EFFECTS OF SOCIO-ECONOMIC FACTORS INFLUENCING EMPLOYEES' INVESTMENT DECISION IN HEALTH

By

Albert Opoku Frimpong, (BA Hons. Economics)

A thesis submitted to the Department of Economics, Kwame Nkrumah University of Science and Technology, Kumasi, in partial fulfilment of the requirements for the degree of

Master of Philosophy (Economics)

Faculty of Social Sciences

College of Art and Social Sciences

May 2013

DECLARATION

I declare that I have wholly undertaken the study reported herein under the supervision of Dr. (Sr.) Eugenia Amporfu and that except portions where references have been duly cited, this thesis is the outcome of my research.

Albert Opoku Frimpong …… ……

(Index Number: PG5541911) Signature Date

(Student)

Certified by

Dr. (Sr.) Eugenia Amporfu ....

(Supervisor/ First Internal Examiner) Signature Date

Certified by

Prof. J. Ohene-Manu ……. ……..

(Second Internal Examiner) Signature Date

Certified by

Dr. (Sr.) Eugenia Amporfu ……. ……..

(Head of Department) Signature Date

ABSTRACT

A healthy and productive workforce is important for both industrial and economic growth and the importance of health capital increases as production becomes increasingly health intensive. Some studies focused on occupational diseases and their effects on workers' health, income, and productivity with little studies done on the effects of factors influencing health investment decisions of workers in developing countries and Ghana for that matter. This study sought to find the effects of socio-economic factors influencing employees' investment decision in health. Primary data was used for the study: Questionnaires were administered and interviews conducted for the collection of data. The convenient sampling method was employed to solicit information from 400 respondents sampled from the private-formal and informal sectors. The statistical analysis of the data was carried out using stata 11 statistical software package. Multivariate analysis using multinomial logistic regression model was employed to estimate the effects of socio-economic factors that influence the decision of employees in Ghana to seek preventive care. The results of the study showed that income, free, and convenient access to medical care were statistically significant and impacted positively on the demand for preventive care at 5% error level. The study recommends that individuals in their search for jobs, with regard to health investment, should consider working in firms with health policies or facilities that provide the employees convenient access to preventive medical care. Medical bill payment coverage policies by firms should as well cover the blue-collar workers who are most likely to be exposed to high health risks. Also, stakeholders should ensure that pro poor health programmes such as the National Health Insurance Scheme (NHIS) be smoothly run for intermittent discontinuation of such programmes discourages individuals enrolled on those programmes from accessing preventive medical care as and when they are supposed to.

ACKNOWLEDGEMENTS

I am forever grateful to God Almighty for His guidance and provision throughout my life and making this thesis a success.

This thesis would not have materialised without the constructive criticisms and suggestions of my supervisor, Dr. (Sr.) Eugenia Amporfu. I am grateful to her for making this thesis a standard one.

I would be charged with ingratitude if I do not appreciate the following individuals for the diverse roles they have played in my life: Mr. Francois Reuter, Mr. and Mrs. Nkrumah and family, and my parents and siblings.

I am again grateful to the Lecturers as well as the non-teaching staff at the Department of Economics, KNUST, my course mates, and all those who have influenced my academic life.

Finally, this section would be incomplete if I fail to acknowledge the firms and respondents sampled for the study as well as all those whose works were cited in this study.

TO GOD BE THE GLORY!

DEDICATION

To Cecilia Boamah – my mother

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS AND ABBREVIATIONS

ILO: International Labour Organisation

KMA: Kumasi Metropolitan Assembly

NHIS: National Health Insurance Scheme

OHS: Occupational Health and Safety

TUC: Trades Union Congress

WHO: World Health Organisation

CHAPTER ONE

INTRODUCTION

1.0 Background of the study

The goods and services produced in an economy, in a simple production function, is a function of two factors: capital and labour, and sometimes a third factor, land, is included (Macinko & Starfield, 2001). Capital refers to assets such as cash holdings, installations, and equipment necessary for producing goods or services; and the second element of the production function, labour, according to Becker (1993) represents the number of person-hours required for the production of the desired good or service.

Grossman (1972a) developed a health investment model in which health is viewed as a capital stock which yields an output of "healthy days" and the incentive for a person to invest in his health is to increase the amount of time available for producing goods or services. Vistnes (1997) investigated the extent and determinants of days lost from work and found that health status consistently explained absenteeism in both men and women than economic factors such as wages. Also, O'Brien (2003) reported from some studies that individuals with poor health or with specific health conditions like arthritis, depression or other psychological disorders, or chronic backache, for example, work less and earn less than do people in good health. These conclusions suggest that the importance of health capital increases as the production becomes increasingly health intensive.

As a person ages his stock of health depreciates which is, of course, "merely one manifestation of the biological process of aging" (Grossman, 1972a; p. 236). Occupation, however, contributes further to this depreciation. The growth of the Ghanaian industrial sector has led to an increased percentage of workers in the sector. The industrial sector also happens to be where employees are exposed to workplace physical and chemical hazards, and among other hazards. For example, Iregren et al. (2001) found a high concentration of aluminium in blood and urine among workers producing aluminium flake powder. Godnic-Cvar et al. (1999) also observed that organic dusts such as barley, hops, and brewery yeast can change the respiratory function and immunological status of brewery workers.

It is estimated that two million people around the world die each year as a result of work-related illnesses or injuries and occupational accidents, and 160 million new cases of work-related illness each year (Neira, 2010). The World Health Organisation (WHO, 2006), cited in Amponsah-Tawiah and Dartey-Baah (c. 2010), reported that a substantial part of the general morbidity of the population is related to work. However, many people do not even know that their ill-health is work related (A TUC Education workbook, 2007).

Katsoulakos and Katsoulacos (2007) argue that consideration of Occupational Health and Safety (OHS) practices into national agenda is an important decision not for only the developed countries but also for the developing countries. The Ghana Labour Act 2003, Act 651 requires employers in Ghana to ensure the health and safety of their employees by ensuring that employees are not exposed to hazards that would lead them to work related illnesses or injuries (Annan, 2010). As a result, some sectors in Ghana, such as the Mineral Commission, have Occupational Health and Safety guidelines (Annan, 2010), but there is no comprehensive

national OHS policy and body for monitoring and ensuring that the OHS policy and guidelines are adhered to (Puplampu & Quartey, 2012).

The International Labour Organisation (ILO) requires its member states, including Ghana, to formulate, implement, and periodically review a policy on occupational health and safety policy (Annan, 2010). However, upon the ILO convention coupled with studies such as Amponsah-Tawiah and Dartey-Baah (c. 2010) and Annan (2010), which focused on and advocate for a national OHS policy in Ghana to ensure workplace health and safety, Ghana still does not have a comprehensive national policy on occupational health and safety policy (Puplampu & Quartey, 2012).

For the informal sector, estimates made by Chen (2002) show that informal sector employment comprises one-half to three-quarters of non-agricultural employment in developing countries: 48% in North Africa; 51% in Latin America; 65% in Asia, and 72% in sub-Saharan Africa. The informal sector, according to Lund and Nicholson (2003), is associated with the creation of employment that is often flexible, precarious, and insecure. Alfers (2009) also points out that most of the informal jobs are not only flexible, precarious, and insecure but are also hazardous and take place in environments which are both unhealthy and unsafe, but there is no occupational health and safety policy for the informal sector in some developing countries including Ghana.

As a result of lack of national OHS policy and body in Ghana to monitor the health and safety of workers, according to Boatey of Ghana Trades Union Congress (TUC), has led to untimely death of many workers while others suffer from diseases due to workplace hazards (http://www.ghana.gov.gh).

Most studies such as Goldstein and Orris (1964) and Godnic-Cvar et al. (1999) focused on investigating into occupational diseases and their effects on workers' health and income, Vistnes (1997) and Neira (2010) also focused on sickness absence and its effects on productivity and income, Anan's (2010) and Puplampu and Quartey's (2012) studies focused on occupational health and safety practices; with little empirical studies done on the effects of factors influencing investment in health by workers, especially in developing countries and Ghana for that matter.

1.1 Statement of problem

Ill-health can retire employees before the retirement age of the economy. The rate of retirement due to ill-health may vary between organisations and may even vary within the same organisation because of different tasks performed by the employees. Any ill-health and chronic incapacitation that forces employees to retirement is a loss of productivity to the society and firms and loss of income to employees.

Goldstein and Orris (1964) argue that occupational diseases – diseases that arise out of and in the course of employment – can largely be prevented. However, illnesses may not be diagnosed, hence treated, if preventive care does not form part of the health investment decision, but one wonders if Ghanaian employees are aware of their health and safety responsibilities.

The ill-health employees are the most affected at the event of illness in that there is a high probability that firms will be willing to employ workers with relatively low skills to replace high skilled ill-health personnel. These less-skilled employees may not be performing the exact task of those they have replaced. Tasks may therefore be simplified or responsibilities lessened to insure quality is maintained (Roberts & Reid, 1954). Hence, production continues but the flow of income of the ill-health employee consequently ceases.

In efforts of employees investing in their health capital to increase the amount of time available for generation of income, there are socio-economic factors that influence them to invest in their health, in particular the demand for preventive care. The effects of these factors on the demand for preventive care have received little empirical studies in developing countries and Ghana for that matter. This situation forms the basis for this study to recommend policy measures that have influence on health investment decisions of employees.

1.2 Objectives of the study

The general objective of the study was to find the effects of socio-economic determinants of employees' demand for preventive care.

The specific objectives of the study were to find out

- if there is difference in the demand for preventive care between salaried (formal) workers and non-salaried (informal) workers
- if there is difference in the demand for preventive care between white-collar workers and blue-collar workers
- if employees have knowledge of the health risks of their jobs
- if the knowledge of the job health risks influences employees to invest in their health

1.3 Study hypothesis

The hypothesis used for the study is expressed as follows:

H_0: Socio-economic factors have no effects on the demand for preventive care by employees

H_1: Socio-economic factors have effects on the demand for preventive care by employees

1.4 Justification of the study

The health status of labour is an important factor in that without health labour cannot transform their stock of knowledge and skills, acquired through education and/or experience, into production of goods and services (Xiaoqing, 2005). The Sixtieth World Health Assembly (2007, p. 8) recommended "research on workers' health needs to be further strengthened... giving it priority in national research programmes and grant schemes..." It is therefore in light of this the study was undertaken.

This study will bring to light the health needs of employees and the effects of socio-economic factors influencing employees' demand for preventive care. The knowledge of this therefore enables the study to provide policy measures to the government and authorities when designing and reviewing programmes that have influence on health investment decisions of employees.

What is more, since most studies on health investment focused on the advanced countries with little done on the developing countries, and Ghana for that matter, the study complements existing literature and contributes to the emerging literature on the developmental implications of programmes which influence health investment decisions of employees in developing countries and elsewhere.

1.6 Scope of the study

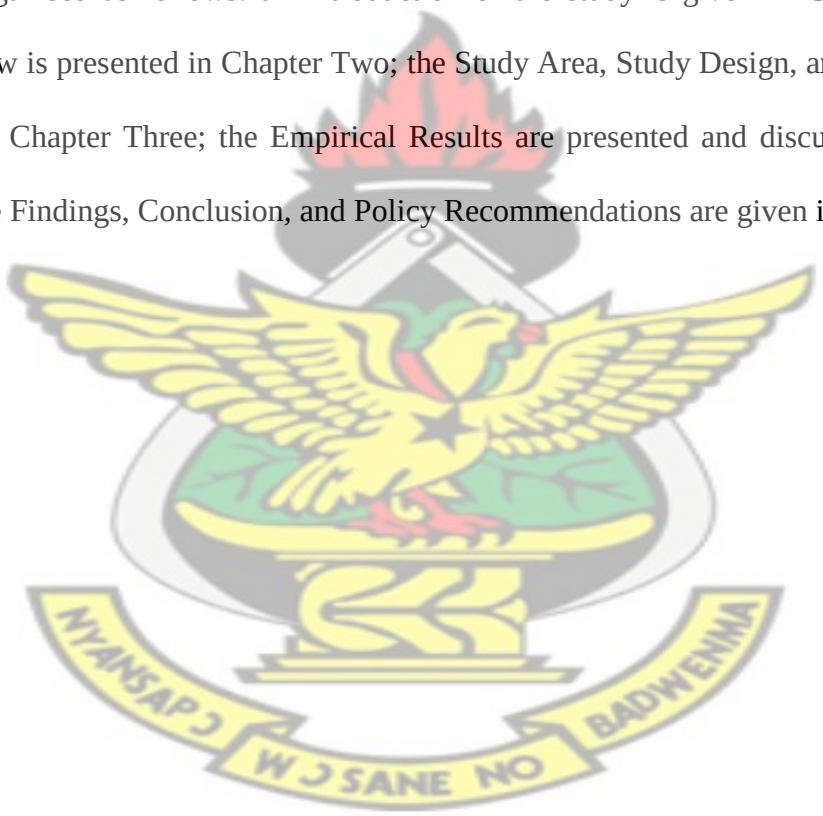
The study was limited to workers of selected firms in both private-formal and informal sectors in Kumasi, Ghana. The private-formal sector workers were sampled from Coca-Cola Bottling Company Limited, DBS Industries Limited, and Donyma Steel Complex Limited, while sampled construction workers constituted the informal sector. The choice of the study area was due to

resource constraints and proximity to the study. Also, the selection of these workers captures those who were exposed to pollutants and whose jobs were also health intensive.

The study restricted attention to health as absence of ill-health which also in most empirical studies is defined indirectly as absence of ill-health (Ferlander, 2007). Further explanation for the chosen of this definition for the study is given in Chapter Two.

1.7 Organisation of the study

The study is organised as follows: an Introduction of the study is given in Chapter One; the Literature Review is presented in Chapter Two; the Study Area, Study Design, and Methodology are described in Chapter Three; the Empirical Results are presented and discussed in Chapter Four; finally, the Findings, Conclusion, and Policy Recommendations are given in Chapter Five.



CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

A healthy and productive workforce is important for both industrial and economic growth. Poor health either results in loss of days worked, called absenteeism, or reduced work capacity, called presenteeism (Cancelliere et al., 2011). It has been known from the time of Hippocrates that health is affected by airs, waters, and places, thus, influences which potentially affect individuals exposed to them (Black, 1999).

Chakraborty and Das' (2005) two-period overlapping generations model acknowledges the impact of health on longevity and investment in health capital, along with education, having positive effects on labour productivity. The model points out that investment in health improves the probability of an individual surviving from the first period of life to the next. The authors argue that absenteeism (and presenteeism) and premature retirement due to ill-health can be reduced and avoided by investment in health.

This chapter therefore reviews both theoretical and empirical studies on investment in health.

2.1.0 Theoretical review of investment in health

Grossman's (1972a) model of the demand for health considers health as a durable good that depreciates. However, by means of investment the stock of health capital can be accumulated by

combining medical services and one's own time, for example, to produce new health which counters the effect of the depreciation of health stock.

According to Grossman, health is both demanded and produced by individuals and it is defined to include longevity and illness-free days in a given year. Health is demanded for two reasons: as a consumption commodity because individuals derive utility from healthy days and as an investment commodity – which this study restricted attention to – determines the total amount of time available for producing goods or services. The latter implies health is an output of inputs and as one of inputs of output. Thus, inputs such as medical services and one's own time are used to produce (good) health, time, which in turn serves as one of many inputs such as computer and one's skills to produce goods or services.

The demand for health as consumption and investment commodities makes it seem reasonable to assume that the rich will spend most of their time on consumption of goods and services like watching football match in a stadium, visiting a museum, or having fun at the beach, with the poor, on the other hand, spend most of their time working to earn more income. That is, the poor will tend to demand more health for investment purposes while the rich demand more health for consumption purposes.

Investment in health implies either preillness investment or postillness investment. For a preillness investment in health, when the individual is not yet ill, the time he takes off from work to visit a physician or for taking medication can be referred to as time input, but not sick time or sick days. Here, combining own time and medical care is meant to reduce the probability of illness. With postillness investment, thus when or after illness strikes, the time taken off from work to seek treatment from a physician or relaxing at home to recuperate is both sick time and time input. Here, combining own time and medical care or recreation is meant to restore to good

health. In this case, sick time and time input are indistinctively separated. But according to Grossman, sick days are periods taken off from work to seek treatment whereas healthy days are days spent in producing goods and services. Grossman therefore failed to separate preillness and postillness investments.

The premise of the Grossman's model is based on age as the only factor causing depreciation of health, which can be viewed as natural depreciation of health. However, occupation and lifestyle also cause depreciation of health, which can be viewed as artificial depreciation of health. Individuals in occupations that expose them to a high level of pollution, for example, experience a faster depreciation of health than their colleagues in healthy occupations; also, those who engage in wild lifestyle such as smoking or drinking will have their health depreciating faster than that of those who do not engage in such activities; all other things held constant..

Cropper (1977) developed two models of investment in health where in the first model individuals invest in health capital when the motive for investing in health is to decrease the probability of illness and in the second model individuals invest in health through their choice of occupation. Cropper's model is an investment in health under uncertainty in which the health capital stock is deterministic with the stochastic element entering as an illness threshold. The model views the relation between illness and health capital as random rather than as deterministic.

In the first model, Cropper explains that whether a person is well or ill depends on events such as changes in climate, exposure to germs and viruses as well as the size of the health stock, which are called random events. The model assumes that illness strikes whenever the health stock, H, falls below a critical sickness level, H_t, which can also be called illness threshold, represented by the individual's exposure to germs or pollutants.

Differently put, the individual is sick if at any given time the value taken on by the illness threshold is above his health stock while if it falls below his health stock he is healthy. Therefore one increases his chance of being well by maintaining a high health capital stock or to reduce the probability of illness as long as the illness threshold remains constant over time or the health stock should always be above the illness threshold should the two rise or fall.

Cropper treated the relationship between health capital and illness as random rather than as deterministic. That is, the individual, according to Cropper, cannot guarantee that illness will not occur for at every point in time, she explains, one of two states – ill or not ill – will occur. But she continues that the probability of either state occurring depends on the health stock which is determined by investment. This latter statement suggests that illness is as well deterministic since the health stock, which is determined by investment, determines the probability of whether or not illness will occur. This therefore means illness is partly deterministic and partly random with events such as industrial accidents constituting the random aspect.

In the second model, an individual invests in his health through his choice of occupation. The extent of exposure to pollutants determines and increases the probability of death. The model predicts how workers tend to respond to information about occupational dangers. The problem faced by the employee is trading higher wages for an increase in the probability of death.

If an employee is faced with a choice between, for example, a job at the brewery which is found to be potential to destroy the immunological status and a safer but lower-paying occupation, how should he optimally behave? Or should an employee who has worked for many years in an occupation which is found to be deleterious to his health continue working in that occupation assuming that he has already accumulated a large stock of the pollutant or should he change his occupation and allow the pollutant to decay?

To answer these questions, according to Cropper, if an individual should choose to work in an unhealthy occupation, he should work in such occupations when he is young and switch to a healthier occupation as he grows older to decrease his pollution stock. Also, to the question of what the individual would do when he discovers that his occupation is dangerous to his health, Cropper says the employee should continue to work in that occupation to further increase the stock of the pollutant rather than leaving for a healthier job. Cropper admits that these answers are "somewhat surprising" (p. 1275), but the only explanation she gives to the somewhat surprising answers is that "these conclusions are based on a model" (p. 1276).

Illness viewed by Cropper as wholly stochastic contradicts with the objective of occupational health and safety practices and healthy lifestyle behaviours. According to cropper, a person will not fall sick even when illness strikes as long as the health stock is above the illness threshold, which implies a very high health stock aims at reducing the probability of illness. Occupational health and safety practices and healthy lifestyle, on the other hand, aim at non-occurrence of illness in the first place. This means cropper did not realise that occupational health and safety practices such as clean air at the workplace or healthy lifestyle such as avoidance of smoking is one of many health inputs for production of health; hence illness is partly deterministic, but not wholly stochastic.

Another drawback to the model is that, according to the model; illness does not reduce the health stock since with the same health stock the individual could be healthy if the illness threshold falls below the health stock or sick if the illness threshold rises above the health stock. For example, by not coming into contact with pollutants the individual is healthy but sick if the illness threshold rises above the health stock, by coming into contact with pollutants.

Also, according to Cropper, a period of illness is not followed by a period of recovery as long as the illness threshold is above the individual's health stock, nor could illness have a permanent effect since the illness threshold can fall below the health stock. The fact of having suffered a prolonged illness at one point in time has no effect on the individual's ability to resist illness in the future since illness does not reduce the health stock.

Put differently, according to Cropper, prolonged illness does not have long term consequences in the form of reduced health in the future, since there is the probability that the illness threshold will fall below the same health stock. To reduce the magnitude of this drawback, Cropper suggests that the model is best represents mild illnesses, such as colds, whose impact on the health stock is likely to be minor, but not representing severe or serious illnesses.

Gilleskie's (1998) model is restricted to the employed individuals and their behaviour in the period of acute illnesses such as colds, but not chronic illnesses, with regard to demand for medical services and absenteeism. According to Gilleskie, absenteeism can be an important complement to or substitute for medical care.

Thus according to the model, with the expected utility maximization, the individual chooses whether or not to resort to medical services and whether or not to miss work. He argues that individuals do not decide at one time the number of visits they will make to a physician within a year, but medical services consumption decisions are sequential and contingent, thus, decisions today is dependent on what happened yesterday. According to Gilleskie, given income, sick leave coverage, and health insurance; a person decides upon becoming ill, whether or not to seek medical care and whether or not to be absent from work. He argues that by seeking medical treatment or staying home from work, one may improve his chances of recovery from the acute illness.

Given the numerous illnesses and different groups of individuals, according to Gilleskie, could lead to wrong estimation of the parameter in modelling demand for health. Therefore a plus of the model is that it restricted attention to specific class of illnesses and a particular group of people: employees.

The model, however, ignores preventive care so an individual who feels he is not ill will not make any medical visits. For illnesses may not be diagnosed and treated, hence may develop into serious illness if the health investment decision does not include preventive care.

The model assumes a zero probability of moving from one type of illness to another within an illness period as well as a zero probability of an acute illness developing into a chronic illness. But it is when the individual seeks preventive care that has a higher probability that a particular illness does not develop into another one.

Also, the model is based on the consumption aspect of health capital, other than the investment aspect. This is because employees necessarily invest in their health to increase the "healthy days" for generation of income, rather than to gain utility from being healthy.

Laporte and Ferguson (2007) argue that illness affects the health stock by causing a reduction of it. According to their model, severe or serious illnesses have impact on the health stock of the individual and are considered as random walks. They define serious illness as one which permanently reduces the individual's stock of health capital. That someone who experiences a severe illness does not necessarily bounce back to full health – which they define as a high level of health capital. The model assumes health stock of the individual and how healthy he feels to be same.

The model looks at two kinds of illness: one that reduces the health stock of the individual by a certain proportion, a, and another which reduces the individual's health stock to a certain level, H_s. In the first case, the amount of health stock the individual is left with after the illness strikes depends on how much he had before the illness. This implies that the greater the preillness health stock of the individual, through investment, the greater his postillnes health stock. The preillness health stock determines the rate of recovery after the individual is hit by a certain proportion, a, of illness and puts him at the position of reducing the probability of contracting another illness.

In the second case, because the health stock of the individual falls to a fixed predetermined level, the preillness health stock has no influence on the postillness health stock. This implies preillness investment should aim at preventing illness but not also to increase the rate of recovery after illness strikes or reduce the probability of contracting another illness. This is because irrespective of the amount of investment the individual makes if he is hit by illness his health stock falls to the fixed predetermined level.

The model is considered a health stochastic variable whose variation over time is determined partly by a deterministic factor and partly by a random factor. Increase of health stock through deliberate private investment is the deterministic factor. The random factor has to do with car accident, gas explosion and the likes. The random factor, argue by the authors, tend to always cause downsize of the health stock with no upward shock to the health stock, but upward shocks to health capital are hardly observed.

Laporte and Ferguson argue that downward shocks, called illness, are easy to observe, whiles unexpected recuperation from illness are seen as upward shocks, but the probability of upward shocks is low for a person already in a very good health, exhibiting diminishing returns. Thus, the model postulates that there is diminishing returns on the return on investment when the

individual has reached the upper limit of full health. A case in point is if an employee falls sick, for example, in the course of work he may resort to medication to be restored to good health to enable him continue or complete his task before the working hours ends or will be able to return to work the following day. The initial return on investment will be high, according to the model, but falls when he recovers from the illness.

This diminishing returns on the return on investment, however, could be due to the consumption technology of medication but not the attainment of full health as put forward by the model. With an increasing consumption technology of a drug, subsequent dosages are more effective than the initial ones, thus the more of a drug is consumed the more effective the drug becomes; while with a decreasing consumption technology, initial dosage is more effective than subsequent ones. With a linear consumption technology of a drug, subsequent dosage is as effective as the initial dosage. This suggests that the type of medication would rather exhibit diminishing returns, but not the attainment of full health as put forward by Laporte and Ferguson. This is because even when the individual has attained full health he may have to continue be on medication to maintain that level of health stock even if not to improve upon it.

2.1.1 Review of definition of health

The chorus that positive health is more than the absence of illness was heard when the World Health Organisation (WHO) definition of health arrived (Ryff & Singer, 1998). The World Health Organization (WHO, 1948) defined health as a state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity (Ryff & Singer, 1998; Ferlander, 2007; A TUC Education workbook, 2007; Neira, 2010).

Kindig (2007) points out that, descriptions of health are complicated by variations in the preferences of individuals. Kindig argues that the modern definition of health views health in relation to all aspects of life and it stresses on the positive sides of health such as wellbeing or wellness as against the general understanding of health often as negative such as absence of disease. However, in most empirical studies, according to Ferlander (2007), health is indirectly defined as absence of ill-health. Marmor (1989), cited in Evans et al. (1994), points out that that whatever be the definition of health being used, it is important to identify the determinants of health from that definition.

According to Ryff and Singer (1998), the definition of WHO provides important steps in the direction of construing health as states of well-being rather than ill-being, and as such wellness is about the mind and body and their interconnections. They argue that assessment of health should be on the side of physical problems (e.g., mobility, pain, fatigue, sleep disorders, symptoms), mental problems (e.g., cognitive confusion, distress, depression, anger, anxiety) as well as social problems (role limitations, marital problems, sexual dysfunction).

However, Evans et al. (1994) argue that the WHO's definition of health, as a state of complete wellbeing, is unhelpful operationally in that the definition is everything and therefore nothing in particular. Evans et al. (1994) point out that the absence of disease or disability is simply used as the definition of health. They explain that health is generally understood as free of illness as experienced by patients (e.g., aching muscles or sinus congestion associated with cold flu), or absence of disease as understood by physicians (e.g., diabetes, cancer, or arthritis), or absence of injury (e.g., hip fracture or broken leg). They continue that the definition of WHO is difficult to use as the basis for health policy in that the definition implicitly includes all policies as health

policy. Following Evans et al. (1994), this study restricted attention to health as absence of ill-health.

2.2 Empirical review of investment in health

Wagstaff (1986) used a cross-sectional data from the 1976 Danish Welfare Survey, with Multiple Indicators-Multiple Causes (MIMIC) methodology, to estimate the demand for medical services and found that the sign of many of the parameters contradict theoretical signs of the Grossman's (1972) model. The wrong signs could be attributed to the generality of the Grossman's model because the model is a demand for medical services for different kinds of health problems by people of different economic and demographic backgrounds. This is because people from different economic and demographic backgrounds may exhibit different behaviour with respect to contraction of illness, recovery from illness, or medical services utilisation.

Gilleskie (1998) study was carried out on 10,000 individuals of each income, sick leave coverage, health insurance coverage, health status, education, and age were used for the study. The data included a self-reported health status for the respondents as excellent, good, fair, or poor. The study found that those who experience acute illnesses and chose to seek medical care or to be absent from work for at least once during the illness days were insured and younger and also have higher incomes and sick leave coverage. He found also that the higher-income individuals were most likely to be insured which influences them to seek medical services more often than lower-income individuals who do not have health insurance. The study revealed that a greater percentage, 77%, of individuals resort to work absence for recovery from an acute illness

than on medical services. He concluded that medical treatment and absence from work, generally, are substitutes in the period of illness, rather than as complement.

Walsh et al. (1991) used a sample size of 2,709 using a cross-sectional data obtained from a 170-item self-administered questionnaire. Demographic variables used were age, sex, and education. The study was carried out at a manufacturing factory in New England. Some of the occupational exposures (or job risks) identified by the study were fumes, solvents/degreasers, poor ventilation, and noise. Results from multiple regression analyses indicated that lifestyle and job risks are associated with disruptive health problems.

Chen et al. (2002) employed Ordinary Least Square (OLS) model to estimate the signs and parameters for blood pressure responses to changes in personal diet, exercise, and medication. Variables used for the multiple regression analysis were exercise, medication, and nutritional food. Other variables used were age, income, education, and gender. The study revealed that the health state of the individual is influenced by prices, income, and tastes which are factors influencing the demand for health inputs. These factors, according to Chen et al., have impact upon the consumption decisions individuals make about health inputs which determine the health state. Thus, the extent to which individuals choose to alter the consumption of health inputs depends on factors such as prices, income, and preferences. For example, those with higher income are able to afford quality healthcare than persons with lower income. Also, the lower the price of health inputs the higher the demand for them and the preference of an individual makes him or she decide whether he or she should resort to traditional medicine or western medicine for treatment.

Gimeno et al. (2003) used multi-stage random sample to carry out a study on 17,910 employees from European countries drawing data from the Third European Survey on Working Conditions

(ESWC). The respondents were asked about their employment status (employed or self-employed) and type (permanent or temporary). They were again asked about the total number of days they were absent from work as a result of health problems or an accident at work. The results showed that both permanent and temporary employees reported similar exposures to physical working conditions.

Garcia et al. (2004) conducted a study on employed workers in Castell in Spain using a total of 1,746 sample size. The closed ended questionnaires used were designed to ask for information including worker's behaviour towards occupational risk prevention. The results showed that 21.1% of unskilled workers, 17.8% of skilled workers, and 8.4% of supervisors said they have no knowledge of their job health risks. Also, a substantial number of the workers highly indicated that they excessively expose themselves to risks while working.

A study by Starfield et al. (2005) on the effects of primary care on health revealed a progressively stronger demonstration that primary care improves health. The study revealed that primary care provides greater access to needed services, greater focus on prevention, and early management of health problems.

Machnes (2006) estimated the demand for medical care and supplemental health insurance between the self-employed and wage earners in Israel. The independent variables used for the study were income, age, education, and health status. The other variables used were marital status, work status, profession, and origin. The study sought to determine whether there is a difference in the demand for medical services and supplemental health insurance between the self-employed and wage-earners in Israel. The study used logit and probit regression models as well as tobit regression model. It was found that income was the main explanatory variable. Individuals with higher income, according to the study, were able to afford also supplemental

health insurance. This is because health is assumed to be a normal good, hence more is demanded with increase in wages. Blue-collar workers were found to demand less supplemental insurance than white-collar workers because of the low income of the former.

Preillness investment in health is the investment one makes to maintain or improve upon the health stock to reduce the probability of occurrence of illness. Postillness investment in health, on the other hand, is the investment one makes to improve upon the health stock to restore to good health after illness strikes. Therefore treatment of illness distinguishes medical expenditure into preventive medical expenditure, which is a preillness medical expenditure; and curative medical expenditure, which is incurred at the event of illness. However, most theoretical and empirical studies on health investment, like most of the above, do not distinguish between preillness and postillness investments, but combine the two; hence might lead to wrong conclusions. Also, most studies have investigated into occupational diseases and sickness absence and their effects on workers' health, income, and productivity with little done on the effects of factors influencing health investment decisions. Using multinomial logistic regression model, this study sought to find the effects of socio-economic determinants of the demand for preventive care by employees in Ghana.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter describes the research methods used to achieve the objectives of the study. Both quantitative and qualitative methods were employed for the analysis of data. Multivariate analysis using multinomial logistic regression was carried out. Features of this chapter are background of the study area, theoretical framework, model specification, data sources and collection as well as data analysis methods.

3.1.0 Background of the study area

Kumasi is the capital of Ashanti Region, Ghana. The Kumasi Metropolitan Assembly (KMA) shares boundaries with the Atwima Nwabiagya District to the west, Ejisu and Juaben Municipals to the east, Kwabre East District to the north and the south with Bosomtwe District. Kumasi covers about 90 suburbs, many of which became part of the city as a result of the process of physical expansion and growth. The Kumasi metropolis is situated in the transitional forest zone and is about 270 km north of Accra, the capital of Ghana. Kumasi is found between longitude $1.30^{o} – 1.35^{o}$ and between latitude $6.35^{o} – 6.40^{o}$, an elevation which ranges between 250 – 300 metres above sea level with an area of about 254 square kilometres (www.districtsinghana.com).

Figures from the Ghana 2010 Population and Housing Census indicated that the population of Kumasi stood at 2,035,064 which makes Kumasi the second highest populous city, in Ghana, after Accra (Ghana Statistical Service, 2012).

The choice of Kumasi as an area of study was motivated by the fact that the metropolitan area has various industries that fit the definition of cases for this study. Most of the industries are located in the Asokwa-Ahinsan-Kaase industrial area, which is the hub of large-scale formal industries. There are also pockets of other industries dotted all over the metropolis. Automobile parts are manufactured at the Suame Magazine and Vehicle bodybuilding is undertaken at the Neoplan Assembly Plant. The Brewery industries in the metropolis, such as Coca Cola Bottling Company Limited, produce beverages.

3.1.1 The selected private-formal firms for the study

The Coca Cola Bottling Co. Ltd, a brewery firm, was established in Ghana in 1995. The firm has a production plant in Kumasi and another in Accra with Coca Cola, Fanta, Minute Maid, Sprite, Krest, Burn, Schweppes, and Born-Acqua as its products. DBS Industries Ltd and Donyma Steel Complex Ltd are basically producers of steel products, namely, aluminium sheets, binding wire, iron rods, and nails, in the construction industry. DBS Industries Ltd, established in 2002 is located at Kwamo-Kumasi and Donyma Steel Complex Ltd is located at Dadiesoaba in Kumasi. Workers of these firms are salaried (formal) workers.

With regard to health care provision to workers of these firms, Coca Cola Co. Ltd has a clinic at the worksite to provide health care services to the workers and their dependents. DBS Co. Ltd and Donyma Steel Complex do not have clinic at their worksites, at the time of the study, but pay the medical bills of their workers who visit clinic in line of duty. DBS Ind. Ltd, at the time of the study, had a Medical Doctor who visited the worksite everyday of working hours to attend to workers who needed medical treatment. This type of health care provision is referred to by the study as near-clinic.

3.1.2 The informal sector selected for the study

The informal sector is described, by Lund and Nicholson (2003), to be associated with the creation of employment that is often flexible, precarious, and insecure. The mode of payment in the informal sector is daily payment and a worker's income increases with his or her daily output. For this reason a worker in the informal sector can choose to work throughout the week. The burden of health care provision basically falls on the workers. The construction workers of the informal sector sampled in this study were no exception of these.

3.2 Theoretical Framework

Occupation contributes to the depreciation of the health stock of employees and individuals in occupations that expose them to high level of pollution, according to Cropper (1977), would have their health deteriorating faster than that of their colleagues in healthier occupations. The study employed the Grossman's (1972) model of demand for health and Cropper's (1977) occupational model of health investment. These models provide the framework for determining the effects of socio-economic factors influencing health investment decisions.

3.3.0 Model Specification

The study employed multinomial logistic model because, according to Baum (2006), multinomial models are used when the dependent variable is unordered. Also, multinomial logistic model is simple and "parameter estimates are easier to interpret than in some other multinomial models" (Cameron & Trivedi, 2009; p. 484).

According to Cameron and Trivedi (2009), multinomial logit can be used when the explanatory variables do not vary across alternatives called case-specific.

The multinomial logit specifies that

$$P_{ij} = \frac{xp(xi'\beta j)}{\sum_{i=1}^{m} \exp(xi'\,\beta j)}, \quad j = 1,\ldots, m$$

where x_i are case-specific explanatory variables. The model ensures that $0 < p_{ij} < 1$ and $\sum_{i=1}^{m} pij = 1$. β_j is set to zero to ensure model identification for one of the categories, and interpretation of coefficient is made with respect to that category, called the base category.

Put differently, interpretation of multinomial models can be in the same way as interpretation of binary logit model parameters, with comparison made to the base category. Setting the base category to be the first category or one of the categories, the multinomial logistic model is expressed as

$$\Pr(y_i = j / y_i = j \text{ or } 1) = \frac{\Pr(yi = j)}{\Pr(yi = j) + \Pr(yi = 1)} = \frac{\exp(xi'\beta j)}{1 + \exp(xi'\beta j)}$$

With $\beta_j = 0$ and $\sum_{i=1}^{m} \exp(xi'\beta j)$ cancellation in the numerator and denominator, β_j can be viewed as parameters of a binary logit model between alternatives j and the base category. Hence a positive coefficient from multinomial logit implies that as the explanatory variable increases, one is more likely to choose alternative j than alternative 1 (the base category).

The model considered in this study used preventive care as the dependent variable with rarely (thus, once a year) seek preventive care as the base category. Also, for each of the categorical independent variables, a particular category was used as a reference category (control group) and comparison was made with reference to that control group. For example, with regard to the nature of job category, the administrators group was used as the control group and the likelihood of the distributors and producers to seek preventive care at least once every three months (often)

or once in six months (sometimes) was compared to that of the administrators (the control group).

The model used in this study was therefore expressed as follows:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \beta_9X_9 + \beta_{10}X_{10} + \beta_{11}X_{11} + \beta_{12}X_{12} + \beta_{13}X_{13} + \beta_{14}X_{14} + \beta_{15}X_{15} + \varepsilon_i$$

where

Y = Qualitative dependent variable (Preventive care) coded 2 = Often seek preventive care (at least once in every three months), 1 = Sometimes seek preventive care (once in every six months), and 0 = Rarely seek preventive care (once a year).

X_1 = Employee's age

X_2 = Employee's income

X_3 = Dummy variable (X_3 = 1 if employee works in a firm with a near-clinic, X_3 = 0 if otherwise)

X_4 = Dummy variable (X_4 = 1 if employee works in a firm with a clinic, X_4 = 0 if otherwise)

X_5 = Dummy variable (X_5 = 1 if employee is a distributor, X_5 = 0 if otherwise)

X_6 = Dummy variable (X_6 = 1 if employee is a producer, X_6 = 0 if otherwise)

X_7 = Dummy variable (X_7 = 1 if employee has a fair knowledge of the job health risks, X_7 = 0 if otherwise)

X_8 = Dummy variable (X_8 = 1 if employee has a good knowledge of the job health risks, X_8 = 0 if otherwise)

X_9 = Dummy variable (X_9 = 1 if employee has very good knowledge of the job health risks, X_9 = 0 if otherwise)

X_{10} = Dummy variable (X_{10} = 1 if employee has excellent knowledge of the job health risks, X_{10} = 0 if otherwise)

X_{11} = Dummy variable (X_{11} = 1 if employee has basic education, X_{11} = 0 if otherwise)

X_{12} = Dummy variable (X_{12} = 1 if employee has secondary education, X_{12} = 0 if otherwise)

X_{13} = Dummy variable (X_{13} = 1 if employee has tertiary education, X_{13} = 0 if otherwise)

X_{14} = Dummy variable (X_{14} = 1 if employee is a male, X_{14} = 0 if otherwise)

X_{15} = Dummy variable (X_{15} = 1 the employer pays for employees preventive care bills, X_{15} = 0 if otherwise)

ε_i = Stochastic error term

3.3.1 Expected signs of the estimated parameters

The expected signs of the coefficients of sometimes and often seek preventive care categories were made with respect to the base category (rarely seek preventive care).

The sign of age (X_1) is unknown. This is because the study is not certain that the demand for preventive care by an employee will depend on his or her age, taking into consideration that an employee invests in his or her health with respect to the nature of the occupation.

The study expects income (X_2) to have a positive impact on seeking preventive care sometimes and often in that higher income earners are not only able to seek preventive care but also purchase the quality.

A firm with near-clinic and a firm with a full fledge clinic (X_3 and X_4 respectively) are expected to impact positively on the demand for preventive care. This is because firms with either near-clinic or full fledge clinic provide convenient access to medical care for their workers than workers in firms with no clinic. Therefore employees of firms with near-clinic or with clinic are most likely to often or sometimes seek preventive care.

The signs of X_5 and X_6 (distributors and producers respectively) are expected to be positive as a result of the nature of their work which is health intensive; hence they will tend to sometimes or often seek preventive care. Also, the workers who work at the production department are often exposed to pollutants, and this factor too is expected to cause these types of workers to demand preventive care more often than their colleague workers who work at the administration department (the control group) whose task is basically 'paper work'. Also, the administrators are not directly exposed to the workplace pollutants. Therefore an Administrator will be less inclined to demand preventive care sometimes or often.

The study expects the signs of X_7, X_8, X_9, and X_{10} (fair, good, very good, and excellent knowledge of the job health risks respectively) to have positive impacts on the demand for preventive care. That is, the study expects workers having much knowledge about the job health risks to demand preventive care more than those with poor knowledge of the job health risks (the control group).

X_{11}, X_{12}, and X_{13} (Basic, Secondary, and Tertiary education respectively) are also expected to have positive signs and impact more on the demand for preventive care than the uneducated (the control group). The educated are most likely to know about the importance of preventive care, hence most likely to demand it.

The study expects the sign of Male (X_{14}) to be positive. This is because the male employees are mostly involved with health intensive activities than their female counterparts.

Finally, the study expects the sign of X_{15} (the employer) to be positive. The employer is also a proxy for a third party payer such that, as expected by the study, employees will sometimes or often seek preventive care if the preventive care bills were paid by a third party; for example, the employer; compared to when the employees themselves pay for their preventive care bills.

3.4 Data Sources and Collection

According to Kumekpor (2002), research design is the planning, organisation, and execution of social investigation and each stage involves a careful planning in order to avoid waste of time, money, and other resources.

This study employed cross-sectional data because, more importantly, it enables data to be collected predominantly by the use of questionnaire or structured interview method. Structured questionnaires and interviews promote standardisation of both the asking of questions and recording of answers. Also, they reduce error due to variation in the asking of questions, hence there is greater accuracy and ease of processing respondents' answers (Bryman, 2008).

Questions featured in the questionnaire and interviews were centred on preillness health investment decisions of employees including whether they know about their job health risks and

whether the knowledge of the job health risks influences them to invest in their health. Also, the respondents provided information on their health status (self-rated), income, age, education level, as well as years working with their firms. These constituted the primary source of data for the study. Secondary materials from journals, articles, textbooks, as well as academic sites on the World Wide Web (internet) were gathered and reviewed which formed the core of the *Literature Review* of this study.

The population of investigation is the total number of units of phenomenon to be investigated that exist in the area of study, that is, all possible kinds (Kumekpor, 2002). The population of this study was grouped into two categories: private-formal sector and informal sector. The population of the private-formal sector consisted of workers from the administrative, distribution, and production departments of Coca Cola Bottling Company Limited, DBS Industries Limited, and Donyma Steel Complex Limited. The medical staff and security personnel of these firms were excluded since their services indirectly enter the companies' production. Construction workers constituted the population from the informal sector.

For the private-formal sector, the companies were already divided into three broad departments: the administrative, production, and distribution. The construction section of the informal sector was also grouped into three departments as in the private-formal sector. These departments thereby constituted the strata from which samples were taken for the study, using the convenient sampling technique.

A total of four hundred (400) workers were sampled for the study with two hundred (200) each from the private-formal sector and the informal sector. Seventy (70) workers each from Donyma Steel Complex Ltd and DBS Industries Ltd and sixty (60) from Coca Cola Bottling Co. Ltd

altogether representing 50% with the other two hundred (200) workers being construction workers from the informal sector also representing 50% of the sample size of the study.

3.5 Data Analysis Methods

Both quantitative and qualitative methods of analysis were employed in the data analysis. Quantitative method allows description of fine differences between variables in terms of the characteristics in question as well as providing a consistent yardstick or device for making distinctions. Also, it provides basis for more precise estimates of the degree of relationship between concepts (Bryman, 2008).

This section dealt with the process of transferring raw data from the field to make meaningful conclusions. Collected raw data was edited, encoded, and analysed with the help of stata (version 11) statistical software package. Presentation of results was in the form of percentages, frequency distribution, and charts. The Multinomial logistic regression model was employed to estimate the effects of socio-economic determinants of the demand for preventive care. With the qualitative method of analysis, economics inferences and analysis were implored. Comprehensive statements and analytical inferences were made from the qualitative data.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Introduction

This chapter presents the analysis of data obtained on 400 employees from the private-formal and informal sectors. The statistical analyses of data in both the descriptive and quantitative aspects were carried out using stata 11. Summary statistics tables and bar graphs were employed under the descriptive statistics to describe the socio-economic characteristics and variations in health investment among the respondents. Multinomial logistic regression model was employed under the quantitative analysis to find the effects of socio-economic factors that have impact on the demand for preventive care by workers in Ghana. The pseudo R^2 was used to test the goodness of fit of the model with the Wald chi2 test used to test the overall significance of the model at 5% error level.

4.1 Descriptive Analysis

The mean years of the sampled employees have worked with their respective employers was 4.13 years with 1 year as the minimum and 16 years as the maximum years worked. The age structure of the sampled employees ranged from 19 years to 55 years with 36.16 years as the average years. The average monthly income of the respondents was GHs 564.75 with the minimum and maximum monthly income being GHs 300 and GHs1200 respectively.

Table 4.1 Summary statistics of variables

VARIABLE	RESPONSE	
	FORMAL(Private)	INFORMAL
Employees' information	Percent	Percent
Gender		
Male	90	66
Female	10	34
Nature of job		
Administration	18	10
Production	65	83
Distribution	17	7
Level of education		
Uneducated	27	61
Basic	13	20
Secondary	39	14
Tertiary	21	5

Source: Field Data, April 2013

From Table 4.1 above, 90% of the respondents from the private-formal sector were men with women constituting 10% while 66% men and 34% women were from the informal sector. With regard to the nature of job, the highest percent, 65%, of sampled employees from the private-formal sector worked at the Production department with 18% at the Administration section with the majority of the administrators (52.78%) being women. The remaining 17% were from the Distribution section. Both those from the production and distribution sections were all males.

Majority (83%) of the respondents from the informal sector were from the production section out of which 64% were males and 36% being females. The distribution section which was basically drivers were all males, and they constituted the lowest percentage of 7%; with the Administration section representing 10% out of which 62% were males and 38% were females.

The reason for a low percentage of women in both sectors was possibly due to the health intensive nature of the work in the areas selected for the study. All the women respondents from the private-formal sector worked at the Administration department while 88% of women respondents from the informal sector worked at the Production section. Concerning educational level of respondents, respondents with no education, basic, secondary, and tertiary education from the private-formal sector were 27%, 13%, 39% and 21% respectively with 61%, 20%, 14%, and 5% respectively for respondents from the informal sector.

Table 4.2 Comparison of health investment variables among the respondents

	RESPONSE	
Variable	Formal(Private)	Informal
	Percent	**Percent**
Job health risks knowledge of respondents		
Poor	15	26
Fair	23	29
Good	44	32
Very Good	13	9
Excellent	5	4
Source of job health risks knowledge		
Through the employer	45	11
Through coworkers	4	11
Through the media	14	39
Through years of work	32	38
Through research	5	1
Number of times preventive care is sought		
Often (at least once in three months)	40	24
Sometimes (once in every six months)	35	22
Rarely (once every year)	25	54

Source: Field Data, April 2013

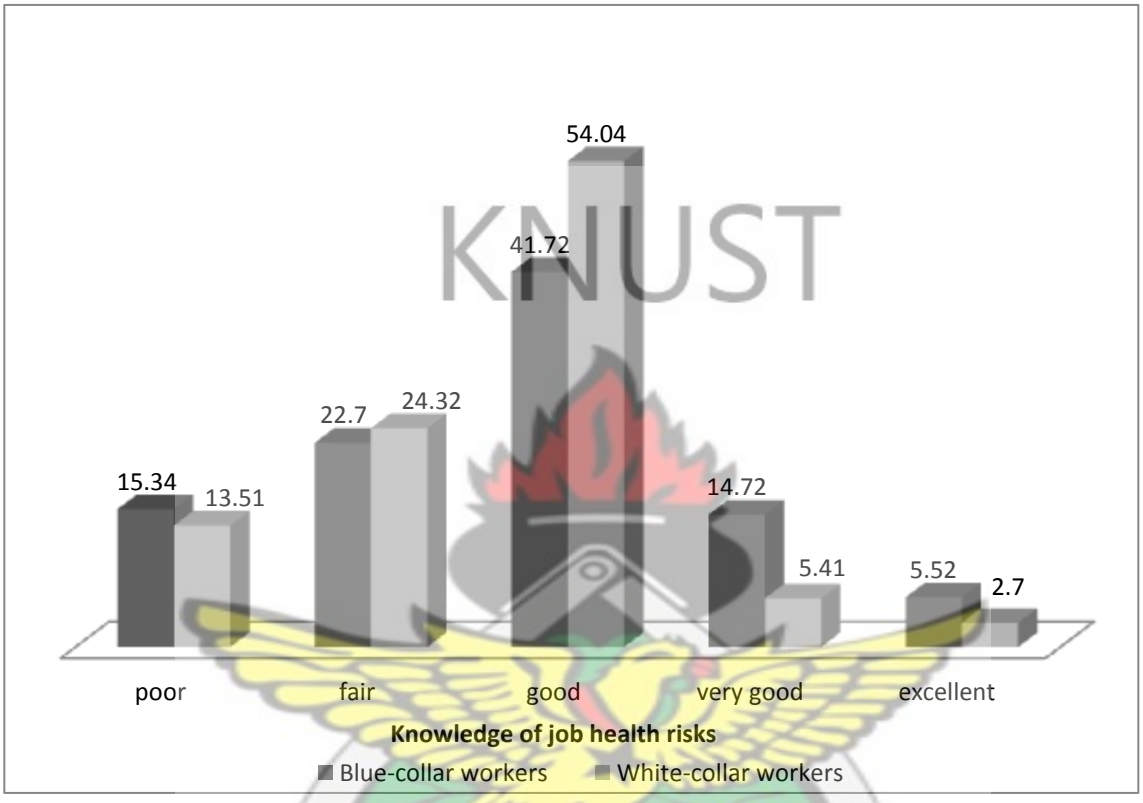
With respect to the knowledge of the job health risks, from Table 4.2 above, a highest percentage of 44% from the private-formal sector said they have a good knowledge of the job health risks

followed by 23%, 15%, and 13% who indicated they have fair, poor, and very good knowledge respectively with the lowest percentage of 5% being those who said they have excellent knowledge. For the informal sector, of almost equal percentages of 32%, 29%, and 26% respectively said they have good, fair, and poor knowledge respectively with the remaining 4% who said they have excellent knowledge of the job health risks.

The source of the knowledge of the job health risks was of much concern to the study, a highest percentage, 45%, of the respondents from the private-formal sector indicated that they got to know the health risks of their job through their employers followed by 32% and 14% of those who indicated it was through years of work and through the media respectively with the lowest percentages of 4% and 5% said it was through coworkers and through research respectively. For the informal sector respondents, 39% and 38% indicated that the media and years worked respectively were the sources of their knowledge with 11%, 11%, and 1% of them said the employer, coworkers, and research respectively were the sources of their knowledge of the job health risks.

Figure 4.1 below shows percentage distribution between white-collar and blue-collar workers in the private-formal sector with respect to the knowledge of the job health risks. Among white-collar employees, the highest percentage, 54.04%, said they have good knowledge of the job health risks followed by 24.32% who indicated fair knowledge with 13.51%, 5.41% and 2.70% respectively indicated poor, very good, and excellent knowledge of the job health risks. And among the blue-collar employees, 41.72% indicated they have good knowledge and 22.70% said they have fair knowledge with 15.34%, 14.72%, and 5.52% respectively indicated poor, very good, and excellent knowledge of the job health risks.

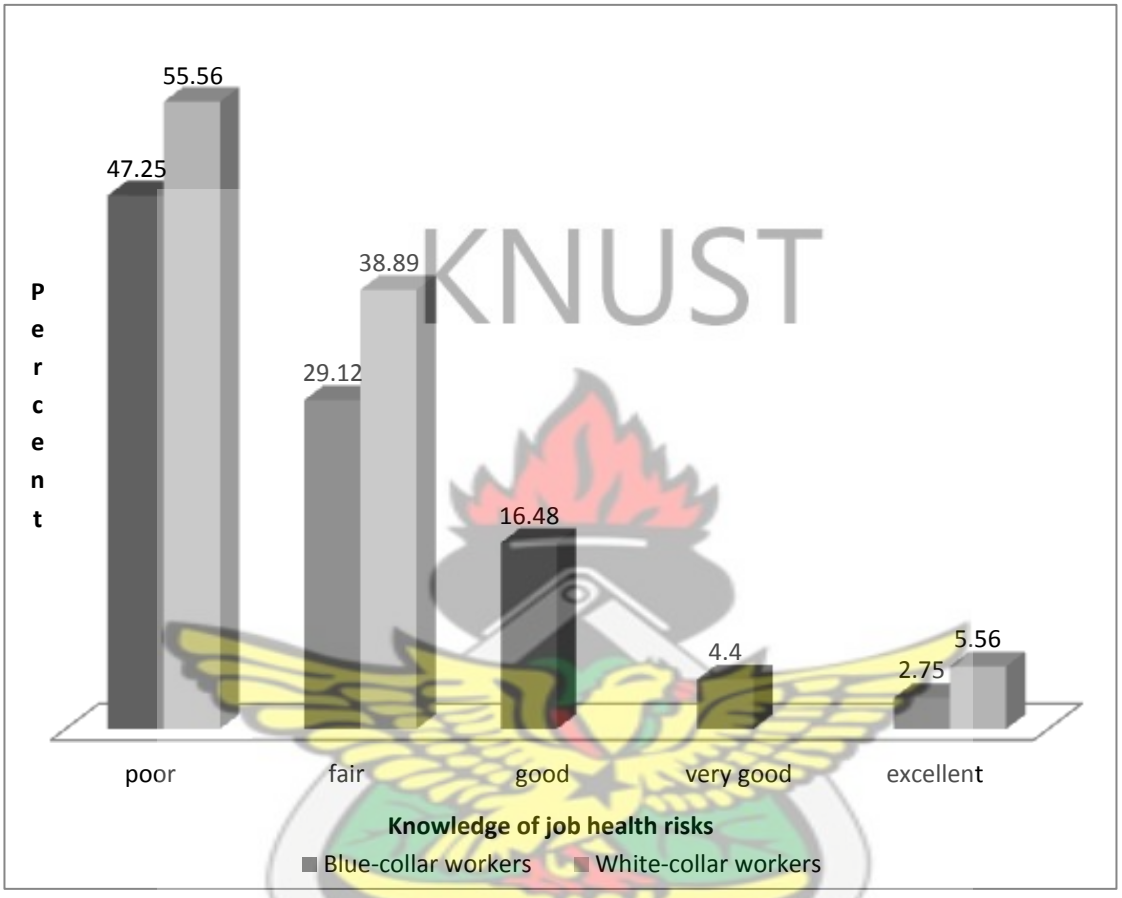
Figure 4.1 Job health risks knowledge between white and blue collar workers in the private-formal sector



Source: Field Data, April 2013

Figure 4.2 below shows that among the white-collar employees sampled from the informal sector, 55.56% said they have poor knowledge and 38.89% indicated fair knowledge, 5.56% indicated excellent knowledge with none indicating good and very good knowledge. And among the blue-collar workers, 47.25% said they have poor knowledge followed by 29.12% who indicated fair knowledge with 16.48%, 4.40%, and 2.75% respectively indicated good, very good, and excellent knowledge of the job health risks. The percentage of informal sector blue-collar workers with respect to the knowledge of the job health risks decreases as the knowledge ratings increases from poor to excellent.

Figure 4.2 Job health risks knowledge between white and blue collar workers in the informal sector



Source: Field Data, April 2013

Concerning how many times preventive care is sought, from Table 4.2 above, a higher percentage, 40%, of the respondents from the private-formal sector indicated that they often (defined as at least once every three months) seek preventive care, 35% said sometimes (thus, once in every six months), and the lowest percentage, 25%, said rarely (once every year).

A higher percentage, 43.56%, of blue-collar workers in the private-formal sector said they often seek preventive care, 33.74% of them said sometimes while 22.70% indicated they rarely seek preventive care. Whereas a higher percentage, 40.54%, of the white-collar workers said they

sometimes seek preventive care followed by 35.14% who said rarely with the lowest percentage of 24.32% indicated that they often seek preventive care. The reason for majority of the blue-collar workers to often seek preventive care was probably because their jobs were health intensive and also were exposed to pollutants as compared to the nature of work of the white-collar workers which was basically 'paper work'.

Among the blue-collar workers, from the private-formal sector, who often seek preventive care, 40.85% of them were employees of Coca Cola Co. Ltd followed by 39.44% being employees of DBS Co. Ltd with the remaining 19.72% being workers of Donyma Co. Ltd. Also, 45% of the blue-collar workers who indicated they sometimes seek preventive care were workers of Donyma Co. Ltd followed by 40% being workers of DBS Co. Ltd whereas majority (54.05%) of them who rarely seek preventive care were workers of Donyma Co. Ltd.

For the respondents in the informal sector, majority (54%) of them indicated they rarely seek preventive care followed by 24% who said they often seek care with the remaining 22% representing those who sometimes seek care. Among the blue-collar workers from the informal sector, 53.30% of them indicated they rarely seek preventive care followed by 24.73% who said often while 21.98% of them said sometimes.

Concerning who pays for the preventive care bills, the percent of the respondents from the private-formal sector who said their preventive care bills are paid by the employer (59%) was higher than that of those who said they themselves pay for the bills (38.50%). However, among the respondents from the informal sector, a much higher percent said they pay for their own preventive care bills (73.50%) compared to that of those who said the bills are paid by their employers (23%).

Also, the lowest percent of 2.50% (5 persons) from the private-formal sector said their medical bills are paid by health insurance (3 persons) or family and friends (2 persons); while at the informal sector, the lowest percent of 3.50% (7 persons) said their medical bills are paid by health insurance (4 persons) or family and friends (3 persons).

Altogether, seven (7) persons, representing 1.75%, out of the total respondents (400) said they used health insurance to access medical care. This low figure could be attributed to the period this study was conducted. The study was carried out within the period when the National Health Insurance Capitation Programme was being piloted, amidst challenges, in the Ashanti region. One of the challenges was that in many occasions, most health care providers refused to attend to patients using health insurance on the grounds that the government was not providing them (health service providers) enough funds to run the capitation programme.

Majority (64.94%) of the respondents from the private-formal sector who said they pay for their preventive care bills were workers of Donyma Co. Ltd followed by 29.87% workers of DBS Co. Ltd with 5.19% being workers of Cocacola Co. Ltd. The disparity in the percentages was probably due to medical attention the respective firms give to their employees.

Starting with Coca Cola Bottling Co. Ltd, the firm has a clinic at the workplace to attend to medical needs of both the employees and their dependents. Therefore among the private-formal employees sampled for the study who indicated that their employers pay for their preventive care bills the highest percentage of 46.61% were employees of Cocacola Co. Ltd. Both DBS Co. Ltd and Donyma Co. Ltd did not have clinic at their workplaces, at the time of the study, but the medical bills of employees who visited clinic in line of duty were paid by the employers.

What DBS Ind. Ltd has over Donyma Co. Ltd was that the former has a medical Doctor who goes to the workplace (DBS) everyday of working hours to attend to employees who would need medical attention. Therefore among the private-formal employees who indicated their employers pay for their preventive care bills, 38.14%, were workers of DBS Ind. Ltd with 15.25% being workers of Donyma Co. Ltd.

Table 4.3 Descriptive statistics of variables

Percentage distribution of	Health status					Medical bills payer	
	Excellent	Very Good	Good	Fair	Poor	Employer	Self
Decision to make when sick							
Work and no treatment	13.17	23.95	37.13	16.77	8.98	31.74	64.67
Work and treatment	13.49	39.68	31.75	9.52	5.56	61.11	35.71
No work and no treatment	21.28	23.4	40.43	10.64	4.26	25.53	72.13
No work and treatment	13.33	36.67	40.00	3.33	6.67	36.67	61.67
Education Level							
Uneducated	13.56	24.86	39.55	12.99	9.04	31.07	66.10
Basic	10.29	26.47	36.76	17.65	8.82	36.76	58.82
Secondary	16.19	39.05	29.52	9.52	5.71	51.76	44.76
Tertiary	18.00	40.00	38.00	4.00	0.00	58.52	39.22

Source: Field Data, April 2013

From Table 4.3 above, the percent of respondents whose medical bills are paid by the employer increases with increase of education level from being uneducated to having tertiary education, thus the percent of those who pay their own medical bills decreases with increase of education level. This suggests that medical bills payment coverage by employers is most likely to cover those with higher education who are most likely to be white-collar workers.

Concerning the response to the hypothetical question of what one would do if he or she is sick but feels can still perform his or her duties at work, the study found that a small percentage of poor health status respondents indicated that they would work with the illness and would not seek medical treatment (8.98%) while a higher percentage of good health status respondents preferred to work with illness without seeking medical treatment (37.13%).

For those who preferred to stay home from work and do not seek medical treatment, the percent of the respondents who pay their own medical bills (72.13%) were much higher than that of those whose medical bills are paid by the employer (25.53%). Also, for those who preferred to work and do not seek treatment, the percent of those who pay their own medical bills were much higher than that of those whose medical bills are paid by the employer (64.67% and 31.74% respectively).

However, for those who preferred to work and seek treatment as well, the percent of the respondents whose medical bills are paid by the employer (61.11%) were much higher than that of those who pay their own medical bills (35.71%). And the percent of those who pay their own medical bills and preferred to be absent from work and seek treatment (61.67%) were also much higher than that of those whose bills are paid by the employer (36.67%). That is, a higher percentage of those who pay their own medical bills (61.67%) preferred to be absent from work at the event of illness and seek medical treatment, while a higher percentage (61.11%) of those whose medical bills are paid by the employer preferred to work and seek treatment as well.

With the relationship between education and health status, none of the respondents with tertiary education indicated having poor health status with 4% reported fair health status. However, the percent of those with tertiary education reported very good health status (40%) was higher than that of all other health status ratings within the education level category.

The study found that the percent of those whose medical bills are paid by the employer and also are influenced by the knowledge of the job health risk to seek care (67.68%) were much higher than that of those who are not influenced by the knowledge of the job health risks to seek care (32.32%). Also, for those who pay for their own medical bills, the percent of the respondents who are influenced by the knowledge of the job health risks to seek care (58.48%) were much higher than that of those who are not influenced by the knowledge of the job health risks to seek care (41.52%).

This reveals that the percent of those who are influenced by the knowledge of the job health risks to seek care and whose medical bills are paid by the employer (67.68%) were higher than that of those who pay their own medical bills and are influenced by the knowledge of the job health risks to seek care (58.48%). Also, the percent of the respondents who indicated that they are not influenced by the knowledge of the job health risks to seek care and happen to pay their preventive care bills (41.52%) were higher than that of those whose medical bills are paid by the employer and are not influenced by the knowledge of the job health risks to seek care (32.32%).

This reveals that in as much as the knowledge of the job health risks influences employees to seek medical treatment, the payer of the medical bills is also a relevant factor with respect to employees' health investment decisions. This is because, for example, for those who pay their own medical bills, a percentage increase of the job health risks knowledge increases demand for preventive care but less than proportionate; and for those whose medical bills are paid by the employer, a percentage increase of the knowledge of the job health risks increases the demand for preventive care more than proportionate.

4.2 Quantitative Analysis.

Table 4.4 below shows the results of the multinomial logistic model to estimate the effects of socio-economic factors influencing the demand for preventive care: often (seek preventive care at least once every three months), sometimes (seek preventive care once every six months) or rarely (seek preventive care once a year). The base category for the model is rarely seek preventive care.

The coefficients of sometimes and often seek preventive care were interpreted with respect to the base category (rarely seek preventive care). The statistical significance of the coefficients estimated is determined by the number of stars as shown by the legend below Table 4.4. Standard errors were reported in parentheses.

The model fit is good with pseudo R^2 equals 0.135. Also, overall test of the significance of the model shows that the model is statistically significant at 5% error level since the Wald chi2 (30) test statistic has p-value = 0.00 < 0.05. Therefore the variables in the model jointly have significant impact on the probability that a sampled employee would seek preventive care. A positive sign of an estimated coefficient implies increases in that variable tend to increase the demand for preventive care for a particular category: often or sometimes.

With the exception of a firm with near-clinic, having good or excellent knowledge of the job health risks, and having a tertiary education, all the expected signs of the coefficients were met for sometimes seek preventive care. Also, with the exception of very good knowledge of the job health risks, tertiary education, and male; all the expected signs of the coefficients were met for often seek preventive care category. The expected sign of age was unknown.

Table 4.4 Results of the multinomial logistic model to estimate the effects of socio-economic factors that influence the demand for preventive care by employees.

	Sometimes			Often		
Variable	Coefficient		p-value	Coefficient		p-value
Age	-0.013	(.017)	0.458	-0.0375*	(.019)	0.049
Income	0.003*	(.001)	0.020	0.005***	(.001)	0.000
Convenience access to medical care						
A firm with near-clinic	-0.432	(.582)	0.458	0.303	(.530)	0.567
A firm with clinic	1.188**	(.442)	0.007	1.486**	(.450)	0.001
Nature of job						
Distribution	0.386	(.608)	0.526	1.362*	(.626)	0.030
Production	0.434	(.715)	0.544	1.784*	(.700)	0.013
Job health risks knowledge						
Fair	0.393	(.342)	0.250	0.096	(.382)	0.801
Good	-0.018	(.354)	0.959	0.867*	(.364)	0.017
Very good	0.254	(.550)	0.645	-0.288	(.521)	0.580
Excellent	-0.362	(.829)	0.662	0.382	(.718)	0.595
Education level						
Basic	0.739*	(.368)	0.045	1.119**	(.373)	0.003
Secondary	0.266	(.370)	0.473	0.884*	(.373)	0.016
Tertiary	-0.048	(.788)	0.951	-0.500	(.878)	0.571
Gender						
Male	0.474	(.355)	0.182	-0.161	(.342)	0.637
Preventive care bills payer						
Employer	0.506	(.336)	0.133	0.866**	(.330)	0.009

*Pseudo R^2 = 0.1345, p-value = 0.00 * p<0.05; ** p<0.01; *** p<0.001*

Source: Field Data, April 2013

At 5% error level, from table 4.4 above, the model identified some significant and insignificant variables associated with demand for preventive care:

Age was found to be statistically significant for often seek preventive care category, but the sign is negative which implies the sampled employees were less likely to often seek preventive care

as they age. This suggests that employees reduce their demand for preventive care for investment purposes as they reach the retirement age. However, age was not statistically significant to influence employees to sometimes seek preventive care.

Income was found to be statistically significant implying income influences the sampled respondents to sometimes or often seek preventive care. The positive sign of the coefficient of income implies that with a unit (GHs 100.00) rise in monthly income, a sampled employee would be most likely to seek preventive care at least once every three months (often) or once in six months (sometimes) than to seek preventive care once a year (rarely), all other factors held constant. This is probably due to the fact that the sampled employees from both the private-formal and informal sectors spend some amount out of their income on preventive care. The preventive care bills of all the employees in the private-formal sector were paid by their employers, but there were some bills they paid on their own, such as treatments they sought when at home or on weekends.

A firm with clinic was found to be statistically significant influencing the workers to seek preventive care either once every three months (often) or once every six months (sometimes). This positive relationship implies that, holding all other factors constant, individuals working in firms with a clinic were most likely to seek preventive care once every three months or once every six months compared to the demand for preventive care by workers in firms with no clinic, holding other factors constant. However, a firm with near-clinic was not statistically significant to often or sometimes seek preventive care. This suggests that a firm having a near-clinic is not enough to providing convenient access to medical care to its workers. Thus having a near-clinic is necessary but not sufficient.

Also, the study found working at the distribution and production departments to be statistically significant to often seek preventive care, but insignificant to sometimes seek preventive care. This positive relationship implies that, holding all other factors constant, workers who work at the distribution or production departments were most likely to seek preventive care once every three months (often) than those who work at the administration department. But working at the distribution or production departments was not statistically significant to seek preventive care every six months (sometimes).

Having a good knowledge of the job health risks was statistically significant to influence the sampled workers to seek preventive care once every three months (often) than having poor knowledge of the health risks of the job. The positive sign implies those with good knowledge of the job health risks were most likely to often seek preventive care than those with poor knowledge of the job health risks, all other factors being held constant. But the study did not find fair, very good, or excellent knowledge of the job health risks statistically significant for often seek preventive care. Also, the study did not find fair, good, very good, or excellent knowledge of the job health risks statistically significant for the demand for sometimes preventive care.

Furthermore, the study found those with basic and secondary education to be statistically significant to often seek preventive care, but only having basic education is significant to sometimes seek preventive care. The positive signs of the coefficients of the variables mean those with basic or secondary education were most likely to seek preventive care once every three months than the uneducated; and those with basic education were most likely to seek preventive care once every six months than the uneducated. This is because the educated are most likely to know about the importance of preventive care, hence most likely to seek care.

However, having tertiary education was not statistically significant to seek preventive care once every three months or once every six months. The reason is probably that most of those with tertiary education were administrators (white-collar workers) whose demand for preventive care was comparatively low because of the low risk nature of their work.

The study found gender statistically insignificant to influence the demand for preventive care. That is, being male or female has no influence on seeking preventive care.

Finally, the study found employer paying preventive care bills of employees, which is also a proxy for a third party payer, to be statistically significant to often seek preventive care. The positive sign of the coefficient implies if the employer pays for the preventive care bills of the employees, the most likely would the employees seek preventive care at least once every three months (often) compared to payment of the bills by the employees themselves, all other factors being equal.

CHAPTER FIVE

SUMMARY OF MAJOR FINDINGS AND POLICY RECOMMENDATION

5.0 Introduction

This chapter presents the major findings and conclusions as well as policy recommendations based on the results from the data analysed.

5.1 Summary of major findings

The study revealed that the knowledge of the job health risks influences employees to invest in their health: Majority (62.25%) of the sampled respondents indicated that the knowledge of the job health risks influences them to seek medical treatment, while a lower percentage (37.75%) said the knowledge of the job health risks does not influence them to seek medical treatment.

The study found that a higher percentage (40%) of the respondents from the private-formal sector indicated that they often seek preventive care, while majority (54%) of the respondents from the informal sector indicated they rarely seek preventive care. A higher percentages of workers in the private-formal sector who reported that they often seek preventive care were workers of a company with a clinic, Coca Cola Co. Ltd (40%); and near-clinic, DBS Co. Ltd, (40%); while the majority (52%) of private-formal workers who indicated they rarely seek preventive care were workers of a firm without a clinic, Donyma Co. Ltd.

Of another interest to the study was the source of the knowledge of the job health risks. A higher percentage (45%) of workers in the private-formal sector indicated they got to know about the health risks of their jobs through their employers, while a higher percentage, 39%, of the

informal workers said it was through the media. Also, 32% and 38% of the private-formal and informal workers respectively indicated that they got to know about the health risks of their jobs through long period (years) of work.

The percent of respondents who pay for their preventive medical bills and are influenced by the knowledge of the job health risks to seek medical care (58.48%) was found by the study to be higher than the percent of those who pay for their medical bills and are not influenced by the knowledge of the job health risks to seek care (41.52%). Also, for those whose preventive care bills are paid by the employer, the percent who indicated the knowledge of the job health risks influences them to seek medical treatment (67.68%) was higher than that of those who indicated the knowledge of the job health risks does not influence them to seek medical treatment (32.32%).

This reveals that the percent of those whose medical bills are paid by the employer and are influenced by the knowledge of the job health risks to seek care (67.68%) were higher than that of those who pay their own medical bills and are influenced by the job health risks knowledge to seek care (58.48%). This therefore suggests that workers increase their demand for medical care if they have "free" access to medical care. In other words, employees increase their demand for preventive care if their medical bills were not paid by themselves, but by an institution such as the firm or a health insurance scheme.

It was again revealed by the study that the percent of respondents whose medical bills were paid by the employer increases with increase of education level from uneducated (31.07%) to having tertiary education (58.82%). This suggests that medical bills payment coverage was most likely to cover those with higher education who were rather likely to be low risks because they were most likely to be white-collar workers. This is because employees with higher education happen

to be administrators with better terms and conditions of service which includes better health policies.

Furthermore, the study found that, at the event of illness, the percent of those who pay their own medical bills and preferred to be absent from work to stay home to recuperate, without seeking medical care (72.13%) was much higher than that of those whose medical bills were paid by the employer and preferred to stay home to recuperate (25.53%). This is probably because staying home to recuperate has zero cost of medical treatment. Conversely, the percent of those whose medical bills were paid by the employer (61.11%) and preferred to go to work when sick and seek medical treatment as well was much higher than that of those who pay their own medical bills (35.71%). This is probably because going to work and seek treatment as well is meant to make the illness a "workplace illness" so that the employer would pay the medical bills.

A low percentage, 1.75% (7 persons), out of the total respondents (400) said they used health insurance to access medical care. This low percentage could be due to the period this study was carried out. The study was conducted within the period when the National Health Insurance Capitation Programme was being piloted, amidst challenges, in the Ashanti region. One of the challenges was that in many occasions, most health care providers refused to attend to individuals using health insurance in that that the government was not providing them (health service providers) much funds to run the capitation programme.

Also, at 5% error level, the study found the following variables to be significant with respect to the demand for preventive care:

Income was found to be significant and has a positive sign. This means, holding all other factors constant, a rise in income will influence employees to seek preventive care at least once every

three months (often) or once in six months (sometimes) than seek preventive care once a year (the base category), all other things being equal.

It was again found by the study that a firm with a clinic was statistically significant and has a positive sign. This implies workers of a firm with clinic were most likely to seek preventive care often or sometimes, all other things being equal. This is because it is convenient for workers of a firm with clinic to seek medical care at the workplace.

The study, in addition, revealed that those who work at the distribution and production departments often seek preventive care more often than those who work at the administration department. That is, the distributors and producers were most likely to seek preventive care at least once every three months than the administrators, all other factors held constant. This is because the producers and distributors face higher health risks than the administrators.

The study again found the employer paying for the preventive care bills of the workers statistically significant and has a positive sign. Thus, the sampled workers were most likely to often seek preventive care when the employer, or a third party, pays for the preventive care bills, all other things being equal.

Both Basic and Secondary education were also found to be statistically significant and have positive relationships with the demand for preventive care at least once every three months. Thus, employees with either basic or secondary education often seek preventive care than those with no education. This is because according to economic theories and research, individuals with education know the importance of medical care, hence most likely to demand it. Also, they are found to be more efficient in health production than those with no education.

Finally, the study found some variables statistically insignificant at 5% error level. These variables include tertiary education, a firm with near-clinic, and excellent knowledge of the job health risks. This means these variables have little or no effect on the demand for preventive care.

5.2 Conclusion

The study concludes that the prior expectations of the study were met. Also, payment of preventive medical bills by the employer influences employees' decision to invest in their health. Socio-economic factors such as income, free, and convenient access to medical care as well influence the decision of employees in Ghana to invest in their health.

5.3 Policy recommendations

The study recommends that employees should seek information about the job health risks of their occupations since a good knowledge of the job health risks impacts positively on health investment. Also, there should be increased education about the health risks of occupations, especially the risky ones. Employers and the media, particularly, the electronic media, should be the main channel for the education.

The study again recommends that medical bills payment coverage policies by firms should as well cover the blue-collar workers who are most likely to be exposed to high health risks by virtue of the nature of their work and also are most likely to be low income earners.

Individuals in their search for jobs, with regard to health investment, should consider working in firms with health policies or facilities that provide the employees convenient access to medical care.

Also, employees should enroll on insurance schemes such as the National Health Insurance Scheme to provide them 'free' access to preventive medical services.

The study again recommends that firms should work towards establishing clinic at their workplaces to provide convenient access to medical treatment to workers and also to provide treatment at the initial stage of illness.

Since the study revealed that income has a positive significant impact on the demand for preventive care, stakeholders should ensure that pro poor health programmes such as the National Health Insurance Scheme (NHIS) be smoothly run for intermittent discontinuation of such programmes discourages individuals enrolled on those programmes from accessing preventive medical care as and when they are supposed to.

5.4 Limitations of the study

The small sample size used for the study rendered the results of the study less representative of the population thereby limiting its generalisation to the entire population. The small sample size used for the study was as a result of financial and time constraints.

The statistical insignificance of some of the explanatory variables could be due to the small sample size. This is because the multinomial logistic model employed in the study uses Maximum Likelihood Estimation which requires a larger sample size for the significance and efficiency of the estimated parameters.

REFERENCES

A TUC Education workbook for union reps., (2007) "Occupational health dealing with the issues"

Alfers, L., (2009) "Occupational Health & Safety for informal workers" School of Development Studies, University of KwaZulu-Natal, Durban

Amponsah-Tawiah, K. and Dartey-Baah, K. (c. 2010) "Occupational health and safety: Key issues and concerns in Ghana"

Annan, J. (2010) "Occupational and industrial safety and health in Ghana "

Baum, C. F. (2006) "An introduction to modern econometrics using stata"

Becker, G. (1993) "Human Capital" University of Chicago Press.

Black, D. (1991) "Paying for health" Journal of Medical Ethics, Vol. 17, No. 3, pp. 117-123

Bryman, A. (2008) "Social research methods" Third Edition. Oxford University Press.

Cameron, P. C. and Trivedi, P. K. (2009) "Microeconometrics using stata"

Cancelliere, C., Cassidy, J. D., Ammendolia, C., and Côté, P. (2011) "Effective at improving presenteeism in workers: a systematic review and best evidence synthesis of the literature"

Chakraborty, S., and Das, M. (2005) "Mortality, Human Capital and Persistent Inequality" Journal of Economic Growth, Vol. 10, No. 2, pp. 159-192

Chen, M. A. (2002) "Work and the Working Poor: The Missing Link in the Globalisation Debate" WIEGO, Harvard Kennedy School: Boston.

Chen, S., Shogren, J. F., Orazem, P. F., and Crocker T. D. (2002) "Prices and Health: Identifying the effects of nutrition, exercise, and medication choices on blood pressure" American Journal of Agricultural Economics, Vol. 84, No. 4 (Nov., 2002), pp. 990-1002

Cropper, M. L. (1977) "Health, Investment in Health, and Occupational Choice", Journal of Political Economy, Vol. 85, No. 6,pp. 1273-1294

Evans, R. G., Barrer, M. L., and Marmor, T. R (1994) "Why are some people healthy and others not? The determinants of health of populations" New York: Aldine de Gruyter

Ferlander, S. (2007) "The Importance of Different Forms of Social Capital for Health" ActaSociologica, Vol. 50, No. 2

Garcia, A. M., Boix, P., and Canosa, C.(2004) "Why do workers behave unsafely at work? Determinants of safe work practices in industrial workers" Occupational and Environmental Medicine, Vol. 61, No. 3, pp. 239-246

Ghana Statistical Service (2012) "2010 Population and Housing Census: Summary report of final results"

Gilleskie, D. B. (1998) "A dynamic stochastic model of medical care use and work absence" Econometrica, Vol. 66, No. 1, pp. 1-45

Gimeno, D., Benavides, F. G., Amick, B. C., and Benach, J., (2003) "Psychosocial factors and work related sickness absence among permanent and non-permanent employees" Epidemiol community health.

Godnic-Cvar J., Zuskin E., Mustajbegovic J., Schachter E. N., Kanceljak B., Macan J., Ilic Z., Ebling Z. (1999) "Respiratory and immunological findings in brewery workers"

Goldstein, D. H. and Orris, L. (1964) "Diseases of white Collar workers" Public Health Reports (1896-1970), Vol. 79, No. 11

Grossman, M. (1972a) "On the Concept of Health Capital and the Demand for Health'', Journal of Political Economy, 80(2): pp. 223–255

http//www.districtsinghana.com/kumasi.htpl

http://www.ghana.gov.gh

http://www.ghanaweb.com/GhanaHomePage/health/artikel.php?ID=217126

http://www.ghanaweb.com/GhanaHomePage/NewsArchive/artikel.php?ID=197916

http://www.rightdiagnosis.comooccupational_asthma_brewery_workersintro.htm

Iregren, A., Sjögren, B., Gustafsson, K., Hagman, M., Nylén, L., Frech, W., Andersson, M., Ljunggren, K. G., and Wennbert, A. (2001) "Effects on the nervous system in different groups of workers exposed to aluminium" Occupational and Environmental Medicine, Vol. 58, No. 7

Katsoulakos, T. and Katsoulacos, Y. (2007) "Integrating corporate responsibility principles and stakeholder approaches into mainstream strategy: A stakeholder-oriented and integrative strategic management framework"7(4) pp. 355–69.

Kindig, D. A. (2007) "Understanding population health terminology" The Milbank Quarterly, Vol. 85, No. 1, pp. 139-161

Kumekpor, T. K. B. (2002) "Research Methods and Techniques of Social Research"

Laporte, A. and Ferguson, B. S. (2007) "Investment in health when health is stochastic" Journal of Population Economics, Vol. 20, No. 2

Lund, F. and Nicholson, J. (2003) "Chains of production, ladders of protection: Social protection for workers in the informal economy" Durban: School of Development Studies, University of Natal.

Machnes, Y. (2006) "The demand for private health care under national health insurance: The case of the self-employed" The European Journal of Health Economics, Vol. 7, No. 4, pp. 265-269

Macinko, J. and Starfield, B. (2001) "The utility of social capital in research on health determinants" The Milbank Quarterly, Vol. 79, No. 3.

Neira, M. (2010) "Healthy workplaces: a model for action for employers, workers, policy-makers and practitioners" World Health Organization

O'Brien E. (2003) "Employers' benefits from workers' Health insurance The Milbank Quarterly, Vol. 81, No. 1

Puplampu, B. B. and Quartey, S. H. (2012) "Key issues on occupational health and safety practices in Ghana: A review." International Journal of Business and Social Science Vol. 3 No.19

Roberts, C. G. and Reid, D. D. (1954) "Premature Disablement and Death among Post Office Workers" British Journal of Preventive and Social Medicine, Vol. 8, No. 4

Roberts, J. T., (1993). "Psychosocial Effects of Workplace Hazardous Exposures: Theoretical Synthesis and Preliminary Findings" Social Problems, Vol. 40, No. 1

Ryff, C. D. and Singer, B. (1998) "The contours of positive human health" Psychological Inquiry, Vol. 9, No. 1, pp. 1-28

Sixtieth World Health Assembly (2007) “Workers’ health: global plan of action.”

Starfield, B., Shi, L., and Macinko, J. (2005) “Contribution of primary care to health care to health systems and health” The Milbank Quarterly, Vol. 83, No. 3, pp. 457-502

Vistnes, J. P. (1997) “Gender Differences in Days Lost from Work Due to Illness” Industrial and Labor Relations Review, Vol. 50, No. 2

Wagstaff, A. (1986) "The demand for health: Some New Empirical Evidence." Journal of Health Economics 5(3):195-233

Walsh, D. C., Jennings, S. E., Mangione, T., and Merrigan, D. M. (1991) “Health promotion versus health protection? Employees’ perceptions and concerns” Journal of Public Health Policy, Vol. 12, No. 2, pp. 148-164

Xiaoqing, X. (2005) “Investment in physical capital, investment in health and economic growth in China”

APPENDIX 1: Questionnaire

QUESTIONNAIRE

Kwame Nkrumah University of Science and Technology (KNUST), Kumasi

Department of Economics

Topic: EFFECTS OF SOCIO-ECONOMIC FACTORS INFLUENCING EMPLOYEES' INVESTMENT DECISION IN HEALTH

This study is being conducted in partial fulfilment of the requirements for the award of a Master of Philosophy Degree in Economics. All information received would be used solely for academic purposes and treated with strict confidentiality. Thank you!

1. Name of your company/employer.....
2. Employment Sector: Formal [ ] Informal [ ]
3. Employment category: Administration [ ] Production [ ] Distribution [ ]
4. How many years have you worked with the company? .....
5. Indicate how many times you seek preventive care:

   Often (at least once in every three months) [ ]

   Sometimes (once in every six months) [ ]

   Rarely (once every year) [ ]

6. Who pays for your medical bills when seeking preventive care?

   ……

7. If you pay for some or all your preventive care bills, how much, on the average, do you spend on preventive care in a year? GHs……

Please Turn Over

8. How will you rate your health status?

   Excellent [ ] Very good [ ] Good [ ] Poor [ ] Very poor [ ]

9. How will you rate your knowledge of the health risks of your job?

   Excellent [ ] Very good [ ] Good [ ] Poor [ ] Very poor [ ]

10. Does the knowledge of the job health risks influence you to seek health treatment?

    Yes [ ] No [ ]

11. Indicate how you learned about your job health risks:

    through the employer [ ] through friends/co-workers [ ] through the media [ ]

    through years of work [ ] through research [ ] Specify, if other ……..

12. If you are sick but feel you can still perform your duties at work, which of the following is your optimising/best decision?

    Work and do not seek medical treatment [ ]

    Work and seek medical treatment [ ]

    Do not work and do not seek medical treatment [ ]

    Do not work and seek medical treatment [ ]

13. Indicate your level of education:

    Uneducated [ ] Basic [ ] Secondary [ ] Tertiary [ ]

14. Gender: Male [ ] Female [ ]

15. Age [ ]

16. Monthly income [ ]

APPENDIX 2: Multinomial logistic regression results

```
Mlogit Preventive_Care Age Income DBS Cocacola Distribution Production Fair_HRknow
Good_HRknow VGood_HRknow Excllnt_HRknow Basic Secondary Tertiary Male Employer_pays,
vce(robust)


Iteration 0:   log pseudo likelihood = -435.70931

Iteration 1:   log pseudo likelihood = -378.22906

Iteration 2:   log pseudo likelihood = -377.09402

Iteration 3:   log pseudo likelihood = -377.08895

Iteration 4:   log pseudo likelihood = -377.08895


Multinomial logistic regression                 Number of obs   =        400
                                                Wald chi2(30)   =     105.06
                                                Prob> chi2      =     0.0000
Log pseudolikelihood = -377.08895               Pseudo R2       =     0.1345

------------------------------------------------------------------------------
             |               Robust
Preventive~e |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
Rarely       |  (base outcome)
-------------+----------------------------------------------------------------
Sometimes    |
         Age |  -.0129266   .0174143    -0.74   0.458    -.0470579    .0212048
      Income |     .00287   .0012378     2.32   0.020      .000444     .005296
         DBS |  -.4318735   .5822608    -0.74   0.458    -1.573084    .7093368
    Cocacola |   1.188449   .4425222     2.69   0.007     .3211211    2.055776
Distribution |    .386102   .6082062     0.63   0.526    -.8059601    1.578164
  Production |   .4337157   .7149304     0.61   0.544    -.9675223    1.834954
 Fair_HRknow |   .3931501   .3420129     1.15   0.250    -.2771828    1.063483
 Good_HRknow |      .0183   .3543019     0.05   0.959    -.6761188    .7127189
```

VGood_HRknow	.2537505	.5499872	0.46	0.645	-.8242046	1.331706
Excllnt_HR~w	-.3619219	.8288921	-0.44	0.662	-1.986521	1.262677
Basic	.7394236	.3685334	2.01	0.045	.0171114	1.461736
Secondary	.2656145	.3702637	0.72	0.473	-.4600891	.9913181
Tertiary	-.0480583	.7876057	-0.06	0.951	-1.591737	1.49562
Male	.4741933	.355442	1.33	0.182	-.2224603	1.170847
Employer_p~s	.5055613	.3363903	1.50	0.133	-.1537516	1.164874
_cons	-2.721686	.9692498	-2.81	0.005	-4.621381	-.8219913
Often						
Age	-.0373346	.0189708	-1.97	0.049	-.0745167	-.0001525
Income	.0050252	.0013784	3.65	0.000	.0023237	.0077267
DBS	.3034981	.5300404	0.57	0.567	-.735362	1.342358
Cocacola	1.457562	.4500354	3.24	0.001	.5755091	2.339615
Distribution	1.362248	.6259141	2.18	0.030	.1354785	2.589017
Production	1.784897	.7197066	2.48	0.013	.3742985	3.195496
Fair_HRknow	.0963983	.3821599	0.25	0.801	-.6526213	.8454178
Good_HRknow	.8670064	.3643084	2.38	0.017	.152975	1.581038
VGood_HRknow	-.288108	.5211149	-0.55	0.580	-1.309475	.7332585
Excllnt_HR~w	.3816963	.7182211	0.53	0.595	-1.025991	1.789384
Basic	1.118743	.37327	3.00	0.003	.3871477	1.850339
Secondary	.8964563	.3729578	2.40	0.016	.1654726	1.62744
Tertiary	-.5003276	.8840821	-0.57	0.571	-2.233097	1.232442
Male	-.1612812	.3422639	-0.47	0.637	-.8321062	.5095438
Employer_p~s	.8661809	.329191	2.63	0.009	.2209784	1.511383
_cons	-4.09444	.959753	-4.27	0.000	-5.975521	-2.213358

legend: * p<0.05; ** p<0.01; *** p<0.001