correspond to the institutions' sample size were selected. The name and the department of workers were noted for easy identification during data collection.

Instrument

An interview schedule was used as the instrument for collecting data. This instrument was used to gather data from the workers because it was

perceived that majority of the respondents especially those in the informal sector were illiterates.

The interview schedule was organised into five sections – A, B, C, D and E. The first section was on knowledge of persons about diet-related lifestyle diseases. Some of the issues considered under the section were knowledge about the causes and symptoms of diabetes and hypertension. The second section was on lifestyle practices of persons in relation to diet-related lifestyle diseases. Issues considered under the section included dietary practices and participation in physical activities. Section three was on association between level of knowledge of diet-related lifestyle diseases and lifestyle practices. Some of the issues captured under the section were carefulness about eating times, and concerned about the types of food to be eaten. The fourth section was on the differences in knowledge of diet-related lifestyle diseases among persons with different socio-demographic factors. The section captured issues such as age, sex and type of occupation. Section five was on the differences in lifestyle practices among persons with different socio-demographic factors. Both close-ended and open-ended questions were used to gather data from the respondents. Close-ended questions were used to assess how responses tally with literature, whereas open-ended questions were used to solicit the reasons behind certain responses.

Data Collection Procedure

The study employed the survey data collection method. According to Biemer and Lyberg (2003), survey method is used to study the sample of individuals from a population with a view towards making statistical inferences about the population using the sample. As part of the survey

method, the interviewing method was adopted for soliciting information from the respondents.

A pre-testing exercise was carried out on 20 individuals in Elmina, the capital of the Komenda-Edina-Eguafo-Abirem Municipality. This was done together with three trained research assistants. The pre-testing exercise was used to reshape the questions and made them more focused and understandable. It enabled me to avoid some of the challenges to be encountered during the actual data collection exercise. Some of the challenges were ambiguity in the questions, and poor understanding of respondents in some of the questions leading to varied responses. For example, most open-ended questions were closed after the pre-testing to avoid too many outliers.

Results from the pre-testing were used to calculate the Chronbach alpha which was used to assess the validity and reliability of interview schedule. From the study, a Chronbach alpha value of 0.71 implied that the questions were able to assess about 71% of the issues in the study, which according to Cohen (2003), meant that the instrument was reliable.

The actual fieldwork was carried-out between 4th February, 2013 and 25th February, 2013. Three Research Assistants were trained for the fieldwork. They were taken through the principles and ethics of research as well as the expected conduct of an interviewer. They were also taken through common translation of the questions to ensure uniform understanding. The various categories of businesses were identified. The interviewers introduced themselves and the purpose of the study to the managers to seek for their permission to conduct data collection. After approval, the interviewers identified the workers and also explained the purpose of the study to seek for

their consent before carrying out the data collection exercise. After the agreements, the interviewers asked the questions and the responses as indicated by the interviewees were either checked or written. On the average, an interview took about eight minutes. The interviews took place at the work places of the respondents.

Some of the ethical issues considered in the study were observing the rights of workers who were reluctant to participate in the data collection exercise, and ensuring the anonymity of respondents. The respondents were assured of their confidentiality of the responses. In view of these, no names were attached to any of the data.

The study encountered a number of challenges, including the reluctance of some workers to partake in the exercise as well as preventing others to do so and also challenge of translating the questions in to Fante or Twi language for the less educated ones. The other challenge was the difficulty in getting appointments with Heads of some of the formal organisations. I was able to interview people who were initially reluctant to do so after careful explanation of the purpose of the study. The researcher also employed an assistant who aided the translation into the Fante and Twi languages for the respondents. However, they all caused some delays in the data collection process.

Data Analysis

The data were first cleaned to correct inconsistencies and grammatical errors. The instruments were given identification numbers to avoid double entries. The data was coded to ease data entries and then entered and processed with the use of Statistical Product and Service Solutions (SPSS)

version 16. Descriptive statistics such as means, standard deviations, frequencies and percentages were used to analyse the first and second research questions. Regression was used to analyse the fourth research question, while cross tabulations were used to analyse the third and fifth research questions. Chi-square was used to test for significance of the relationship between respondents' awareness level and diet related lifestyle diseases.

As part of the regression process, a composite variable was computed for knowledge of diet-related lifestyle diseases. This was done by summing up the respondents' responses to questions on level of knowledge on diet-related lifestyle diseases. One was used to code for very low level of knowledge on a particular issue related to diet-related lifestyle diseases. Two was used for low level of knowledge, three was used for high level of knowledge and four was used for very high level of knowledge. The implication was that the higher the composite variable the respondent had very high level of knowledge on diet-related lifestyle diseases.

CHAPTER FOUR

RESULTS AND DISCUSSION

The chapter presents the results and discussion of the data gathered from the field. The chapter is organised under the background characteristics of respondents, knowledge of persons about diet-related lifestyle diseases, lifestyle practices of persons in relation to diet-related lifestyle diseases, association between level of knowledge of diet-related lifestyle diseases and lifestyle practices, differences in knowledge of diet-related lifestyle diseases among persons with different socio-demographic factors, and differences in lifestyle practices among persons with different socio-demographic factors.

Background Characteristics of Respondents

This section deals with an examination of the background characteristics of the respondents. The examination of the respondents' background characteristics was aimed at ascertaining the type of respondents that were involved in the study as well as the differences, similarities and relationships in lifestyle related activities among people with different background attributes. Some of the issues considered under this section were sex, age, occupation, level of education and the marital status of the respondents. A total of 377 respondents comprising of the workers responded to issues under the section.

Sex of Respondents

The study considered the gender characteristics of the respondents. This was essential because the socio-cultural environment of the people defines certain activities for particular sex groups which may shape their lifestyles and perceptions about diet-related lifestyle diseases. For example, certain activities, such as selling of foodstuffs, woodwork and metal works, are gender sensitive within the socio-cultural spectrum of the people which may affect their physical lifestyles and contraction of certain diseases. It was found from the study that most of the respondents, representing 57.6%, were males, while 42.4% were females.

Age of Respondents

The study also examined the age characteristics of the respondents. This was essential because Dutta-Bergman (2005) explained that the extent of exposure to physical activities of an individual decreases as the age increases which may influence his or her contraction of diet-related lifestyle diseases. Results on the age characteristics of respondents are presented in Figure 2

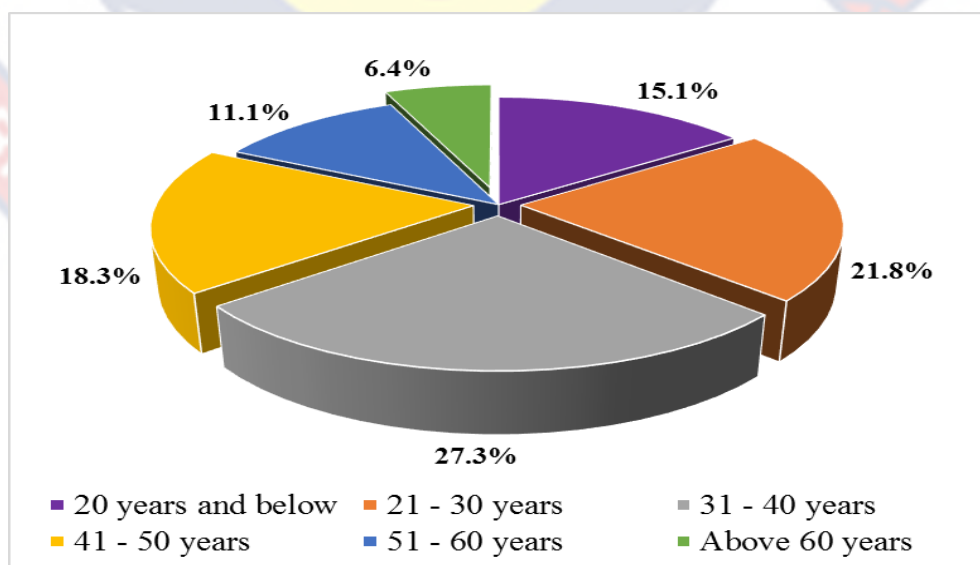


Figure 2. Age of respondents

Source: Field survey, 2013

Figure 2 shows that 15.1% of the respondents were aged 20 years and below, 27.3% were within 31 and 40 years of age, while 6.4% were above 60 years of age. The results show that many (49.1%) of the respondents were within the active working age cohorts. The mean age of the respondents was 33.7 years with a standard deviation of 5.9. The high concentration of the respondents within the active age cohorts (21 – 40 years) is likely to reduce the incidence of diet-related lifestyle diseases since such people are physically active to burn some of the excess fats and cholesterol that may be sitting in their bodies. However, Dutta-Bergman (2005) argues that people within the active age brackets are less concerned about the health implications of their diets.

Occupational Types of Respondents

The occupational types of the respondents were also assessed in this study. This was imperative because the occupational type of an individual influences his or her physical activeness, which also affects one's diet-related lifestyle and contraction of diet-related infections (Sniehotta, 2009). According to Sniehotta, informal workers were less prone to contracting diet-related infections compared to formal workers. This was attributed to the physical activities involved in informal businesses compared to formal businesses. The results revealed that 69.2% of the respondents were informal workers, while 30.8% were formal workers. This reflects the finding of Wellington (2002) that the informal sector employs the majority of people in Ghana. The high number of informal workers in the Metropolis is likely to reduce the incidence of diet-related lifestyle diseases since according to Sniehotta (2009) the high physical activeness associated with informal

businesses enables workers excrete excess fats, which is a major cause of diet-related lifestyle diseases.

Highest Level of Education of Respondents

Respondents were also asked to indicate their highest levels of education. This was essential because Sniehotta (2009) asserted that educated people are more aware of diet-related lifestyle diseases than those without formal education. The results on the levels of education of respondents are presented in Table 2.

Table 2: Educational Level of Respondents

Level	Frequency	Percentage
None	42	11.1
Basic Education	121	32.1
Senior High School	105	27.9
Tertiary (Diploma/Degree)	109	28.9
Total	377	100.0

Source: Fieldwork, 2013

Table 2 shows that 11.1% of the respondents had not received any formal education, 32.1% have had basic education, while 28.9% have had tertiary education. The results show that the majority (88.9%) of the respondents had had formal education. The implication is that the majority of the respondents were likely to be aware of diet-related lifestyle diseases. Hawkes (2006) indicates that people with high level of education are also more aware of diet-related lifestyle diseases, and as a result, are more able to control their diet to avoid such diseases than those with low levels of education.

Marital Status of Respondents

The marital statuses of the respondents were further examined in the study. This was critical because Guo et al. (1999) reported that diet patterns differed significantly among people with different marital characteristics, which could affect their probabilities of contracting diet-related lifestyle diseases. Table 3 presents results of the marital status of the respondents.

Table 3: Marital Status of Respondents

Marital Status	Frequency	Percentage
Married	191	50.7
Single (Never married)	118	31.3
Divorced	49	13.0
Widowed	19	5.0
Total	377	100.0

Source: Fieldwork, 2013

The results of the analysis presented in Table 3 show that a little over half (50.7%) of the respondents were married, 31.3% were single (never married), while 13% were divorcees. The fact that the respondents were from different marital backgrounds was likely to contribute to different diet-related lifestyles among the respondents in this study. This is because Guo et al. (1999) found out that married persons consumed more improved, hygienic and balanced diets as compared to unmarried persons. The implication is that the majority of the respondents were likely to consume more improved, hygienic and balanced diets, which may reduce their probability of contracting some diet-related lifestyle diseases.

Research Question 1: What Knowledge do Persons in the Selected Occupations in Cape Coast Metropolis have about Diet-related Lifestyle Diseases?

The first research question of the study sought to examine the level of knowledge of persons about diet-related lifestyle diseases in the Cape Coast Metropolis. It was found essential to examine the respondents' awareness level on diet-related lifestyle diseases since people's awareness level on diet-related lifestyle diseases has the possibility of influencing their strategies and activities to prevent such diseases (Hawkes, 2006). Some of the issues considered under this section were the awareness of the prevalence of common diet-related lifestyle diseases, and the awareness of risk factors associated with dietary lifestyles. Descriptive statistics such as frequencies, percentages and means were used to analyse issues under this research question.

The respondents were asked to list any diet-related lifestyle diseases they were aware of, since Ajzen's (1991) theory of planned behaviour posited that people's level of awareness on the effect of a particular lifestyle influenced their perceptions, attitudes, subjective norms and behaviours as well as the nature of the mechanisms to exercise control over the lifestyles. Results on the diet-related lifestyle diseases the respondents were aware of are presented in Table 4.

Table 4: Diet-related Lifestyle Diseases Respondents were Aware of

Diseases	Frequency	Percentage
Typhoid	88	23.3
Obesity	83	22.0
Cholera	67	17.8
Ulcer	58	15.4

Table 4 continues

Kwashiorkor	57	15.1
Blood pressure	37	9.8
Diabetes	33	8.8
Anaemia	25	6.6
Total	*448	100

*n = multiple responses

Source: Fieldwork, 2013

Data, as presented in Table 4, indicate that 23.3% of the respondents were aware of typhoid as a diet-related lifestyle disease, whereas 22% and 17.8% were aware that obesity and cholera are diet-related lifestyle diseases, respectively, and 15.1% of the respondents were aware that kwashiorkor is a diet-related lifestyle disease. The results show that the respondents were aware of some diet-related lifestyle diseases. Similarly, some of the respondents perceived certain environmental diseases transmitted through food, such as cholera and typhoid, as diet-related lifestyle diseases. The assumption then was that the respondents were likely to adopt certain practices to avoid the diet-related lifestyle diseases they were aware of. In that case there was also the likelihood that they were less likely to adopt practices to guard themselves against other diet-related lifestyle diseases such as heart diseases, stroke, and cancers they were not aware of.

The respondents were further requested to indicate whether they themselves had ever suffered from or they had encountered people suffering from any of the diet-related lifestyle diseases before. The aim was to find out whether the respondents were aware of the symptoms of some of the diet-

related lifestyle diseases. This was because people's awareness of the symptoms of such diseases would influence their attitudes and lifestyles.

The responses to the item indicated that the majority (79.8%) of the respondents attested that they had witnessed someone experiencing diet-related lifestyle diseases before, whereas 20.2% denied ever seeing anyone with such diseases. Thus, the majority of the respondents were likely to be more serious to adopt preventive diet-related practices to avoid contracting such diseases as indicated by Hawkes (2006) that people's experiences with diet-related lifestyle diseases influenced the seriousness they attached to their preventive mechanisms to avoid being inflicted by similar situations.

Again, there was an item on the questionnaire that further examined the diet-related lifestyle diseases that respondents knew to be more recent among the people in the Metropolis. The question was meant to reveal respondents' awareness of the diet-related lifestyle patterns of people in the Metropolis. Table 5 presents the results of the analysis on the recent diet-related lifestyle diseases that respondents knew to be common in the Cape Coast Metropolis.

From Table 5, 20.4% of the respondents identified typhoid as the most recent diet-related lifestyle disease in the Metropolis, whereas 18.8%, 17%, 10.9% and 10.6% identified obesity, cholera, ulcer and kwashiorkor respectively as the most recent diet-related lifestyle diseases in the Metropolis. The implication is that typhoid, obesity and cholera were more recent among the majority of the people in the Metropolis.

Table 5: Recent Diet-related Lifestyle Diseases in the Metropolis

Diseases	Frequency	Percentage
Typhoid	77	20.4
Obesity	71	18.8
Cholera	64	17.0
Ulcer	41	10.9
Kwashiorkor	40	10.6
Hypertension	35	9.3
Diabetes	27	7.2
Anaemia	22	5.8
Total	377	100.0

Source: Fieldwork, 2013

Level of Awareness of the Respondents on the Causes of Some Diet-related Lifestyle Diseases

People's level of knowledge on the causes of diseases is known to enable them adopt lifestyle practices that are more responsive and effective in preventing them from contracting such diseases. In view of this, the respondents were asked to indicate causes of the lifestyle diseases identified. Some of the diet-related lifestyle diseases considered under this section were diabetes, heart diseases, stroke, high blood pressure (hypertension), and asthma.

Respondents' Knowledge on the Causes of Hypertension

Respondents were further requested to indicate the causes of high blood pressure (hypertension). This was imperative because the Ghana Health

Service (2003) emphasises that hypertension is getting widespread as the country is becoming industrialised. The Ghana Health Service continues that the way high blood pressure begins is dangerous such that it takes years to develop and then becomes so much a part of people's lives that it cannot be easily cured even with allopathic medicines. Consequently, people knowledge about the causes and prevention are critical to ensure a healthy population. Table 6 presents results on the level of knowledge about the causes of high blood pressure.

Table 6: Respondents' Knowledge about the Causes of Hypertension

Causes	Frequency	Percentage
Hereditary	115	30.5
Too much blood	107	28.4
No idea	98	26.0
Unhealthy diet	57	15.1
Witchcraft	30	8.0
Total	*407	100

Source: Fieldwork, 2013 *n = multiple response

Table 6 shows that 30.5% of the respondents attributed the cause of high blood pressure (hypertension) to hereditary, 28.4% identified too much blood as the cause of hypertension, whereas 26.0% did not have any idea about the causes of hypertension. The implication was most (54.4%) of the respondents did not have true knowledge about the causes of high blood pressure. The finding was likely to affect the respondents' attitude to behaviour and perceived behavioural control as shown in the conceptual

framework. According to the theory of planned behaviour proposed by Ajzen (1991), individual's attitude to behaviour and perceived behavioural control depend on the level of knowledge one has over the issue.

Respondents' Knowledge on the Causes of Diabetes

Figure 3 presents results on the respondents' knowledge on the causes of diabetes.

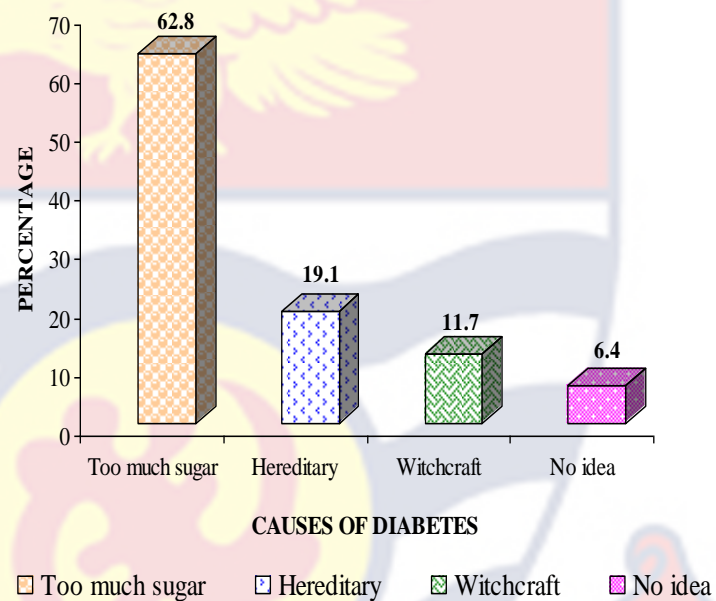


Figure 3. Respondents' knowledge about the causes of diabetes

Source: Field survey, 2013

Figure 3 shows that the majority (62.8%) of the respondents were aware that consuming too much sugar could cause diabetes, whereas 6.4% did not know the cause of diabetes. The results show that a high majority (93.6%) of the respondents had knowledge of the major cause of diabetes. However, the results show that 81.9% of the respondents had true or scientific knowledge of diabetes, which was 'too much sugar and hereditary', while the rest, 18.15% either blamed witchcraft or had no knowledge. Thus, the preventive practices were not likely to be put into practice. Thus, it was likely

that only those respondents with true or scientific knowledge about the causes of the disease could adopt effective practices to avoid the disease, just as Hawkes (2006) asserted that people with true knowledge about diseases are able to adopt effective practices to avoid contraction.

Respondents' Knowledge on the Causes of Heart Diseases

Another diet-related lifestyle disease considered under this section was heart diseases. Respondents were asked to indicate the causes of heart diseases with an aim of finding out how effective the people in the Metropolis could be in preventing heart diseases. The results are presented in Figure 4. Figure 4 shows that nearly half of the respondents (48.8%) cited hereditary as the cause of heart diseases, 43.6% of the respondents cited unhealthy diets, while 6.0% had no idea about what the cause of heart diseases was. Again, a few (1.5%) placed the cause of heart disease was spiritual, specifically on witchcraft. Comparing the responses to the causes of heart diseases, as indicated by Labarthe (1998), it was evident that the greatest majority (92.4%) of the respondents were aware of the true causes of heart diseases.

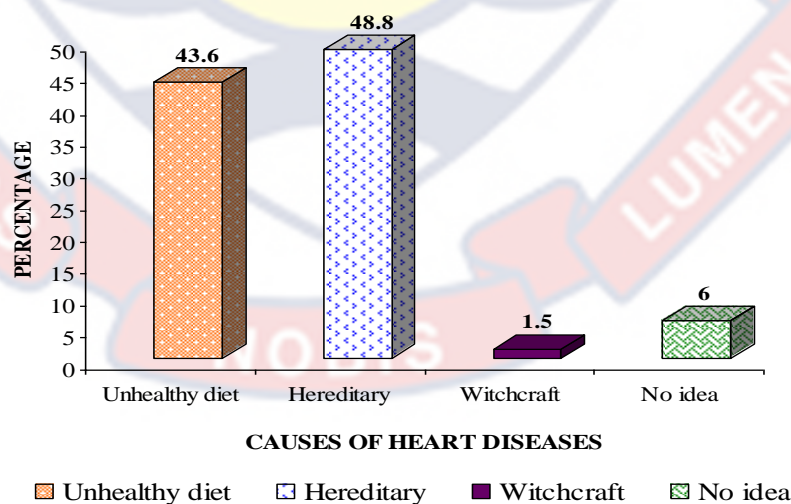


Figure 4. Respondents' knowledge on the causes of heart diseases

Source: Field survey, 2013

The deduction from the results is that measures adopted by such respondents were likely to be more effective in preventing heart diseases than the respondents who attributed witchcraft to the cause of heart diseases and those who had no idea about the causes of heart diseases.

Respondents' Knowledge on the Causes of Stroke

The level of awareness of the respondents on the causes of stroke was also examined. This was examined because WHO/FAO Expert Consultation Report (2003) posited that stroke is one of the gradually increasing diet-related lifestyle diseases in developing and newly developed countries. The results on the respondents' knowledge about the causes of stroke are presented in Table 7.

Table 7: Respondents' Knowledge on the Causes of Stroke

Causes	Frequency	Percentage
Witchcraft	137	36.3
No idea	108	28.7
Unhealthy diet	93	24.7
Hereditary	55	14.6
Unhealthy sex life	49	13.0
Total	*393	100

*n = multiple response

Source: Fieldwork, 2013

As high as that 36.3% of the respondents attributed the cause of stroke to witchcraft, while 28.7% had no idea concerning the causes of stroke as Table 7 shows. Unhealthy diet was identified by 24.7% as the cause of stroke. In effect, it can be concluded that 65.0% of the respondents in this study did not know about the causes of stroke. This is in line with the figure released by

WHO/FAO Expert Consultation Report (2003), which indicated that the majority (65.0%) of the respondents in their study did not know about the true causes of stroke. The situation was serious in that it was likely to affect the effectiveness of the practices respondents were putting in place to prevent themselves from getting stroke. According to WHO/FAO Expert Consultation Report (2003), the lack of knowledge about the true causes of stroke partly explains its gradual increasing around the globe. Thus, people were not likely to adopt effective lifestyle practices to guard against the stroke because of poor knowledge on the causes.

Respondents' Knowledge on the Causes of Obesity

There were periods when big body weight was considered as ideal and also as a sign of good living. Now in Ghana, a number of names have been given to people who are excessively fat such as 'Ngozi' and 'Oboshie'. It has therefore been assumed that people did not approve of overweight people. However, sedentary lifestyles keep resulting in overweight children, adolescents as well as adults. Respondents were asked to identify the causes of obesity. This was imperative because obesity is increasing in prevalence in developed and developing nations and is a problem across all age groups (Flegal et al., 2002). Results on the knowledge of respondents on the causes of obesity are presented in Table 8.

Table 8: Respondents' Knowledge on the Causes of Obesity

Causes	Frequency	Percentage
Not exercising	115	30.5
Unhealthy diet	95	25.2

Table 8 continues

Hereditary	89	23.6
Late eating	84	22.3
No idea	33	8.8
Total	*416	100

*n = multiple response

Source: Fieldwork, 2013

The data presented in Table 8 show that more 30.5% of the respondents identified lack of exercise as the cause of obesity, while 23.6% and 22.3% attributed the cause of obesity to hereditary and late eating respectively. On the other hand, 8.8% did not know the cause of obesity. The results show that 52.8% of the respondents perceived unhealthy diet-related lifestyles and lack of exercises as the causes of obesity. This perception is in line with the nutrition transition theory by Drewnowski and Popkin (1997) that diet and physical activities are the major causes of diet-related lifestyle diseases. Although such respondents were expected to be more likely to adopt healthy and effective lifestyle behaviours to avoid obesity, it might not likely be the case. Kuhnlein et al. (2004) reported that the majority of people who perceived hereditary as the cause of certain diseases, were less likely to adopt effective measures to prevent such diseases.

Knowledge Level of the Respondents on the Causes of Cancers

According to WCRF (1997), certain cancers were caused by dietary-related factors. The knowledge level of the respondents on the causes of cancers was added so as to find out how prepared the respondents were in preventing themselves from contracting cancers. The results are presented in

Table 9. It is again disappointing to note that a little over a third of the respondents (32.1%) did not know the cause of cancers, and also 30.0% identified smoking as the cause of cancers, whereas 22.8% attributed the cause of cancers to unhealthy diet.

The results show that 77.2% of the respondents did not know that dietary-related lifestyles could also cause cancers. The implication is that the situation was likely to reduce the effectiveness of their strategies to avoid contracting cancers. According to Hawkes (2007), comprehensive awareness about the causes of an illness influences the effectiveness of an individual's mechanisms to avoid it.

Table 9: Respondents' Knowledge on the Causes of Cancers

Causes	Frequency	Percentage
No idea	121	32.1
Smoking	113	30.0
Unhealthy diet	86	22.8
Hereditary	84	22.3
Total	*404	100

*n = multiple response

Source: Fieldwork, 2013

Respondents' Knowledge on the Causes of Asthma

Another diet-related lifestyle related disease considered by the study was asthma. The study examined the level of knowledge of the respondents about the causes of asthma. This was imperative to assess how well

respondents were prepared to adopt healthy lifestyle practices to avoid contracting asthma. The results are presented in Figure 5.

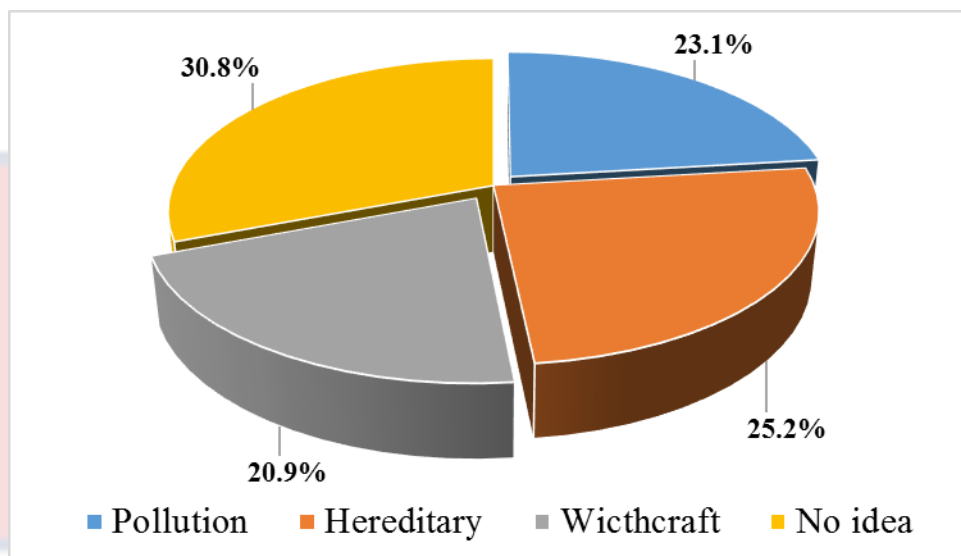


Figure 5. Respondents' knowledge about the causes of asthma

Source: Field survey, 2013

Figure 5 shows that 25.2% of the respondents attributed the cause of asthma to hereditary, 23.1% identified pollution as the cause of asthma, whereas 30.8% had no idea about the causes of asthma. Again, 20.9% still believed that witchcraft was a cause of asthma. The results show that none of the respondents was aware that asthma could also be contracted through diet-related lifestyle factors and also a sizeable proportion (46.1%) of the respondents did not have the true or scientific knowledge about the causes of asthma. The poor knowledge of the respondents about the causes of asthma was therefore likely to affect the effectiveness of their attitudes and behaviours adopted to prevent the disease.

The study further examined the awareness of the respondents on the risk associated with the high intake of sodium (salt). This was necessary

because high intake of salt pose serious health risks to people. The results are presented in Figure 6.

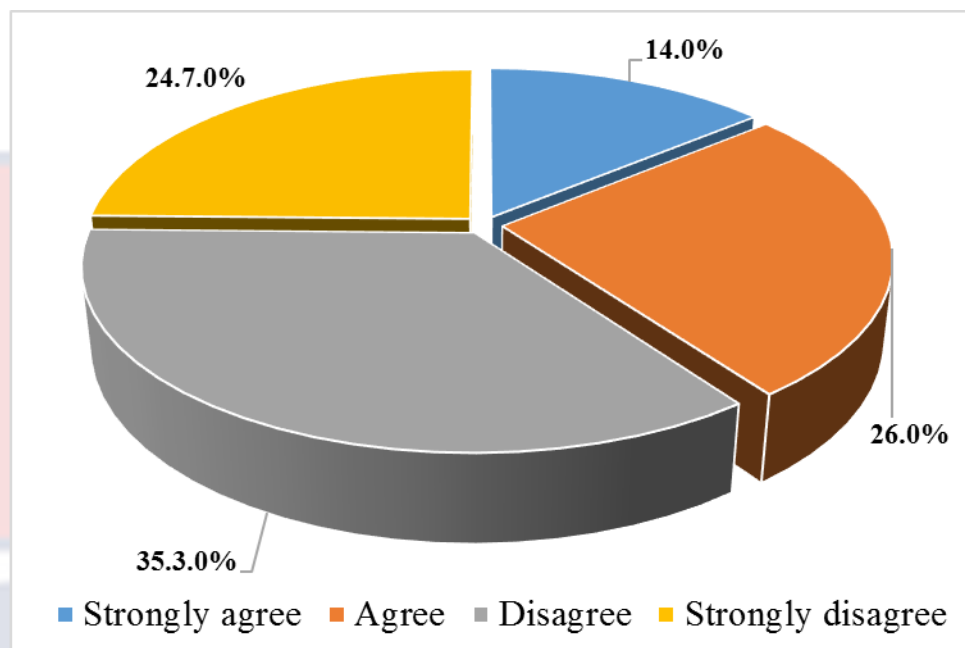


Figure 6. High salt intake generally increases the risk of having high blood pressure

Source: Field survey, 2013

In Figure 6, the results show that most (60.0%) of the respondents were in disagreement with the statement that high salt intake increases the risk of having blood pressure since 35.3% disagreed and 24.7% strongly disagreed with the statement. The remaining 40.0% of the respondents agreed that high sodium (salt) intake increases the risk of having high blood pressure. The implication is that most of the respondents were not aware of the health risk posed by a high intake of salt. The low level of awareness about the risk associated with the high intake of salt and therefore might be consuming unacceptable quantities of salt. The end result was likely to contribute to increased development of high blood pressure among the people in the Metropolis.

The next view sought in this study was the perception of the respondents on the risks connected with the high intake of fats and oils. The reason for this was because excessive fats and oils in the body is known to impede free flow of blood, which may lead to the development of heart diseases (Popkin, 2002). The results are presented in Figure 7.

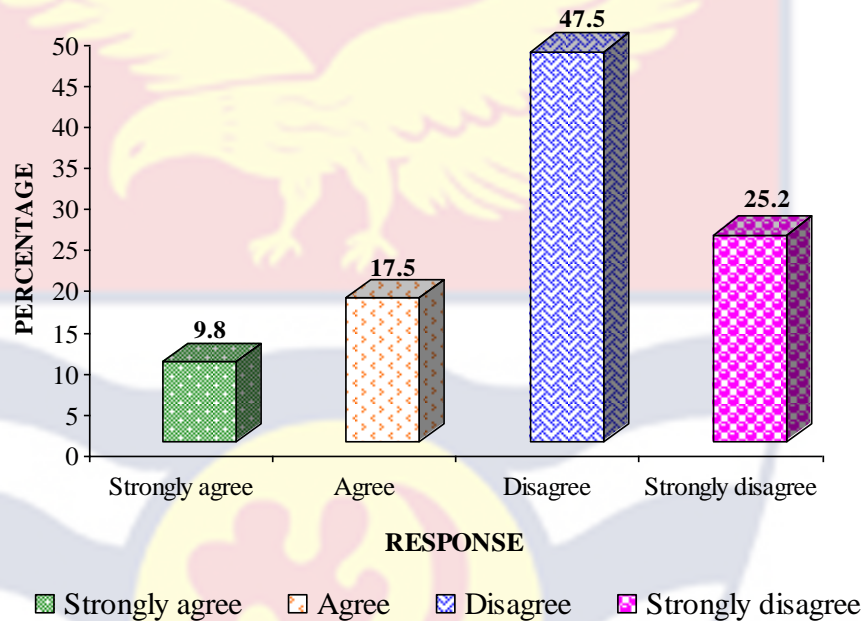


Figure 7. Views on the risk of a high intake of fat and oils (food that has a lot of fat is healthy)

Source: Field survey, 2013

The responses presented in Figure 7 show that the majority (72.7%) of the respondents strongly disagreed or disagreed with the statements that food that has a lot of fat or oil is healthy, while 27.3% strongly agreed or agreed. It can be concluded that the majority of the respondents were aware of the health risks associated with excessive fat. If the respondents were eating food with reasonable amounts of fats and oils then it was likely to help curb the excessive weight gain among people in the Metropolis.

The views of the respondents on the consumption of animal protein and vegetables were further examined by the study. Figure 8 presents the

results on the issue that animal protein foods are healthier than vegetable foods.

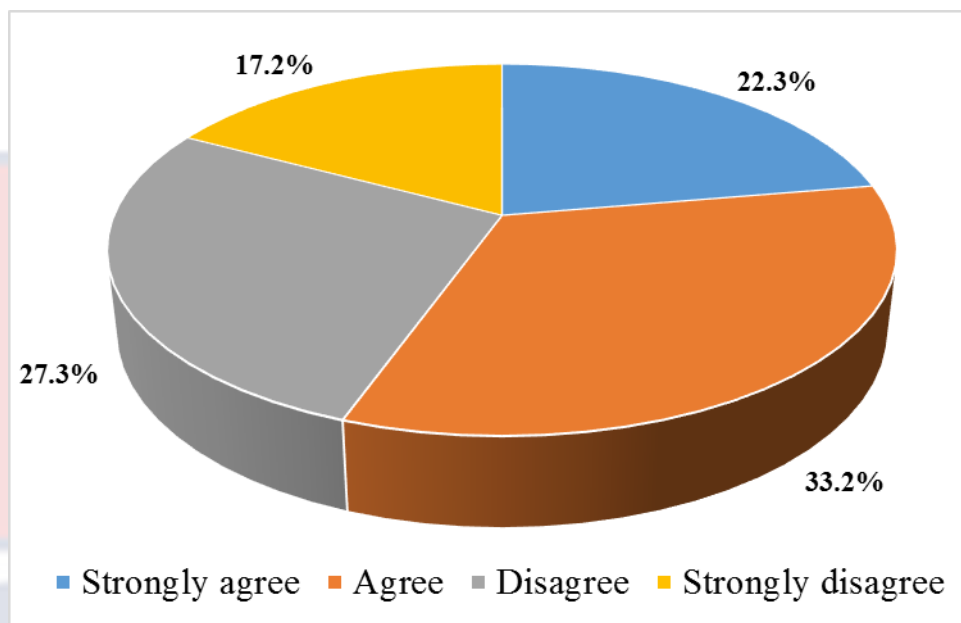


Figure 8. Respondents' perception on animal protein consumption

Source: Field survey, 2013

Figure 8 shows that 22.3% of the respondents strongly agreed that animal protein foods are of high nutritional value, 33.2% agreed, while 27.3% and 17.2% disagreed and strongly disagreed, respectively. The results show that majority (55.5%) of the respondents perceived that animal protein foods are healthy. This is likely to encourage the high intake of animal protein among the people. However, Socha et al. (2011) reported that animal protein put much stress and strain on the digestive system because they take a longer time to digest. This may lead to the development of certain diet-related lifestyle diseases. According to Socha et al., vegetable foods digest faster and protect the body against diseases.

The study further made enquiry into the perceptions of the respondents on the consumption of vegetables. This was necessary because Hawkes (2006)

opines that people's perceptions about the intake of a particular food source encourage them to consume more foods from that source. From the study, 47.2% of the respondents agreed that the consumption of vegetables is important for the body, 32.7% strongly agreed, whereas 20.1% disagreed. The results show that majority (79.9%) of the respondents have positive perceptions about the contribution of vegetables to the body. This is likely to encourage them to consume more vegetables.

Research Question 2: What are the lifestyle practices of persons in selected occupations in Cape Coast Metropolis in relation to diet-related lifestyle diseases?

The second research question sought to assess the lifestyle practices of persons in relation to diet-related lifestyle diseases in the Cape Coast Metropolis. The aim was to examine the diet-related lifestyles of the respondents and the diet-related mechanisms adopted to avoid developing diet-related lifestyle diseases. This was critical because Popkin (1999) explained that the food habits of people were the major causes of diet-related diseases. Some of the issues considered under the research question were taking of breakfast, lunch, supper, snack, fruits, vegetables, and food supplements. Barasi and Mottram (1993) defined food habits as the number of meals taken in a day, the foods that are selected, the method of cooking, the time for eating the foods and the people with whom the meals are eaten. The food items eaten in a day and the number of times constitute the meal patterns.

Respondents were also requested to indicate the number of times they ate in a day. This was important because Drewnowski and Popkin (1997) recommended that three standard meals a day was good for maintaining a

balance between the inflows and outflows in the human body. The results are presented in Table 10.

Table 10: Number of Times Respondents Ate in a Day

Number	Frequency	Percentage
Once	72	19.1
Twice	163	43.2
Thrice	142	37.7
Total	377	100.0

Source: Fieldwork, 2013

Table 10 shows that many of the respondents eat two meals in a day, whereas 37.7% eat three times. The results show that most of the respondents (62.3%) did not take the three standard meals as recommended by Drewnowski and Popkin (1997). Inability to eat the three main meals of the day has the possibility of affecting the healthy growth of the respondents.

The respondents were asked to indicate the regularity of intake of breakfast before they started work. The aim of examining the regularity of breakfast intake was because Popkin (1999) reported that the intake of breakfast helped to open up and lubricate the stomach and intestines to reduce excessive contraction and bruises which could lead to ulcers. The results from the study showed that most of the respondents (66.3%) indicated that they sometimes took breakfast, while 33.7% stated that they always took breakfast. The indication was that the majority of the respondents did not know the health benefits they could derive from breakfast.

Some of the reasons cited for not taking breakfast regularly were inability to regularly afford breakfast (38.3%), busy working schedule

(23.4%), saving money for other issues (21.1%), and forgetfulness (17.2%). The results show that some socio-economic factors influence the food habits of the respondents. This confirms the assertion by Socha et al. (2011) that socio-economic factors either gives an individual more dietary choices or restricts the individual over variety of food choices and frequencies of taking food.

The respondents were requested to indicate food they normally took for breakfast. According to Popkin (2002), the composition of diet is the most significant part of a meal. It was found from the study that the foods respondents took as breakfast included rice (15.6%), porridge (7.5%), tea (3.2%), coffee (2.3%), chocolate drink (11.6%), fruits (1.8%), juice (1.6%), *fufu* (3.9%), *banku* (5.9%), plantain (2.1%), kenkey (12.8%), bread (10.2%), yam (4.8%), *gari* and beans (11.8%), *tuo zaafi* (3.8%), and cornflakes (1.1%).

Thus, majority of the food types were solids and therefore heavy for breakfast. According to Drewnowski and Popkin (1997), the most important function of breakfast is to lubricate some of the internal organs of human beings. Accordingly, Drewnowski and Popkin recommended fluids as foods that best suited the definition of breakfast. However, the results show that the majority of the foods taken by the respondents could not function as lubricants to the stomach and intestines.

This finding may be attributed to several reasons, which include lack of awareness on the main function of breakfast, the high cost of the processed beverages or preference for heavy foods owing to the heavy work which requires excessive labour. Guo et al. (1999) contended that most people, especially in the developing countries, take breakfast with the aim to quench

their hunger and not to lubricate their internal organs. Chopra (2002) also attributed the consumption of heavy breakfast to socio-economic factors such as inability to afford other food types, delicacy, and few varieties of food.

Regularity of Eating Snacks in a Week

The study further examined the regularity with which respondents took snack. Snack taking is important as it aids digestion and also helps to lubricate the digestive system. Results on the regularity of snack taken by the respondents are presented in Figure 9.

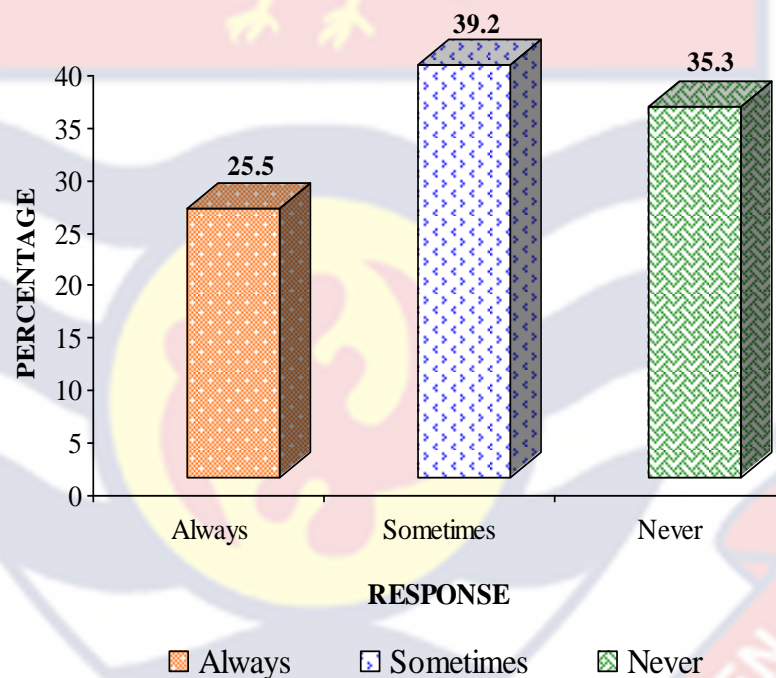


Figure 9. Regularity of eating snacks in a week

Source: Field survey, 2013

Figure 9 shows that 25.5% of the respondents stated that they always take snack, 39.2% indicated that they sometimes take snack, while 35.3% admitted that they never take snack. The results show that majority (64.7%) of the respondents take snack. Some of the reasons stated as to why respondents did not take snack or did not sometimes take snack were not necessary, cannot

afford snacks, forgetfulness, and unaware of the importance of snack. The implication is that socio-economic factors influence the regularity of snack taken among the respondents. Socio-economic factors therefore play a critical role in the food habits of people. Some of the foods taken as snack were yoghurt, fruit juice, soft drinks, biscuits, bread, and pastries.

Another issue considered under the research question was the food types that constituted the lunch or supper of the respondents. This was imperative because the type of food consumed during lunch or supper helps to serve its purpose effectively. The study found that the foods mainly constituting the lunch or supper of respondents were *fufu*, rice, *banku*, plantain, yam, kenkey, *gari* and beans, and *tuo zaafi*. The results show that the respondents normally took solid and heavy foods for lunch or supper.

The study examined the times respondents take their supper. This was necessary because Cannon (1992) emphasised that late eating is a major cause for the development of diet-related lifestyle diseases. According to Cannon, late eating does not allow food to be completely digested in the stomach and also poses so much stress on certain organs such as the kidney and liver. The study found that the average period respondents took their supper was 3 hours 47 minutes before sleeping. Committee on Diet and Health, Food and Nutrition Board, Commission on Life Sciences and National Research Council (1989) recommended that people should eat high protein foods such as egg and meat at least 4 hours before sleeping. Thus, waiting for such considerable amount of time before one sleeps enables the body to effectively digest and assimilate the nutrients in such foods. The implication is that taking late supper does not aid effective digestion and assimilation, which produces

unwanted chemicals, fats and elements in the body. According to the Committee, excessive building of such substances could lead to the development of diet-related diseases.

Another issue considered under the section was the frequency with which the respondents consumed vegetables with other meals. This was necessary because vegetables contain many nutritional elements which are good for preventing illnesses. The results are presented in Figure 10.

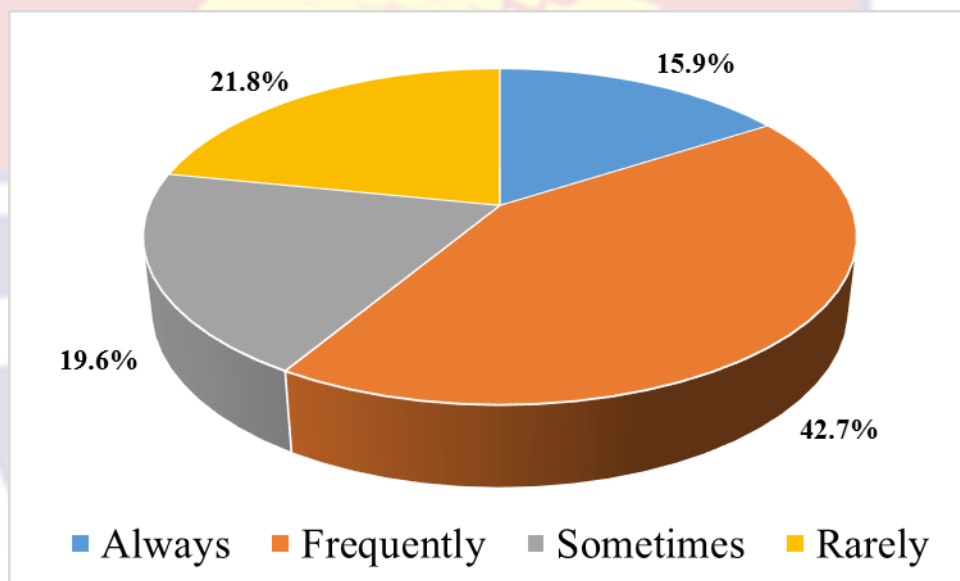


Figure 10. Frequency of consuming vegetables in a week

Source: Field survey, 2013

Figure 10 shows that 15.9% of the respondents admitted to always consuming vegetables with other meals, 42.7% frequently consume vegetables with other meals, whereas 21.8% rarely consume vegetables. The implication is that vegetables constituted an important part of the meals of majority (58.6%) of the respondents. This may be due to the awareness creation programme by the Regional Health Directorate. According to the Director of the Regional Health Directorate, the Directorate in partnership with the United Nations Children's Fund (UNICEF) organise campaign programmes to

sensitise people on the importance of adding vegetables and fruits to children's diet.

The respondents were also asked to indicate the number of times or days they consume fruits within a week. This was essential because fruits are important sources of nutritional elements that help to protect the body against diseases. The results on the number of times respondents consumed fruits in a week are presented in Figure 11.

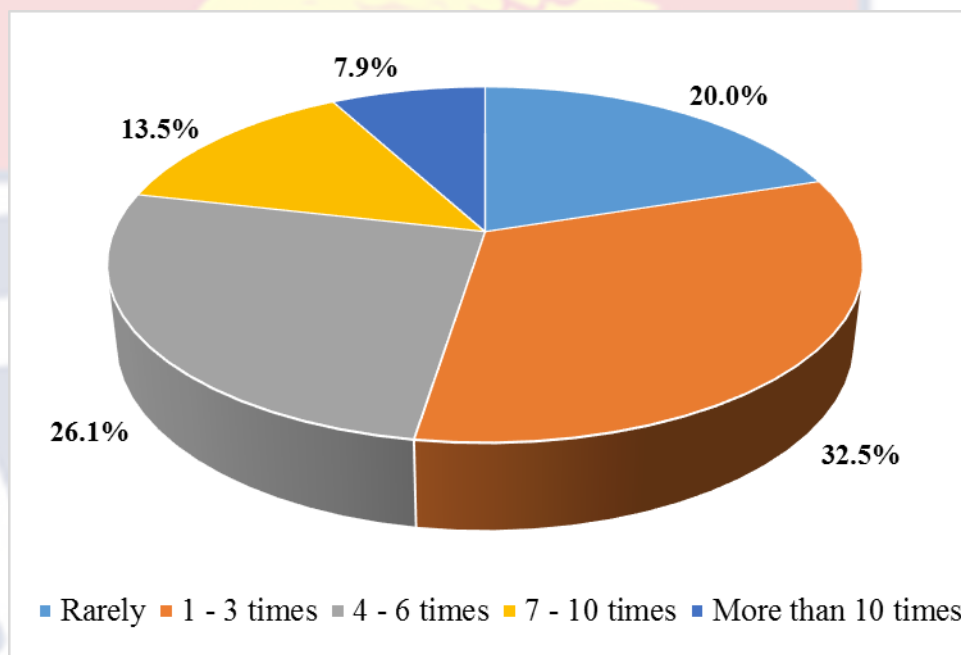


Figure 11. Frequency of consuming fruits within a week

Source: Field survey, 2013

Figure 11 shows that 32.5% of the respondents consumed fruits 1-3 times in a week, 26.1% consume fruits 4-6 times in a week, whereas 20.0% rarely consume fruits within a week. The irregularities in the consumption of fruits within a week show that some of the respondents did not attach so much importance to the consumption of fruits. As high as 35.5% of the respondents either rarely ate fruits or ate fruits once a week. Some of the fruits consumed by the respondents were pineapple, water melon, mango, banana, orange and

coconut. According to Chopra et al. (2002), the irregularity in the consumption of fruits among people is due to their lack of awareness about the nutritional benefits the body could generate from fruits, as well as economic factors.

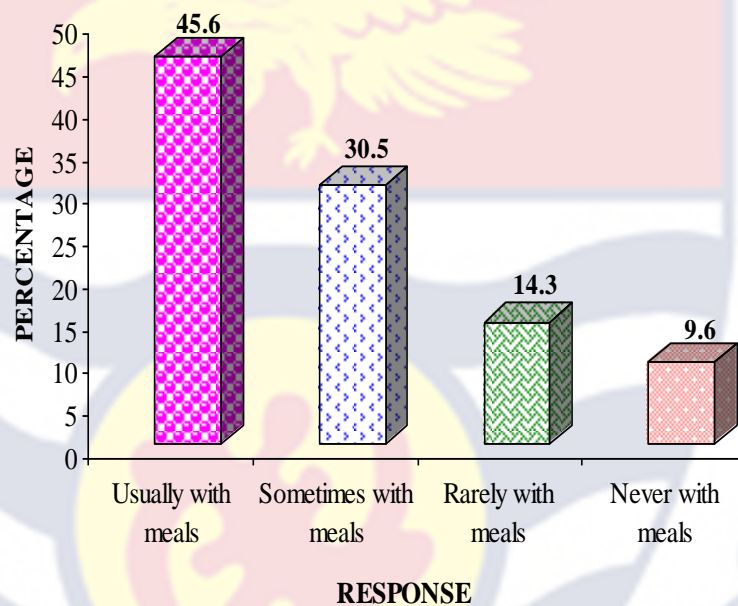
The study further found that 22.5% of the respondents used food supplements to complete their diet, while 77.5% did not. Reasons for the use of food supplements included poor diet intake, loss of appetite, and less nutritional value of food intake. The implication is that majority of the respondents were satisfied with the nutritional levels of their diets.

An enquiry was made into drinks the respondents had during meal times and the responses revealed that 45.9% of the respondents drank water at meals, 15.6% drank processed fruit juice, 16.2% drank soft drinks (carbonated drinks), whereas 9.8% and 12.5% drank wine and beer, respectively. It can be concluded that all the respondents drank some liquids at meals to aid digestion. However, the high consumption of processed juice and carbonated drinks is more likely to reduce the nutritional benefits they gain from drinks at meals. This is because Chopra (2002) argues that processed fruit beverages are of less nutritional value than unprocessed or natural ones.

Frequency of Alcohol Consumption

The first part of this section started with finding out the frequency of alcohol consumption by the respondents. From the study, it was found out that the mean number of times respondents drank alcohol in a week was 4.3, with a standard deviation of 0.47. In addition, the mean number of times respondents took alcoholic drinks during one drinking occasion was also found to be 3.6, and a standard deviation of 0.84.

A further inquiry into whether those respondents who drank alcohol, drank it with meals. According to Trowell and Burkitt (1985), drinking high alcoholic beverages frequently without food might cause ulcer. It was thus important to find out the number of times the respondents who consumed alcohol took it. Figure 12 presents the responses on the frequency with which respondents consume alcoholic drinks with meals.



■ Usually with meals ■ Sometimes with meals ■ Rarely with meals ■ Never with meals

Figure 12. Frequency of consuming alcohol with meals

Source: Field survey, 2013

Figure 12 shows that 45.6% of the respondents who consumed alcohol indicated that they usually drank alcohol with meals, 30.5% sometimes drank alcohol with meals, while 9.6% never drank alcohol with meals. The implication was that some of the respondents did not know the health implications of consuming alcohol without meals, which was likely to contribute to the development of alcohol-related diseases among alcohol consumers in the Metropolis. According to Stern (2005), people's level of

awareness about diseases is negatively related to the development of diseases. In other words, people with high level of knowledge about the causes and effects of particular diseases were less likely to contract such diseases.

Physical Activeness

The respondents were further asked to indicate their physical activeness since it is often acknowledged that physical activeness helps to prevent diet-related lifestyle diseases. According to Story (1999), physical activeness aids digestion and help frees the digestive system from unwanted substances. Story also reported that physical activeness enables the body to burn some excess fat to prevent diet-related lifestyle diseases. Some of the issues considered under the section are description of working life of respondents and engagement in sporting exercises.

It was found out in the study that the average daily working time of the respondents was 10 hours and 27 minutes. Thus, majority (60.2%) of the respondents worked more than the 8 official daily working hours in Ghana. This was due to the high number of respondents working in the informal sector (69.2%). A lot of the informal workers are often seen rising up very early and working late into the night to meet the needs of their customers. The long hours of working are likely to improve the physical activeness of respondents, which may help to reduce the incidences of diet-related lifestyles diseases, if they are able to reserve some time for adequate rest.

In addition, most (62.9%) of the respondents indicated that the nature of their work was such that they mostly walked for more than five minutes at a time, whereas 37.1% described the nature of their work did not demand

walking more than five minutes. It can be seen that the majority of the respondents were somehow active during their working hours.

Further examination of the number of times that respondents did moderately intense activities as part of their work within a week was determined in order to assess the level of physical activeness. From the study, a little over half (52.5%) of the respondents reported that they did moderately intense activities for everyday as part of their work, 30.8% did so for two days, whereas 16.7% did not do any moderately intense activities as part of their work. The results indicated that the nature of work enabled most of the respondents to be physically active. This was likely to aid digestion and the burning of excess fat to prevent or reduce the occurrences of diet-related lifestyle diseases as Sharma (2010) asserted.

Another issue considered under the section was the engagement of the respondents in sporting activities or exercises. This was necessary because exercise helps to strengthen the body system and remove unwanted substances from the body through sweat (Sharma, 2010). It was found out that most (67.4%) of the respondents did not engage in any form of exercise or sports that caused high increase in breathing or the rate of heart beat, whereas 32.6% had some form of exercises. The non-engagement of most of the respondents in exercises or sporting activities was likely to contribute to the development or occurrences of diet-related lifestyle diseases as described by the nutrition transition theory put up by Drewnowski and Popkin (1997).

According to Drewnowski and Popkin (1997), the increase in the occurrences of diet-related lifestyle diseases was due to the shifts in the diet pattern of mankind from raw foods to processed and fatty foods, coupled with

the shift from jobs with more physical activities like farming to service jobs. Thus, the processed foods take longer periods to digest than the raw foods, thereby putting less stress on the digestive system compared to processed foods. In addition, Popkin (2002) reported that jobs with which demand more physical activities help to increase breathing and rate of heart beat, thereby freeing the arteries and veins from clots and blogs to prevent malfunctioning or deformation of cells, organs and systems.

Types and Frequency of Exercises and Sporting Activities

Some of the exercises the respondents engaged in were dawn trotting, skipping, aerobics, weight lifting, press-ups, and back-ups. Similarly, some sporting activities the respondents engaged in were football, swimming, tennis, and basketball. An average of 31.6 minutes was spent performing the various exercises and sporting activities.

It was revealed in the study however, that most (68.1%) of the respondents engaged in the exercises and sporting activities once in a week, whereas 23.1% did so for two days and 8.8% did that every day. This shows that the exercises and sporting activities were not done frequently. The respondents attributed their inability to exercise daily to eagerness to get to work on time. This implies that the nature of working activities or long traffic jams in the Metropolis did not allow the respondents adequate time to involve in frequent exercises.

Research question 3: What is the Association between Level of Knowledge on Diet-related Lifestyle Diseases and Lifestyle Practices?

The third research question sought to examine the relationship between people's level of knowledge on diet-related lifestyle diseases and lifestyle practices. This was essential because the theory of planned behaviour by

Ajzen (1999) indicated that individuals' attitude, behaviour, habits and practices are determined by their level of awareness about issues. In other words, there is a relationship between one's dietary lifestyle and level of knowledge on diet-related lifestyle diseases. Some of the issues considered under this research question were tobacco use, alcohol consumption, and physical activity. Descriptive statistics and chi-square test of independence were used to analyse the data.

A composite variable for the level of awareness of respondents on diet-related lifestyle diseases was first computed. This was done by summing up the responses of the respondents on the causes of the various diet-related lifestyle diseases. Respondents with knowledge about the true cause of six or more diseases were classified as having very high knowledge about diet-related lifestyle diseases. Respondents with scientific knowledge about the causes of four or five of the diseases were considered having high knowledge, whereas those with two or three, and those with one or none were considered as having low knowledge and very low knowledge, respectively. This was because having knowledge about the true cause of more diet-related lifestyle diseases implies that respondents were more aware of the causes of diet-related lifestyle diseases, and vice versa.

The examination of the relationship between the level of knowledge on diet-related lifestyle diseases and the smoking status of respondents was the first issue that was dealt with. The results on the relationship between the level of knowledge on diet-related lifestyle diseases and the smoking status of respondents are presented in Table 11.

Table 11 shows that 25.7% of the respondents had very high knowledge on diet-related lifestyle diseases, 32.9% had high level of knowledge, while 14.6% had very low level of knowledge. The data in the table further show that 46.4% of the respondents had never smoked before, 24.1% were smoking at the time of the study, whereas 29.5% were ex-smokers. The results show that the majority (75.9%) of the respondents were not smoking at the time of the study.

Table 11: Relationship between Level of Knowledge in Diet-related Diseases and Smoking Status of Respondents

Level of knowledge	Description of the smoking status of respondents			Total (%)
	Current smoker (%)	Ex-smoker (%)	Never smoke (%)	
Very High	13 (13.4)	31 (32.0)	53 (45.4)	97 (25.7)
High	25 (20.2)	32 (25.8)	67 (54.0)	124 (32.9)
Low	31 (30.7)	27 (26.7)	43 (42.6)	101 (26.8)
Very Low	22 (40.0)	21 (38.2)	12 (21.8)	55 (14.6)
Total	91 (24.1)	111 (29.5)	175 (46.4)	377 (100.0)
p-value = 0.49 $\chi^2 = 10.37$ df = 11				

Source: Field survey, 2013

The data further show that 13.4% of the respondents with high level of knowledge in diet-related lifestyle diseases were smoking at the time of the study, 32.0% were ex-smokers, while 45.4% had never smoked before. Similarly, the majority (79.0%) of the respondents with high level of knowledge in diet-related lifestyle diseases were not smoking at the time of the study. In addition, 40.0% of the respondents with low level of knowledge

in diet-related diseases were smoking at the time of the study, while 21.8% had never smoked before.

A Chi-square test of independence was used to explore the statistical significance of the relationship between level of knowledge on diet-related lifestyle diseases and the smoking status of respondents. From the test, a p-value of 0.49 ($\chi^2 = 10.37$, $df = 11$) at 0.05 significance level indicated that there was no statistically significant association between the levels of knowledge on diet-related lifestyle diseases and the smoking status of respondents. This was because the p-value of 0.49 was larger than the acceptable error margin of 0.05, implying that differences in the level of knowledge on diet-related lifestyle diseases did not explain the smoking pattern of respondents. Thus, people with different levels of knowledge on diet-related lifestyle diseases were equally capable of smoking or avoiding smoking.

The results disagree with the finding of Popkin (2006) that people adopted behaviours to avoid developing diseases when they have knowledge about their causes and also Sniehotta's (2009) argument that people adopt behaviours to avoid developing diseases when they have knowledge about the causes. This may be attributed to the sensitisation programmes organised by the Ghana Health Service through the Regional Health Directorate.

Among the respondents who were smoking at the time of the study, the mean number of times they smoked in a day was 1.7, with a standard deviation of 0.28. In addition, the average number of sticks of cigarettes, cigars or pipes the respondents smoked per day was 2.3 with a standard deviation of 0.41.

The Relationship between Respondents' Level of Knowledge on Diet-Related Lifestyle Diseases and Drinking Status

The relationship between the level of knowledge on diet-related lifestyle diseases and the drinking status of respondents was assessed. This was found necessary since the intake of high volumes of alcohol has been known to have health implications on people. The results are presented in Table 12.

Table 12: Relationship between Level of Knowledge in Diet-related Diseases and Drinking Status of Respondents

Level of knowledge	Description of the drinking status of respondents				Total (%)
	Current drinker (%)	Occasional drinker (%)	Ex-drinker (%)	Never drunk (%)	
Very high	29 (29.9)	35 (36.1)	23 (23.7)	10 (10.3)	97 (25.7)
High	44 (35.5)	40 (32.3)	32 (25.8)	8 (6.4)	124 (32.9)
Low	54 (53.5)	31 (30.7)	10 (9.9)	6 (5.9)	101 (26.8)
Very low	22 (40.0)	17 (30.9)	10 (18.2)	6 (10.9)	55 (14.6)
Total	149 (39.5)	123 (32.6)	75 (19.9)	30 (8.0)	377 (100.0)
	p-value = 0.30	$\chi^2 = 17.45$	df = 15		

Source: Field survey, 2013

An examination of Table 12 reveals that on the whole, a little over half of the respondents had very high (32.9%) and high (25.7%) knowledge. The rest, 41.4% had low and very low knowledge on diet-related. The respondents were composed of 39.5% who still were drinking at the time of the study, 32.6% were occasional drinkers, 19.9% were ex-drinkers and only 8.05 had never ever drunk in their lives. It can be concluded from the results that most of the respondents in the study, forming 72.1% were drinking alcohol at the

time of the study. It can also be observed further that 29.9% of the respondents who had very high knowledge in diet-related lifestyle diseases were currently drinking alcohol, 36.1% were occasional drinkers, while 10.3% had never drank alcohol before.

A Chi-square test of independence was used to explore the statistical significance of the relationship between level of knowledge on diet-related lifestyle diseases and the drinking status of respondents. From the Chi-square test, a p-value of 0.30 ($\chi^2 = 17.45$, $df = 15$) showed that there was no statistically significant association between the levels of knowledge on diet-related lifestyle diseases and the drinking status of respondents. This was because the p-value of 0.30 was larger than the acceptable error margin of 0.05.

What can be inferred from the results is that differences in the level of knowledge on diet-related lifestyle diseases did not explain the drinking habits of the respondents. Thus, people with different levels of knowledge on diet-related lifestyle diseases were equally capable of drinking. The drinking habit could be a result of poor habit acquired from other personal reasons.

The study further assessed the relationship between the level of knowledge of respondents on diet-related diseases and their engagement in physical or sporting exercises. This was imperative because it was expected that people with high level of knowledge on diet-related diseases may engage more in physical or sporting activities to prevent the development of such diseases. The results are presented in Table 13.

Table 13: Relationship between Level of Knowledge in Diet-related Diseases and Engagement in Physical or Sporting Exercises

Level of knowledge	Engagement in physical or sporting exercises		Total (%)
	Yes (%)	No (%)	
Very high	38 (39.2)	59 (60.8)	97 (25.7)
High	49 (39.5)	75 (60.5)	124 (32.9)
Low	28 (27.7)	73 (72.3)	101 (26.8)
Very low	8 (14.5)	47 (85.5)	55 (14.6)
Total	123 (32.6)	254 (67.4)	377 (100.0)

Source: Field Survey, 2013

Table 13 shows that majority (60.8%) of the respondents with very high level of knowledge on diet-related diseases did not engage in any physical or sporting exercises, whereas 39.2% were engaged in some exercises. In addition, 60.5% as against 39.5% of the respondents with high level of knowledge on diet-related diseases did not engage in any physical or sporting exercises. Furthermore, majority (72.3%) of the respondents with low level of knowledge on diet-related diseases did not engage in any physical or sporting exercises, while 27.7% conducted some physical or sporting exercises. Similarly, the majority (85.5%) as against 14.5% of the respondents with very low of knowledge on diet-related diseases did not engaged in any physical or sporting exercises.

The results show that the majority of respondents with either high or low knowledge on diet-related diseases did not engage in any physical or sporting exercises. The implication is that the respondents' levels of knowledge on diet-related diseases did not influence their engagement of

physical or sporting exercises as lifestyle practices to avert the development of such diseases. This could be attributed to the busy working and activity schedule of people in the Metropolis.

Research Question 4: Do Persons in Selected Occupations in Cape Coast Metropolis Differ in Knowledge of Diet-related Lifestyle Diseases by Socio-demographic Factors?

The fourth research question sought to assess differences in knowledge of diet-related lifestyle diseases among persons in selected occupations in the Cape Coast Metropolis. This was important to assess how people from different occupations acquire knowledge on diet-related lifestyle diseases. A composite variable was computed for knowledge of diet-related lifestyle diseases. This was done by summing up the respondents' responses to questions on level of knowledge on diet-related lifestyle diseases as follows.

- 1 (one) was used to code for very low level of knowledge on a particular issue related to diet-related lifestyle diseases
- 2 (two) was used for low level of knowledge
- 3 (three) was used for high level of knowledge
- 4 (four) was used for very high level of knowledge

The higher the composite variable implied that the respondent had very high level of knowledge on issues about diet-related lifestyle diseases. This is because high composite variable for a respondent on the level of knowledge on diet-related diseases implies the person has higher or very high knowledge in issues, and vice versa. The Pearson correlation coefficient was used to assess the significance of the association between the socio-demographic factors and the level of knowledge on diet-related diseases. Table 14 presents

the correlation coefficients between the socio-demographic factors and the level of knowledge on diet-related diseases.

Table 14: Correlation Coefficient for Socio-demographic Factors and the Level of Knowledge on Diet-related Diseases

Socio-demographic factors	Level of knowledge on diet-related diseases	Age	Sex	Occupation	Level of education	Marital status
Level of knowledge on diet-related diseases	1.00	0.15*	-0.19*	0.13*	0.05*	-0.05*
Age	0.15*	1.00	0.06*	0.08*	0.01*	0.02*
Sex	-0.19*	0.06*	1.00	0.02*	-0.10*	0.04*
Occupation	0.13*	0.08*	0.02*	1.00	-0.01*	-0.11*
Level of education	0.05*	0.01*	-0.10*	-0.01*	1.00	0.05*
Marital status	-0.05*	0.02*	0.04*	-0.11*	0.05*	1.00

* = $p < 0.05$

Source: Field survey, 2013

Table 14 shows that there was significant positive correlations between level of knowledge on diet-related diseases, and age ($r = 0.15$), occupation ($r = 0.13$) and level of education ($r = 0.05$). The implication is that unit increases in age, occupation and level of education will increase the level of knowledge on diet-related diseases. The results are in line with the finding of Paeratakul et al. (1998) who found out that the aged were more prone to diet-related lifestyle diseases due to weak digestive system and reduction in physical activeness. As a result, the aged is more concerned and learn more about diet-related diseases. However, there was significant negative correlation between

level of knowledge on diet-related diseases, and sex ($r = -0.19$) and marital status ($r = -0.05$). The results mean that unit increases in labour and marital status will result in a unit decrease in the level of knowledge on diet-related diseases.

Standard Multiple Regression Analysis

Standard multiple regression analysis was used to assess the effect of the socio-demographic factors on the level of knowledge on diet-related diseases. This enabled an examination of how well the socio-demographic factors explained changes in the level of knowledge on diet-related diseases as well as the contribution of each socio-demographic factor on the level of knowledge on diet-related diseases in the Cape Coast Metropolis. The normal probability plot was first used to check for outliers, normality, linearity, homoscedasticity, and independence of residuals. Table 15 presents a model summary on how the socio-economic factors predicted the occurrence of diet-related lifestyle diseases.

Table 15: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.653	0.426	0.413	0.356

Predictors: (Constant), sex, age, occupation, level of education, marital status

Table 15 presents the significance of the analysis of variance in the changes in occurrence of diet-related lifestyle diseases explained by the socio-demographic factors (predictors). From the table, an adjusted R Square value of 0.413 implied that 41.3% of changes in the level of knowledge on diet-related diseases were explained by the socio-demographic factors (sex, age,

occupation, level of education, marital status). Thus, other variables explained 58.7% of variations in the level of knowledge on diet-related diseases.

Anova Test for the Significance of the Contribution of the Socio-demographic Factors in the Level of Knowledge on Diet-related Diseases

There was a need to conduct another test to verify if the contribution socio-demographic factors in the level of knowledge on diet-related diseases was significant. Thus, the Anova test was used. Table 16 presents the result.

Table 16: Anova Test

Model		Sum of squares	Df	Mean Square	F	Sig
1	Regression	25.42	5	4.24	33.502	0.001
	Residual	34.27	371	0.126		
	Total	59.70	376			

Source: Field survey, 2013

It can also be observed from Table 16 that the F-statistic value obtained from the test was 33.502, with a significant value of 0.001, which was within the acceptable error margin value of 0.05. The indication was that the socio-demographic factors had significant effects on the level of knowledge on diet-related diseases in the Metropolis.

Socio-demographic Factors Critical to Control the level of knowledge on diet-related Diseases in the Metropolis

A further examination had to be conducted to confirm the contribution of each of the socio-demographic factors to variations in the level of knowledge on diet-related diseases in the Cape Coast Metropolis. This was necessary to assess how changes in one socio-demographic factor would affect the level of knowledge on diet-related diseases. It was also imperative to inform stakeholders' decision on which socio-demographic factors were

critical to control the level of knowledge on diet-related diseases in the Metropolis. Details of these analyses are presented in Table 17.

Table 17: Coefficients

Model	Unstandardised		Standardised	t	Sig.
	Coefficients		Coefficient		
	B	Std. Error	Beta		
1 (Constant)	3386.5	3662.1		0.925	0.356
Age	2050.8	849.9	0.144	2.413	0.016
Sex	-472.9	829.3	-0.034	-0.570	0.569
Occupation	1646.1	826.1	0.120	1.993	0.047
Level of education	1005.6	1140.7	0.053	0.882	0.379
Marital status	-619.8	933.1	-0.040	-0.664	0.507

Source: Field survey, 2013

From Table 17, age can be seen to have made the strongest unique contribution (Beta = 0.144) to explaining variations in level of knowledge on diet-related diseases, when the variance explained by all other variables in the model is controlled for. Comparing the significance value of 0.016 with the alpha value of 0.05, it implied that the effect of age on the level of knowledge on diet-related diseases was statistically significant. This finding seemed to confirm the assertion of Paeratakul et al. (1998) that the aged, who are more prone to diet-related lifestyle diseases due to weak digestive system and reduction in physical activity, learn more about diet-related diseases.

The possibility of knowing diet-related diseases therefore can be said to increase as one grows. The table further shows that occupation made the second unique contribution (Beta = 0.120) to explaining variations in the level of knowledge on diet-related diseases, when the variance explained by all

other variables in the model is controlled for. Comparing a significant value of 0.047 with the alpha value of 0.05 implied that the effect of occupation on the level of knowledge on diet-related diseases was statistically significant.

From the table, sex made the least unique contribution (Beta = -0.034) to explaining variations in the level of knowledge on diet-related diseases, when the variance explained by all other variables in the model is controlled for. Comparing the p-value of 0.569 with the acceptable error margin of 0.05 implied that the effect of sex on the level of knowledge on diet-related diseases was not statistically significant. Constructing regression equation for the socio-demographic factors and level of knowledge on diet-related diseases in the Cape Coast Metropolis shows that:

$$\text{Level of knowledge on diet-related diseases} = 3386.5 + 2050.8 (\text{age}) - 472.9 (\text{sex}) + 1646.1 (\text{occupation}) + 1005.6 (\text{level of education}) - 619.8 (\text{marital status}).$$

Research Question 5: Do Persons in Selected Occupations in Cape Coast Metropolis Differ in Lifestyle Practices by Socio-demographic Factors?

The fifth research question sought to examine differences in lifestyle practices among persons with different socio-demographic background. This was essential because differences in the socio-demographic factors are likely to influence diet-related lifestyle practices. Some of the issues considered under the section were gender, age and level of education.

Table 18 shows that majority (94.5%) of the respondents who currently smoke were males, while 5.5 percent were females. The majority (90.1%) of the respondents who were ex-smokers were males, while 9.9 percent were females. However, the majority (82.3%) of the respondents who had never smoked were females, while 17.7% were males. The results show that more

males than females had adopted smoking as a lifestyle practice. This was so because smoking is more associated with males in the Ghanaian socio-cultural setting.

Table 18: Relationship between Gender and Smoking Status of Respondents

Smoking status	Gender		Total (%)
	Male (%)	Female (%)	
Current smoker	86 (94.5)	5 (5.5)	91 (24.1)
Ex-smoker	100 (90.1)	11 (9.9)	111 (29.5)
Never smoke	31 (17.7)	144 (82.3)	175 (46.4)
Total	217 (57.6)	160 (42.4)	377 (100.0)

Source: Field survey, 2013

Thus, male smokers are sometimes considered not to be out of place in the Ghanaian society. However, female smokers are considered as uncultured and ill-trained. This is likely to increase the incidence of diet-related lifestyle diseases more in males than females. Thus, Vorster (2000) stipulates that smoking triggers a number of cardiovascular illnesses.

The study further examined the relationship between age and drinking status of respondents. The aim was to analyse whether workers in particular age cohorts have adopted drinking as a lifestyle practice and their implications on the development of diet-related lifestyle diseases. The detailed results are presented in Table 19. From Table 19, 19.3% of the respondents aged 20 years and below were currently drinking, 35.1% were occasional drinkers, while 22.8% each were ex-drinkers and those who have never drunk. The table further shows that 25.6% of the respondents between 21 and 30 years of age

were currently drinking alcohol, 43.9% were occasional drinkers, while 17.1% and 13.4%, respectively were ex-drinkers and those who have never drunk.

In addition, 46.4% of the respondents within the ages of 31 and 40 years were currently drinking alcohol, 40.8% were occasional drinkers, while 7.8 percent and 4.8 percent were ex-drinkers and those who have never drunk, respectively. Furthermore, the majority (66.7%) of the respondents above age 60 were currently drinking alcohol, 8.3 percent were occasional drinkers, while one quarter (25%) were ex-drinkers.

Table 19: Relationship between Age and Drinking Status of Respondents

Age cohorts (years)	Drinking status				Total (%)
	Current drinker (%)	Occasional drinker (%)	Ex-drinker (%)	Never drunk (%)	
20 years and below	11 (19.3)	20 (35.1)	13 (22.8)	13 (22.8)	57 (15.1)
21 – 30	21 (25.6)	36 (43.9)	14 (17.1)	11 (13.4)	82 (21.8)
31 – 40	48 (46.4)	42 (40.8)	8 (7.8)	5 (4.8)	103 (27.3)
41 – 50	33 (47.8)	16 (23.2)	19 (27.5)	1 (1.5)	69 (18.3)
51 – 60	20 (47.6)	7 (16.7)	15 (35.7)	-	42 (11.1)
Above 60	16 (66.7)	2 (8.3)	6 (25.0)	-	24 (6.4)
Total	149 (39.5)	123 (32.6)	75 (19.9)	30 (8.0)	377 (100.0)

Source: Field survey, 2013

The table further show that none of the respondents within the ages of 51 and 60 years and those above 60 years had never drank alcohol before. The results show that the number of people adopting alcohol as a practice increases as the ages increase. The implication is that the aged drinks more than the young. This could be due to the fact that the matured adults are more able to

afford alcoholic drinks in addition to their other basic responsibilities than the young ones. It could also be attributed to the socio-cultural setting of the Ghanaian society where it is not acceptable for young ones to drink alcohol. The implication is that socio-cultural issues partly influence the lifestyle practices of workers in the Cape Coast Metropolis.

Another issue considered under the section was the relationship between levels of education and engagement in physical or sporting exercises. The aim was to examine whether respondents with particular levels of education engage more in physical or sporting exercises than others. This was important to assess whether respondents with particular levels of education have accepted physical or sporting exercises more than others. The results are presented in Table 20.

Table 20: Relationship between Level of Education and Engagement in Physical or Sporting Exercises

Level of education	Engagement in physical or sporting exercises		
	Yes (%)	No (%)	Total (%)
None	14 (33.3)	28 (66.7)	42 (11.1)
Basic	38 (31.4)	83 (68.6)	121 (32.1)
SHS	42 (40.0)	63 (60.0)	105 (27.9)
Tertiary	29 (26.6)	80 (73.4)	109 (28.9)
Total	123 (32.6)	254 (67.4)	377 (100.0)

Source: Field survey, 2013

Table 20 shows that majority (66.7%) of the respondents who had never been to school did not engage in physical or sporting exercises, while 33.3% did. A majority (68.6%) of the respondents with basic education did not

engage in physical or sporting exercises, whereas 31.4% did. In addition, 60% as against 40% of the respondents did not engage in physical or sporting exercises. Furthermore, the majority (73.4%) of the respondents with tertiary education did not engage in physical or sporting exercises, whilst 26.6% did.

The results show that the engagement of physical or sporting exercises did not follow any definite order in relation to the levels of education of the respondents. Thus, majority of respondents with the various levels of education did not engage in physical or sporting exercises. Furthermore, more respondents with SHS education engaged in physical or sporting exercises than those with tertiary education, while more respondents with basic education engaged in physical or sporting exercises than those without formal education. This could be attributed to the engagement of people in physical or sporting activities such as football and gymnasium activities as fun. In other words, people have different reasons for engaging in physical or sporting exercise apart from controlling diet-related diseases.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents summary of the major findings of the study. It also gives the overall conclusions of the study as well as recommends ways to improve the level of awareness on diet related lifestyle diseases among workers in the Cape Coast Metropolis.

Summary

This section presents the overview of the study as well as the key findings.

Overview of the Study

The purpose of the study was to assess the level of awareness of people in selected occupations in the Cape Coast Metropolis on diet related lifestyle diseases. It aimed at examining the incidences of diet-related lifestyle diseases in the Metropolis, socio-economic factors influencing the occurrence of diet-related diseases, food habits of respondents, awareness of the role of diet in lifestyle diseases, and relationship between people's lifestyle and food habits, their awareness of the role of diet in lifestyle diseases and programmes in place to control and or prevent the diseases.

A descriptive survey design was adopted for the study. A total of 378 respondents were sampled for the study. Multi-stage sampling procedure was used to sample 377 workers, whereas purposive sampling technique was used to sample the Regional Director of Health. Both interview guide and interview

schedule were used as instruments for collecting data. SPSS version 17 was used to analyse the data. Descriptive statistics, tables of frequencies and percentages were used to present the data and Chi-square test of independence to test the hypotheses formulated.

Key Findings

This section presents the key findings of the study. The section is organised under the research questions.

Knowledge of persons about diet-related lifestyle diseases,

1. From the study, the respondents identified typhoid and cholera as diet-related lifestyle diseases. The study found that the recent diet-related lifestyle diseases that are common in the Metropolis were hypertension, kwashiorkor, ulcer, obesity and diabetes.
2. A high majority of the respondents had knowledge about some causes of diabetes. However, majority of the respondents' knowledge was the true or scientific knowledge (too much sugar and hereditary) the causes. Thus, not all preventive practices adopted by the respondents who had knowledge about the causes of diabetes might work to inoculate them against diabetes.
3. From the study, it was found out that a high majority of the respondents were aware of the true causes of heart diseases. The implication was that measures adopted by such respondents were likely to be more effective in preventing heart diseases.
4. Most of the respondents did not know about the true causes of stroke and thus was likely to affect the effectiveness of the practices that the respondents might take to prevent themselves from getting stroke.
5. The majority of the respondents did not know that dietary-related lifestyles

could also cause cancers. The implication is that majority of the respondents did not have the full knowledge about the causes of cancers. This is likely to reduce the effectiveness of their strategies to avoid contracting cancers.

6. Most of the respondents disagreed that high salt intake increases the risk of having blood pressure. The implication is that majority of the respondents were not aware of the health risk posed by the high intake of salt.
7. Most of the respondents perceived that animal protein foods were healthier than vegetable foods.

Lifestyle practices of persons in relation to diet-related lifestyle diseases,

1. Most of the respondents did not know the health benefits of taking breakfast and so did not take breakfast regularly. Similarly, most of the foods taken as breakfast were solid which could not help lubricate the digestive system as expected of breakfast foods.
2. Some socio-economic factors were observed to have influenced the food habits of the respondents. Thus the respondents cited reasons such as busy working schedule, inability to regularly afford breakfast, forgetfulness, saving money for other issues as reasons for not regularly taking breakfast.
3. It was found out that most of the respondents did not engage in any form of exercise or sports.

Association between level of knowledge of diet-related lifestyle diseases and lifestyle practices

1. The study found that differences in the level of knowledge on diet-related lifestyle diseases did not explain the smoking pattern of respondents. Thus,

people with different levels of knowledge on diet-related lifestyle diseases were equally capable of smoking or avoiding smoking.

2. There was no statistically significant association between the levels of knowledge on diet-related lifestyle diseases and the drinking status of respondents. Thus, people with different levels of knowledge on diet-related lifestyle diseases were equally capable of drinking.
3. There was no statistical significant association between the level of knowledge on diet-related lifestyle diseases and the occurrence of diet-related lifestyle diseases.

Differences in knowledge of diet-related lifestyle diseases among persons with different socio-demographic factors

1. There was a significant positive correlation between the level of knowledge on diet-related diseases, and age, occupation and level of education. The implication is that unit increases in age, occupation and level of education will increase the occurrence of diet-related lifestyle diseases.
2. Age made the strongest unique contribution to explaining variations in the level of knowledge of diet-related lifestyle diseases, when the variance explained by all other variables in the model is controlled for.

Differences in lifestyle practices among persons with different socio-demographic factors

1. The study found that more males than females had adopted smoking as a lifestyle practice. This was attributed to the fact that smoking is more associated with males in the Ghanaian socio-cultural setting.

2. From the study, the number of people adopting alcohol as a lifestyle practice increases as the ages increase. The implication is that the aged drunk more than the young.

Conclusions

It can be concluded that workers in the Metropolis did not have full knowledge about what constituted diet-related lifestyle diseases and their causes. Thus, some of the workers cited common environmental diseases as diet-related lifestyle diseases. The majority of workers were also not aware of the health risk posed by the high intake of salt. The low level of awareness on diet-related lifestyle diseases could contribute to increase the incidence of diet-related lifestyle diseases in the Metropolis because efforts adopted to reduce such diseases may be wrong. There was little knowledge about the health benefits of taking breakfast. As a result, the respondents regularly skipped breakfast.

The food habits of workers were influenced by some socio-economic factors such as busy working schedule, inability to regularly afford breakfast, forgetfulness, and saving money. In other words, such socio-economic factors were crippling the ability of workers to adopt healthy diet-related lifestyle. The implication is that workers with high level of awareness on diet-related lifestyle diseases are likely to compromise on such knowledge due to poor socio-economic factors.

Differences in the level of knowledge on diet-related lifestyle diseases did not explain the smoking pattern and the drinking status of respondents. Thus, workers with different levels of knowledge on diet-related lifestyle diseases were equally capable of smoking or drinking, or avoiding both. The

majority of the workers did not engage in any form of exercise or sports that cause large increases in breathing or heart rate. Such physical inactiveness coupled with poor diet lifestyle could contribute to increase diet-related lifestyle diseases among workers in the Metropolis. The study concludes that in as much as the awareness about the causes of diet-related lifestyle diseases is critical, the socio-economic conditions of workers are also crucial to enable them practice healthy diet-related lifestyles.

Recommendations

Based on the findings from the study, the following recommendations were made for practice and policy.

Ghana Health Service and Metropolitan Health Directorate

1. Metropolitan Directorate of Health should educate the populace on what constitute and the causes of diet-related lifestyle diseases such as kwashiorkor, blood pressure ulcer, obesity and diabetes would enable people to adopt strategies to avoid them as well as reduce their incidences in the Metropolis. This could be done through public campaigns on radio and television stations to create awareness on the causes of such diseases and measures they can adopt to avoid or minimise the effects on their health.
2. The study also recommends that Metropolitan Health Directorate should roll out a special programme to educate the aged on how well they could avoid developing diet-related lifestyle diseases. Such education should focus on how the aged could avoid developing any of the diet-related lifestyle diseases. This could be done by assigning health assistants to help educate the aged in health facilities.

3. It is also recommended that the Metropolitan Health Directorate should educate the people through public campaigns on the media on the importance of taking breakfast as well as the types of foods conducive for breakfast. This would enable most people to take liquid foods as their breakfast to help lubricate their digestive system to avoid any ulcers and other undue pressure on the digestive system.
4. The Ghana Health Service should sensitise people in the Metropolis on the negative effects of the intake of high salt and food with high fat content as well as the importance of vegetables. This would enable the general populace to change their diet patterns to avoid developing any of the diet-related lifestyle diseases. Such sensitisation programmes could be organised through radio and television stations.
5. It is also recommended that awareness should be created by Metropolitan Health Directorate on the importance of exercises, and how it helps to prevent certain diseases. This would enable more people to take physical exercises more seriously to avoid diet-related lifestyle diseases.

Workers and Inhabitants of the Cape Coast Metropolis

The study recommends that workers and inhabitants should organise occasional games among working groups to promote exercise and physical activeness among workers in the Cape Coast Metropolis. This would enable workers, especially those in the formal sector, to gain the opportunity to exercise and burn excess fats, oils and cholesterol in their system. This would help to reduce the development of diet-related lifestyle diseases.

Various Keep-fit Associations and Churches

1. The various keep-fit associations and churches should organise regular keep-fit activities to take people through regular exercises. This would enable more people to develop interest in regular exercises to be physically active to excrete more unwanted substances from their systems to reduce the occurrences of diet-related lifestyle diseases.
2. Churches should also invite dieticians regularly to their churches to advice members on healthy diet-related lifestyles to reduce the intake of certain foods such as salts, fats and oils, and increase the intake of others such as vegetables and natural fruits. This would help to reduce the incidence of diet-related diseases among church members.

The Mass Media

The mass media are also encouraged to support the course for reducing the incidence of diet-related lifestyle diseases. This could be done by inviting dieticians and other food and health experts to programmes on radios and televisions to advice the general populace on healthy diet-related lifestyle issues. This would enable more people to be aware of diet lifestyles which could impact negatively on their health.

Suggestion for Further Studies

Further studies could be conducted into the changes in the diet pattern among people of different socio-economic background and how such changes relates with the occurrences of diet-related lifestyle diseases in the Cape Coast Metropolis. This would enable researchers to assess how changes in the diet pattern influence the incidences of diet-related lifestyle diseases.

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APPENDICES

APPENDIX A

Interview Schedule

Demographic and Socio-economic Data

1. Age.....
2. Sex Male [] Female []
3. Occupation
 Formal sector [] Informal sector [] (please define these sectors)
4. Level of education completed
 None [] Basic []
 SHS [] Tertiary []
5. Marital status
 Single [] Married [] Divorced []
 Widowed []

Incidences and Knowledge on Diet-related Diseases

6. List any diet related lifestyle diseases you know of

7. Have you or seen anybody who suffered from diet related lifestyle diseases before? Yes [] No []
8. Which of the diseases mentioned in question 6 is more recent in your community?

What are the causes of diet related lifestyle diseases? Please check [✓] the causes of the diseases

9. Diabetes

- a) Too much sugar [] b) Hereditary [] c) Witchcraft [] d) No idea []
- e) Other (specify).....

10. Heart diseases

- a) Unhealthy diet [] b) Hereditary [] c) Witchcraft [] d) No idea []
- e) Other (specify).....

11. Stroke

- a) Witchcraft [] b) Unhealthy diet [] c) Hereditary [] d) No idea []
- e) Other (specify).....

12. Obesity

- a) Unhealthy diet [] b) Hereditary [] c) Not exercising [] d) No idea []
- e) Other (specify).....

13. Cancers

- a) Hereditary [] b) Unhealthy diet [] c) Smoking [] d) No idea []
- e) Other (specify).....

14. High blood pressure (Hypertension)

- a) Unhealthy diet [] b) Too much blood [] c) Hereditary []
- d) No idea []
- e) Other (specify).....

14. Asthma

- a) Unhealthy diet [] b) pollution [] c) Hereditary [] d) No idea []
- e) Other (specify).....

Diet and Habits

14. What food do you eat perceive to be

15. Do you take breakfast before going to work?

- a) Always [] b) Sometimes [] c) Never []

16. What do you normally have for breakfast?

- a) Bread [] b) Cereals [] c) Porridge [] d) Coffee []

- e) Juice [] f) Tea [] g) Fruit []

Other (*specify*).....

17. Do you usually have a snack regularly?

- a) Always [] c) Sometimes [] e) Weekly []

- b) Never [] d) Daily [] f) Monthly []

18. What do you usually have as snack?

.....

19. How often do you eat salad or vegetables with lunch or dinner?

- a) Always [] d) Rarely []

- b) Frequently [] e) Never []

- c) Sometimes [] f) []

20. In a typical week, on how many days/times do you eat fruits?

- a) One day [] c) Four to five days []

- b) Two to three days [] d) Rarely []

21. In a typical week, on how many days/times do you eat vegetables?

- a) One day [] c) Four to five days []

- b) Two to three days [] d) Rarely []

22. What do you drink at meals?

- a) Water [] d) Wine []

- b) Juice [] e) Beer []

- c) Soft drinks []

23. What foods mainly constitute your lunch or supper?

.....

24. How many times do you eat a day?

.....

25. How frequently do you eat at fast food restaurants?

- a) 2 or 3 times a week [] b) Everyday [] c) Almost every day [] d)
Never []

26. Do you use food supplements to complete your diet?

- a) Yes [] b) No []

Relationship between Diet and Diseases

27. A high sodium (salt) intake generally increases the risk of having high blood pressure

- a) Strongly agree [] b) agree [] c) strongly disagree [] d) disagree []

28. Food that has a lot of fat is healthy

- a) Strongly agree [] b) agree [] c) strongly disagree [] d) disagree []

29. Animal protein foods are healthier than vegetable foods.

- a) Strongly agree [] b) agree [] c) strongly disagree [] d) disagree []

30. The more fatty food you eat the better your health will be

- a) Strongly agree [] b) agree [] c) strongly disagree [] d) disagree []

Tobacco Use

31. Which of the following best describes your smoking status?

- a) Current smoker [] c) Ex-smoker []
b) Never smoke []

32. How many times do you smoke in a day? []
33. On average, how many of the sticks of cigarettes, cigars or pipes do you smoke each day? []

Alcohol Consumption

34. Which of the following best describes your drinking status?
- a) Current drinker [] c) Never drink []
- b) Occasional drinker [] d) Ex-drinker []
35. Which of the following best describes your drinking pattern?
- a) Daily [] c) 5 – 6 times a week []
- b) 1 – 3 times a week [] d) 1 – 5 times a month []
- c) Other (*specify*) []
36. During the past 30 days, when you drank alcohol, **on average**, how many **standard alcoholic drinks** did you have during one drinking occasion? Number []
37. During the past 30 days, when you consumed an alcoholic drink, how often was it with meals? Please do not count snacks.
- a) Usually with meal [] c) Rarely with meals []
- b) Sometimes with meals [] d) Never with meals []

Physical Activity

38. How long is your typical working day? (in hours/minutes)
-
39. Does your work involve mostly sitting or standing, with walking for not more than 5 minutes at a time?

- a) Yes []
- b) No []

40. In a typical week how many days do you do moderate intensity activities as part of your work?

- a) One day []
- b) Two days []
- c) Three days []
- d) Four days []
- e) Everyday []

41. Do you engage in any form of exercise or sports that cause large increases in breathing or heart rate?

- a) Yes []
- b) No []

42. If yes please state the exact form of exercise you engage in

.....

.....

43. How much time do you usually spend performing this exercise? (in hours/minutes)

44. In a week how often do you engage in exercise or any form of sports?

- a) Once []
- b) Two days []
- c) Three days []
- d) Four days []
- e) Everyday []

