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COLLEGE OF ARCHITECTURE AND PLANNING

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TOPIC:

HEALTH HAZARDS OF CASUAL WORKERS IN THE BUILDING CONSTRUCTION INDUSTRY IN GHANA: A CASE STUDY OF THE ACCRA METROPOLIS

BY

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DECLARATION

I hereby declare that this submission is my own work towards the MSc construction Management and that, to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University except where due acknowledgment has been made in the text.

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DEDICATION

An appreciation to my humble and caring husband Rev. Samuel Majdoub, for his love and kind support. A dedication to my sons, Joseph, Nhyira, Ezra and Bezalel Majdoub with the hope to inspire them to achieve excellence.

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To my dearest husband.

ABSTRACT

The purpose of the study was to assess the health hazards of casual workers in the Building construction industry in the Accra Metropolis of Ghana. The study sought to provide the casual workers level of awareness on health hazards at construction sites, further identifying the causes of health hazards at construction sites and suggest strategies to put in places curb health hazards at construction sites. The research design adopted in the study was descriptive survey research. The sample size of 120 respondents was selected for the study by using purposive and convenience sampling techniques. Also, a questionnaire was used to collect data on respondents' views on health hazards on construction sites and their views were analyzed in mean scores, standard deviation, frequency tables and percentages. The findings of the study showed majority of the respondents asserted they had never received training regarding health hazards on construction sites. Again, the results revealed that majority of the respondents agreed management's poor safety measures were the major causes of health hazards at the construction site. The study revealed majority of the respondents of the view working at heights as one of the most prominent types of health hazards identified amongst Building construction sites. It is recommended that government would adequately resource regulatory institutions to ensure frequent monitoring and inspection at construction sites.

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

The construction industry is closely linked to the economy of every country and contributes to the growth of that economy. Construction industry as a proportion of Gross Domestic Product (GDP) varies widely in industrialized countries. It is about 4% of GDP in the United States, 6.5% in Germany and 17% in Japan among others. Anaman and Osei-Amponsah (2007) posited of that, the construction industry plays an important role in providing shelter, infrastructure and employment. According to Anaman and Osei-Amponsah, the construction industry in Ghana was the third largest growing economic sector outstripping the manufacturing industry in 2004 with a constant GDP growth of about 5.8 % from 2004 to 2005. This shows that the industry has a huge potential of leading the way for the economic development of developing countries such as Ghana if well exploited. Thus in specific terms, the Ghanaian construction industry could be the instrument for achieving the infrastructural guidelines of the Millennium Development Goals (MDGs). Despite its importance, construction sites have been regarded as very risky areas where construction workers are subject to fatalities and ill- health problems. Sarah (2011) emphasizes that many building construction activities are inherently risky to health and safety such as working at height, working underground, working in confined spaces and close proximity to falling materials, handling loads manually, handling hazardous substances, noises, dusts, using plant and equipment, fire and exposure to live cables. Smallwood and Ehrlich (2001) asserted that construction workers are exposed to a variety of health hazards, namely: noise, resulting in noise induced hearing loss; skin diseases from close contact with irritant or sensitizing materials; respiratory irritation

from dusts, fumes and gases; as well as developing more serious lung diseases related to exposure to asbestos and other fibro-genic materials. Based on the above discussion, this study intends to investigate into health hazards of casual workers in building construction industry in Accra Metropolis of Ghana.

According to the Australian Bureau of Statistics (ABS, 2006), a casual employee is someone who is not entitled to either paid holiday leave or sick leave while any other employee is permanent. Casual employment is an Australian employment classification under Australian workplace law where an employee is paid at a higher hourly rate (at least 20%) in lieu of handing their employment guaranteed and lacking other usual employment conditions such as sick leave. Casual employees are often contacted regularly by their employers to arrange working times from week to week. Hence, there is no expectation in a casual work contract between employee and employer of ongoing work. However, the ILO (2001) has indicated that, casualisation in the construction industry has led to debilitating effect of health hazards on casual workers in especially in the developing countries. Mitullah and Wachira (2002) acknowledge that many construction operatives are employed on temporary and casual basis and therefore the employment conditions are not properly defined thus offering little protection on workers' health and safety. A study by Buchanan (2004) revealed that casual workers were unwilling to leave dangerous work situations because they recognised the turnover of workers and hence, worried that they would be replaced if they complained about health hazards on construction site. Other researchers are of the view that the lower level of education and the quest of casual workers to meet their basic needs such as food and shelter, among others, have contributed to their inability to refuse to work in unsafe conditions. However, available literature on this research study suggests that there is paucity data on health

hazards of construction workers in Accra Metropolis of Ghana. Hence, this present attempts to investigate the factors leading to health hazards of casual workers in the Building construction industry in the Metropolis and strategies that could be employed to improve casual workers' health hazards in the construction industry.

1.2 STATEMENT OF THE PROBLEM

The construction industry has earned the reputation of being highly hazardous industry because of the disproportionately high incidence of accidents and fatalities that occur on construction sites around the world (Rowlinson, 2000; Smallwood & Haupt, 2000). Likewise, ILO (2005) avers that data on health hazards of casual workers in building construction industry indicates that each year at least 60,000 fatal accidents occur on construction sites around the world or one fatal accident in every ten minutes. Mitullah and Wachira (2002) confirmed that many construction operatives are employed on temporary and casual basis and therefore the employment conditions are not properly defined thus offering little protection on workers' health and safety.

A study conducted by Buchanan (2001) revealed casual workers were unwilling to leave dangerous work situations because they recognised the turnover of workers and hence, worried that they would be replaced if they complained about health hazards on construction site. Further, a casual visit by the researcher to several building construction sites in Accra Metropolis revealed that most construction firms engage casual workers to do more hazardous activities at the sites with no consideration for proper health and safety measures. Hence, this study has the purpose of finding out health hazards associated with building construction works and to identify the sources of health hazards of casual workers in construction industry in the Metropolis as well

as determining the strategies to employ to control health hazards of casual workers in the construction sites.

1.3 AIM AND OBJECTIVES OF THE STUDY

The aim of this study was to assess the health hazards of casual workers in construction industry in Accra Metropolis of Ghana.

The following objectives were proposed to guide the study:

- To assess the level of awareness of health hazards of casual workers in the building construction industry of Accra Metropolis
- To identify the sources of health hazards of casual workers in building construction sites of Accra Metropolis
- To determine the strategies to employ to control health hazards of casual workers in building construction sites of Accra Metropolis

1.4 RESEARCH QUESTIONS

From the proposed objectives of the study, the study answered the following research questions:

1. What is the level of awareness of health hazards of casual workers in Building construction industry in Accra Metropolis?
2. What are the sources of health hazards of casual workers in Building construction sites of Accra Metropolis?
3. What strategies can be employed to control health hazards of casual workers in Building construction sites of Accra Metropolis?

1.5 SIGNIFICANCE OF THE STUDY

The findings of the study would add to the existing body of knowledge on health hazards of casual workers in construction industry in the country. It is intended that the findings of this research project would be useful to the management, contractors and policy makers in Ghana in strengthening the health and safety measures and regulation in construction industry in the country. The study would also inform casual workers in the construction about the rights to demand for safety measures at the construction sites.

1.6 SCOPE OF THE STUDY

The study covered health hazards of casual workers in the building construction industry in Accra Metropolis of Ghana. Further, this study was delimited to casual workers who work with the Ghanaian building construction firms registered and categorised by the Ministry of Water Resources, Works and Housing (MWRW&H) as D3K3 and D4K4.

1.7 LIMITATIONS OF THE STUDY

The study adopted descriptive survey research methods which employed the use of questionnaire to collect data from the respondents. One of the limitations associated with the use of questionnaire is that the respondents may not provide all the needed information because they may think that the study would expose the flaws that are associated with health hazards in construction industry in Ghana. This weakness might have affected the results of the study.

Another significant limitation to this study was the use of only Accra Metropolis for the study. It is often difficult to draw definitive conclusions from the findings because of the small scale of the method. Thus, the findings of the study may have a low

external validity and hence, inference making about the entire population outside the Metropolis should be done with caution.

1.8 DEFINITION OF KEY TERMS

a. Casual Worker

According to the Australian Bureau of Statistics (ABS, 2006), a casual employee is someone who is not entitled to either paid holiday leave or sick leave while any other employee is permanent.

b. Hazards

A hazard is the potential for harm. In practical terms, a hazard is often associated with a condition or activity that, if left uncontrolled, can result in an injury or illness. HSE (2004) define hazard as any source of potential damage, harm or adverse health effects on something or someone under certain conditions at work. Basically, a hazard can cause harm or adverse effects (to individuals as health effects or to organizations as loss of property or equipment). In this study hazard mean anything which has the potential to cause harm to people on construction sites.

c. Health

Health is the general condition of a person in mind, body and spirit, usually meaning to be free from illness, injury or pain. The World Health Organization (WHO) defined health in its broader sense in 1946 as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" (WHO, 2006). In this study health means being free from illness, injury or pain which can be caused by construction activities.

d. Accident and Injury

The terms accident and injury refer to separate phenomena, mutually interrelated as cause and effect (Anderson, 1999). The use of the term 'accident' in this thesis is based on an event which cause physical harm or damage to the body resulting from an exchange, usually acute, of mechanical, chemical, thermal, or other environmental energy that exceeds the body's tolerance. An event which has the potential to damage property is not considered in this thesis.

1.9 ORGANISATION OF THE STUDY

This study is organised into five chapters. Chapter one covers the background to the study, objectives, research questions, significance of study and research scope, definitions of terms as well as organisation of study. Chapter two describes the review of literature relevant to the research theme, providing insight into previous studies relating to the research area. Chapter three describes the methodology including research design, sample and sampling procedure, method of data collection and method of data analysis. Chapter four presents analysis of data and discussing of results while chapter fives describes the summary, conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter aims at providing a focus for the study as well as the basis for the assessment of the findings. The literature review covers conceptual and the empirical perspectives on health hazards in building construction industry.

Further, the review will cover works done in the area of:

- Casual Workers in Construction Industry
- Definition of Hazard
- Global Situation of Health hazards on Construction Sites
- Sources of Health Hazards in Building Construction Sites
- Types of Hazards on Building Construction Sites
- Causes of Health Hazards on Building Construction Sites
- Challenges Facing Health and Safety on Building Construction Sites
- Strategies to prevent hazards on Building Construction

2.2 CASUAL WORKERS IN CONSTRUCTION INDUSTRY

The Ghana Labour Act 651, 2003, defines a casual worker as a worker who is engaged to work temporarily for a period not exceeding six (6) months, and whose remuneration is calculated on daily basis. Also, Buchanan (2004) defined casual worker as an individual who is hired on temporal basis, often for one day at a time. Thus individual workers, either working alone or in groups, who undertake temporal work without any contract, are known as casual workers, labourers, temporary workers or day labourers. Further, studies show that casual type of employment in the Ghanaian construction industry has increased over the years with its accompanying

occupational health and safety issues. Interestingly, literature available indicates that the presence of casual workers in the construction industry is fraught with many shortcomings. For instance, within 2.3% of the active workforce in the construction sector is a considerable proportion of workers who cannot read and write and contributing significantly to the country's Gross Domestic Product (GDP). This assertion is buttressed by the fact Edmonds and mills, (2007) pointed out that the Ghanaian construction industry is dominated with many workers who are not able to read and write, and in its report, the Ghana Living Standard Suvery -GLSS (2008) noted that within Ghana's population of about 22.2 million is a large pool of cheap unskilled workers with low level of education.

More so, Buchanan (2001) draws attention to the fact that casual workers obtained work by congregating on street corners or in parking lots in close proximity to building supply stores, or at other informally designated spots where contractors know to look for hired help. In Nigeria, Aladekomo (2004) noted that groups of casual workers arrive at road intersections as early as 6.00 a.m. in the morning carrying their baskets or bowls, cutlass, shovel and digger, to be picked up by contractors / builders for the day's job of bricklaying. However, the International Labour Organisation- ILO (2001) has indicated that, the increasing number of casual workers and with its accompanying practice of high rate of hiring by contractors has led to a profound effect upon occupational health and safety issues. Vaid (1999) also indicated, an estimated 73% of construction workers in India who were recruited on casual basis. The trend is not different in Philippines, where construction companies continue to downsize their regular workforce. It is estimated that 85 % of the 1.35 million wage and salaried workers in the construction industry in January 2000 were casual workers or project-based employees (Yuson, 2001). In India, Wells (2007) reported that casual

workers in the construction workforce increased in 10 years between 1983 and 1993. In 1993, 64% of men were employed on casual basis in urban construction as compared to 58% in 1983. Wells (2007) also further reported Mexico and Republic of Korea to have about 64% and 77 % of casual workers on construction sites. In that same report Wells (2007) indicated, 90% of construction workforce in Egypt are hired on casual basis.

2.2.1 Characteristics of Casual Workers in Construction Industry

The ILO (2001) has indicated that, casualisation in the construction industry has led to debilitating effect of health hazards on casual workers in especially in the developing countries. Other researches are of the view that the lower level of education and the quest of casual workers to meet their basic needs such as food and shelter, among others, have contributed to their inability to refuse to work in unsafe conditions. Likewise, In China, the booming construction industry is drawing on surplus labour from the rural areas. Employment on construction sites in the towns is the only way for those displaced by increased agricultural productivity to gain some income. The urban construction companies depend on rural labour, and in 1996 the construction industry in Beijing alone employed a total of 424,000 workers from 49 different provinces. By 1999, the number had risen to 640,000 migrant workers coming from 60 different provinces (Lu and Fox, 2001). Indications from Lu and Fox publications are that most of these migrant workers do not have any skill to the construction industry.

According to ILO (2001) report, the construction industry has the ability to absorb the excluded". The understanding gathered is that, the industry provides employment for those with little education or skill, and most often than not, these are from the poorer

sections of the society. In the same report, the ILO established that almost all of the casual workers in Indian construction sites are young from the lower social group and poorly educated, and significantly a large number of these workers in the urban centres were found to have had no schooling. Similarly, Lu and Fox (2001) maintain that in China where 50 % of the 600,000 migrant workers on construction sites in Beijing have received no more than primary education and over 10 % are illiterates.

The construction sector generally has been described more relatively as labour – intensive in the sense that it uses a larger number of workers per unit of output than most of the other industrial sectors. For example in the manufacturing sector, labourers account for about 30-40 % of the total workforce, while in the construction sector, construction labourers constitutes 75-80% of the total workforce (Edmonds et al, 1984; Habitat Intl, 1983). The labour – intensive work within the construction sector was confirmed in the 2001 ILO's report which noted "despite mechanization, the industry is still largely labour-intensive especially in developing countries".

The construction workforce is classified into three groups according to skills: unskilled, semi-skilled and skilled. It is worth noting that to a large extent, the construction industry is characterised by its high numbers of unskilled workers (Van Riju, 2004). In the process of industrialization and urbanization, construction work most often than not provides an entry point for migrant workers and statistically, construction work is often one of the significant alternatives to farm labourers who do not have any particular skills (ILO, 2001). This reason and others have provided employment for rural-urban migrants in many developing countries. For instance, Grandi (1985, cited in ILO 2001) asserted that, in Brazil during the process of rapid urbanization between 1960 and 1980, an estimated 30 million people left various rural

centres for urban areas and most of them joined the construction industry without skills or knowledge about the construction industry. Further in his surveys in São Paulo and Rio de Janeiro in 1985, he found out that, the total migrants in construction workforce were 98 % and 94 % respectively. A high proportion of these work forces were from the north-east region, the poorest in the country.

2.2.2 Issues of Casual Workers on Construction Sites

As emphasized by Philips (2000), contractors were reluctant to invest in training because of the chances of losing workers to other firms or other countries. Susan et al. (2008) concluded employers are of the view that, investing in casual workers has less of a long-term return for their businesses. Indeed from this statement, it appears it may not be profitable to use resources to train a casual worker only for him or she to leave after the assigned task is completed. Again, the ILO (2003) asserted that the high turnover of casual workers poses a considerable barrier to training among others in the construction industry. In Philippines, the International Federation of Building and Wood Workers (IFBWW 2005, cited in ILO 2001) attributed their 32 and 40 fatalities of construction accidents in 1997 and 1998 respectively to lack of training, information, provision of safety equipment and welfare facilities to casual labourers, resulting in poor safety record.

Again, ILO (2001) confirmed that accidents on Malaysian construction sites are so common that everyone has come to accept them as an unavoidable feature of the industry. It was suggested that the situation was due to the casual terms of employment and the non-coverage of workers under Malaysian National Insurance Scheme. Even China as an emerging developed nation, the trend is not different. The bulk of casual workers on construction sites, lack proper places to have their meals

and they are often found eating outdoors, exposed to dust in the air, without dining tables or seats (Lu and Fox, 2001). Additionally, Jeemol. (2002) indicated that casual workers have a problem of meeting their basic needs such as food, shelter. A base study conducted in Tanzania by ILO, (2005) revealed that casual workers were not provided with welfare facilities in most of the projects. For example, in India, the on-site accommodation provided for casual workers is rudimentary, comprising simple shacks with no running water or decent sanitation, and poor ventilation (Vaid, 1999). The same can be said about Malaysia where it has been estimated that 82 per cent of casual workers live on sites in buildings of poor quality, and this was their second major grievance after social security (Abdul- Aziz, 2001).

Other challenging issues of casual workers among others to occupational health and safety (OHS) issues have been lack of: protection mainly in terms of enforcements of minimum wages and other terms of employment such as leave, housing, which are not there due to lack of a representation in collective bargaining process; and social protections of the casual labourers in the form of terms and conditions of employment. This means that the casual workers have no protection from the law against dismissals, sickness, old age and incapacity (ILO, 2001, Mitullah & Wachira, 2003).

2.3 DEFINITION OF HAZARD

According to Shariff (2005), a hazard is anything that can cause harm, for examples falls, slips, chemical burns. A hazard is something that presents a danger. Hazard, at most of the time is obvious, but it may be intangible too1 Hazards may exist in the form of chemical hazard, physical hazard, biological hazard, ergonomic hazards. Hazard is also a condition or substance that has potential to adversely affect the health

of people in a workplace. The severity of the hazard, the amount, the duration and frequency of exposure to the hazard affects the health and safety of the worker. Channing (2003) avers that the hazard presented by a substance is its potential to cause harm. Hazard is associated with degrees of danger, and is quantifiable. Hazard is seen as the situation that in particular circumstances could lead to harm, where harm is the loss to a human being (or to human population) consequent on damage and damage is the loss of inherent quality suffered by an entity physical or biological. Those who work under water or in pressurized tunnels, in caissons or as divers are exposed to high barometric pressure. Such workers are at risk of developing a variety of conditions associated with high pressure: decompression sickness, inert gas narcosis, aseptic bone necrosis and other disorders. Strains and sprains are among the most common injuries among construction workers. These, and many chronically disabling musculoskeletal disorders (such as tendinitis, carpal tunnel syndrome and low-back pain) occur as a result of traumatic injury, repetitive forceful movements, awkward postures or overexertion. Also Collins (2001) maintains that falls are due to unstable footing, unguarded holes and slips off scaffolding and ladders are very common. Physical hazards are defined as those types of hazards that can harm a worker from external sources.

2.4 GLOBAL SITUATION OF HEALTH HAZARD ON BUILDING CONSTRUCTION SITES

Construction health and safety risks are always a grave concern for both practitioners and researchers all over the world. Thus, construction has been regarded as the most hazardous place in which to work with a high level of health and safety risks (ILO, 2005; Smallwood et al., 2008). The International Labour Organisation -ILO estimates

that at least 60,000 fatal accidents happen in a year on construction sites around the world, which is one in six of all fatal work related accidents. Furthermore, it has been acknowledged that 25–40% of fatalities in the world's occupational settings are contributed to by construction (ILO, 2005). Based on fatality statistics, different countries show that the construction industry produces 30% of fatal industrial accidents across the European Union (EU), yet it employs only 10% of the working population. In the United States of America (USA) the sector accounts for 20% of fatal accidents and only 5% of employment, and in Japan construction fatalities account for 30-40% of industrial fatal accidents (ILO, 2005). In the developing world, the risks associated with construction work are much greater. Available data would suggest they are 3–6 times greater (Jason, 2008). In comparison with developed countries, construction sites in developing countries are ten times more dangerous. Other research conducted in developing countries corroborates evidence of this relatively high proportion of accidents on construction projects (ILO, 2001; Murie, 2007). However, there is a challenge of reporting accidents in developing countries (ILO, 2005). From this perspective, health and safety is a global issue which needs a different approach to solve it. Improving health and safety in the construction industry therefore continues to remain a priority.

2.5 SOURCES OF HEALTH HAZARDS ON BUILDING CONSTRUCTION SITES

The factors causing construction site accidents have been addressed by several researchers. Toole (2002) listed the main causes of construction accidents. These are lack of proper training, deficient enforcement of safety, lack of safety equipment, unsafe methods or sequencing, unsafe site conditions, not using provided safety

equipment, poor attitude toward safety, and isolated, sudden deviation from prescribed behavior. Thus, in order to understand the sources of accidents and subsequent injuries, researchers have attempted to develop theories of why accidents occur. Accidents are viewed as originating from a technical or human error (Chi et al., 2005; Murie 2007). The multiple accidents causation theory postulates that there are many contributory causes leading to an accident. The causes are categorized into behavioural and environmental factors. Behavioural factors include attitudes, skills and knowledge. Environmental factors include worksite hazards and procedures that contribute to injuries (Taylor et al., 2004). A similar view is held by Lubega et al. (2001), who found that the causes of construction accidents in Uganda include a lack of knowledge about safety rules, engaging an inexperienced workforce, and lack of respect for safety. Tam et al. (2004) concur with this view and suggest that the main factors affecting safety in China were managers' poor safety awareness, lack of training, reluctance to commit resources to safety, and reckless operations. Furthermore, Dejus (2007) conducted a study in the Lithuanian Republic and identified that the major reasons for serious and mortal accident are inexperienced employees, lack of qualifications and understanding risk on a construction site. Rahim et al. (2008) carried out a survey in Malaysia to identify the causes of accidents on construction sites; they found that unsafe methods, including incorrect procedures, knowledge level, and disobeying procedures are the most frequent reasons for accidents on construction sites.

Similarly, Holt (2001) argued that, secondary causes of accidents centred on management pressures, such as financial restrictions, lack of commitment, inadequate policy and standards, deficient knowledge and information, restricted training and task selection, and poor quality control systems. He further emphasised that

incomplete structural connections, temporary facilities, tight work areas, varying work surface conditions, continuously changing work-sites, multiple operations and crews working in close proximity are common causes of construction-related deaths and injuries.

To conceptualize the literature (above) on sources of accidents and ill-health problems on construction sites, it is observed that the causes of construction accidents can generally be classified into the five most influential factors namely, site conditions, equipment and materials, human, management and job factors (building/task itself). According to Sarah (2011), the sources include site conditions such as the nature and physical layout of the work, location and weather, equipment and materials specification such as paint and asbestos that have the potential to cause ill-health problems. The human factor includes human behaviour, competence, attitude and management such as leadership and safety culture of the organization. The job factors include the nature of the task, design, detail, duration and the size of the structure itself.

2.6 TYPES OF HEALTH HAZARDS ON BUILDING CONSTRUCTION SITES

Various researchers have divided health and safety hazards into two categories, namely the physical injury hazards and the Ill-health hazards (Davies &Tomasin, 1996; HSE, 1998; Murie, 2007). Hazard of physical injury include death consequences. Hazard of ill-health can only be notified after a long period and shall cause sickness or death after a certain period of time (Murie, 2007). The following are common hazards on construction sites irrespective of the physical injury or ill-health problems.

2.6.1 Height

The main hazards associated with working at height are people and objects falling onto people below. Falls from height have been viewed as the one of the most frequent killers of the workers on construction sites. Statistics indicate that nearly 1,000 construction workers are killed each year at their work places. Of these, one-third or over 300 deaths are a result of construction site falls (ILO, 2005). The study from different countries for example, New Zealand, indicates that, falls from heights are the leading cause of occupational injuries on construction sites (Bentley et al., 2006). In China's construction industry, falls account for approximately 51% of injuries (Yung, 2009). In Hong Kong, work-related falls from heights represented more than 47% of all fatal incidents (Chan et al., 2008). Chi and Wu (1997) reported that more than 30% of fatalities in Taiwan can be attributed to falls. As a result, falls are the most costly occupational hazard in many countries. Common construction site falls include roof-related falls, crane falls, scaffolding falls, elevator shaft falls, falls resulting from holes in flooring, and falling objects. These may occur as a result of inadequate edge protection, or from objects in storage being poorly secured. Workers at risk of falling from a height include painters, masons, decorators and window cleaners and those who undertake one-off jobs without proper training, planning or equipment (Murie, 2007).

2.6.2 Slips and Trips

Slips and trips are seen as the most common workplace hazards and contribute to over a third of all major injuries (Hughes and Ferret, 2011). Over 10,000 workers suffered serious injury because of a slip or trip last year. They occur in almost all workplaces and 95 % of major slips result in broken bones (HSE, 2004). According to statistics

from the Health and Safety Executive (HSE), slips and trips are the single most common cause of injuries at work, and account for over a third of all major work injuries (HSE, 2003). They cost employers over £512m a year in lost production and other costs and account for over half of all reported injuries to members of the public. The study done by Lipscamb et al. (2008) on the USA revealed that slips account for 18% of all injuries and 25% of workers' compensation payments. Slips contributed to 85% of falls on the same level and over 30% of falls from height as well as a significant number of musculoskeletal injuries sustained after slipping. They can also be the initial cause of a range of other types of accidents, such as falls from heights. Slips and trips are caused when materials are scattered everywhere haphazardly, the floor is wet or greasy, inappropriate footwear is worn, mainly by casual employees and visitors, something large or heavy is being carried, reducing one's balance, and when the lighting is poor.

2.6.3 Equipment, Machinery, Tools and Transport

Vehicles are necessary for transporting goods and people. However, many people die and are injured due to being struck and crushed by equipment and machinery at construction sites, especially by reversing machinery, site machinery falling in the excavation area, machines overturning due to travelling down a steep slope, and material falling from construction equipment especially haulage trucks, hitting people behind it or nearby (HSE, 2004). Crush injuries can have a wide range of serious effects, including fractures, internal injuries, head and brain injuries, and back injuries. In some cases, a crush injury may result in amputation and permanent disability of the affected worker.

Meanwhile, many people are injured due to being chopped and cuts by equipment and hand held working tools such as chisels, screwdrivers, knives, saws, harmers, nails and drilling machines. The greatest hazards posed by hand tools results from misused and improper maintenance.

2.6.4 Electricity

Electricity is widely used on construction sites but has the potential to be very hazardous with possible fatal results. Someone coming into contact with a live electrical conductor will get a shock that may lead to injuries or even death. In the UK, for example, 2% of all fatalities at work are caused by electric shocks (Huges and Ferrett, 2011). Most injuries and deaths from electricity are due to, using poorly maintained electrical equipment, working near overhead high tension lines or domestic electricity supplies, contact with underground power cables during excavation work and working without appropriate safety gear.

2.6.5 Fire

Fire is one of the many hazards that construction workers could face on site. Although fire hazards are not seen as such as a high risk compared with falling from a height and slipping, tripping and falling, fire hazards need to be considered at all stages of the building process (HSE, 2003). Every year on many construction sites, workers are killed or injured as a result of fire. There are about 400 construction fires annually in United Kingdom (UK) and about 100 of them cause over £50,000 worth of damage and can result in the incomplete dislocation of the project schedule **(**Hughes & Ferret, 2011). Fires on site are caused by braising work carried out by plumbers, gas lines for

underground work, power lines, power leads and tools, machinery requiring petrol and diesel, and hazardous chemicals.

2.6.6 Manual Handling

Manual handling is defined as the movement of a load by human effort alone (Hughes and Ferret, 2011**).** It can include any activity requiring the use of force exerted by a person to lift, push, pull, carry or otherwise move or restrain any moving or stationary object (HSE, 2003). It has been argued that lifting bricks, cement blocks and cement bags weighing 50 kilos has been regarded as risky activities on construction sites (Hughes & Ferret, 2011). Back injuries and emasculatory disorders, sciatica, hernias and slipped discs are often the most serious of construction site injuries. In the study by Smallwood (2008), it was revealed that in construction, 25% of injuries are back injuries. Almost 30% of all construction workers complain of back pain that requires over thirty days off. The average number of days of work missed by a construction worker is higher than in other fields of employment.

2.6.7 Noise

Noise is defined as any unwanted sound. Exposure to noise has many adverse effects on workers ranging from physical stresses to physiological imbalances. Noise can contribute to accidents by making it difficult to hear warnings. Excessive noise can also destroy one's hearing or ability to hear. The amount of damage noise produces depends on how loud the noise is and how long the duration it has been exposed. The frequency or pitch also has some effects which are high pitches are more damaging than low pitch (Shariff, 2005).

Occupational noise-induced hearing loss is defined as hearing impairment arising from exposure to excessive noise at work, which is also commonly known as industrial deafness the NOHSC National Code of Practice (2004). Exposure to hazardous noise levels is so widespread as to be routine, and occupational deafness is very common among building workers. Some activities on construction sites are notoriously noisy, for example, rock breaking during demolition work or the operation of a jack hammer. The use of vibrating wacker plates, electric tools, explosive powered nail guns and vibrators during concrete pours; all cause specific noise problems for the operators and workers in the vicinity in relation to maintaining their hearing ability. Noise comes from the operation of plant, machinery and power tools, the movement of vehicles and deliveries of materials (HSE, 2003).

2.6.8 Chemical substances

Construction activities involve using chemicals which pose health and safety risks to workers. For example solvents of many different kinds are used in paints, varnishes, pesticides used to treat timber, bonding agents, lacquers and adhesives (HSE, 2003). At the construction site, workers might be exposed to chemicals by breathing them in, ingestion and absorption through the eyes or skin (Murie, 2007). Chemicals at work sites can cause headaches, eye irritation, dizziness, faintness, sleepiness and affect judgment and coordination. They can damage to the central nervous system and can harm the skin, liver, kidneys and cardiovascular system. Some solvents increase the likelihood of cancer (Huges and Ferrett, 2011). Solvents can also cause reproductive problems. They can reduce fertility and cause birth defects and miscarriages (Murie, 2007). Some paints and varnishes, bonding agents and resins, can cause asthma and dermatitis. Welding fumes – which may include a cocktail of metal fumes, can cause

serious health problems in the long term. The respiratory system is affected and, as chemicals are absorbed, they can slowly affect the brain and internal organs (Huges and Ferrett, 2011).

2.6.9 Dust

Dust is a common hazard on roads and building works at many sites. The health risks associated with a dusty jobs depend on the type of dust (physical, chemical and mineralogical), which will determine its toxicological properties, and hence the resulting health effect; and the exposure, which determines the dose. If dust is released into the atmosphere, there is a good chance that someone will be exposed to it and inhale it. If the dust is harmful, there is a chance that someone will suffer an adverse health effect, which may range from some minor impairment to irreversible disease and even life-threatening conditions (Huges and Ferrett, 2011). There are higher death rates from respiratory disease and from lung and stomach cancers in dusty trades. At construction sites cement, silica and wood dust and dust from medium-density fiberboard poses particular risks.

2.6.10 Aggression, Violence and Bullying

Aggression and violence occurs when people are verbally abused, threatened or assaulted in circumstances relating to their work. At construction sites aggression and violence are manifested through the use of foul language and physical attacks (HSE, 2003). Where there is aggression and violence, human dignity is debased. Violence and aggression may come from superiors or workmates. Bullying occurs when workers feel that they are being singled out for unfair treatment by a boss or colleague. For example, a worker is constantly criticized instead of being instructed,

being demoted and being shouted at by workmates or superiors. Aggression, violence and bullying can contribute to other risks such as stress (Huges and Ferrett, 2011).

2.7 CAUSES OF HEALTH HAZARDS ON BUILDING CONSTRUCTION SITES

According to the survey conducted by Farooqui (2008), the major injuries faced by contracting firms in Pakistan on their projects site, in descending order of occurrence, were given as fall injuries, struck by wastage and raw materials, heat stroke, head injuries and eye injuries.

In the same study, some informal assessments identified a few major reasons for safety on-performance which included:

- lack of development of construction sector in the shape of mechanization and industrialization,
- lack of professional construction management practice,
- Inadequate safety provisions laid by the existing regulatory environment which has failed establish safety as major industry objective,
- Insufficient and incentive less insurance mechanisms which have failed to establish safety as a business survival issue, and unfavorable business environment which has led to adversarial business relationship among stakeholders resulting in controversies, conflicts, claims and litigation and hence diverting the focus from issues like safety.

The Department for Work and Pensions in the UK commissioned a research into construction health and safety practices to ascertain the underlying causes of construction fatal accidents in the UK. The underlying causes of construction accidents identified were categorised under societal and industry wide influences

(macro); project and process factors (mezzo) and worker/supervisor/workplace cause (micro). The causes of construction accidents at the macro level were identified to include immature corporate systems, inappropriate enforcement, lack of proper accident data, lack of leadership from 'Government' as a key client and a lack of influence of trades unions in practice on most sites, especially for smaller projects. Mezzo factors were identified as immature project systems and processes, inappropriate procurement and supply chain arrangements, lack of understanding and engagement by some of the design community, lack of proper accident investigation/data and consequently, a lack of organisational learning. Micro factors included a shortage of competent supervisors; a lack of individual competency and understanding of workers and supervisors; the ineffectiveness or lack of training and certification of competence; a lack of ownership, engagement and empowerment of, communication with and responsibility for workers and supervisors. These factors were also exacerbated by poor behaviour, cost pressures; poor equipment or misuse of equipment, including personal protective equipment; site hazards; poor employment practices; an itinerant workforce and inadequate management of and provision for vulnerable workers such as younger, older or migrant workers. The study was based on an international consultation with overseas construction industry expert stakeholders; phone/email interviews/consultation with 27 UK senior construction industry expert stakeholders; in-depth face to face interviews with 15 practitioners from the UK construction industry; and phone interviews with 15 workers representing the UK's smaller organisations /sole-traders (Brace et al., 2007).

2.8 CHALLENGES FACING HEALTH AND SAFETY ON BUILDING CONSTRUCTION SITES

There are health and safety problems on almost all construction sites which relate to reporting accidents, employing and subcontracting. **Employing:** all personnel who are employed to carry out construction work on site must be trained, competent and fit to do the job safely and without putting their own or others' health and safety at risk; properly supervised and given clear instructions; have access to washing and toilet facilities; have the right tools, equipment, plant and protective clothing; educated about health and safety issues with them (or their representatives); have arrangements for employees' health surveillance where required. **Accidents:** all accidents or work-related illness should be reported to the appropriate authorities within a reasonable or stipulated timeframe. Subcontracting: main contractors should ensure that they check the health and safety performance of the subcontractors they plan to use; give subcontractors the health and safety information they need for the work; talk about the work with them before they start; make sure that you have provided everything agreed (for example, safe scaffolds, the right plant, access to welfare among others); and check their performance and remedy shortcomings.

The study by Kheni (2008) on health and safety practices among construction SMEs in Ghana revealed serious problems. The main problems identified by Kheni (2008) included lack of skilled human resources, inadequate government support for regulatory institutions and inefficiency in institutional frameworks responsible for health and safety standards. Another problem highlighted was the significance of the Ghanaian socio-cultural value systems particularly, the extended family system and traditional religious value systems in health and safety management within Ghanaian construction SMEs. The research also provided insights into difficulties posed by the

internal environment of SMEs to the effective management of health and safety. Kheni (2008) provides a broad understanding of health and safety in the construction sector in Ghana. Further, Hassouna (2005) maintains that in Australia, almost all respondents agreed with the statement ‘’safety is the responsibility of both management and the worker together’. He concluded that owners, as part of his safety responsibly, must ensure that the designs safe projects. He also ensures that the contractor has a safety program. The owner should include the safety programs an element of the bidding technicalities.

Tam et al. (2004) identified that poor safety awareness of firm’s top leaders and poor safety awareness of projects managers were the main factors affecting construction safety performance in China. Jannadi et al.(1998) in Saudi Arabia stated that the responsibility for safety on any construction projects should be shared between all the parties involved in the projects, namely, the owners, the designer or architect and the contractor. Tam et al. (2004) reported that in China the causes of accidents were due to poor safety awareness from top leaders; lack of training; poor safety awareness of managers; reluctance to input resources for safety; reckless operation; lack of certified skill labor; poor equipment; lack of first aid measures; lack of rigorous enforcement of safety regulation; lack of organizational commitment; low education level of workers; poor safety conscientiousness of workers.

2.9 STRATEGIES TO PREVENT HAZARDS AT BUILDING CONSTRUCTION SITES

In the developed as well as developing part of the world, construction industry is considered to be one of the most significant industries in terms of its impact on health and safety of the working population. Construction industry is both economically and

socially important. Therefore, the subsequent subsections suggest some measures that can be adopted to improve health hazards in construction industry.

Farooqui (2008) posits that the prevention of construction accidents usually entails predicting future accidents and their nature under given circumstances. Thus, the making of such predictions is based on knowledge about past accidents. The major causes of accidents in the construction industry are related to the unique nature of the industry, human behavior, difficult work-site conditions, and poor safety management which result in unsafe work methods and procedures. Further, Farooqui mentioned that the major causes of accidents are related to the unique nature of the industry, human behavior, difficult work site conditions, and poor safety management, which result in unsafe work methods, equipment and procedures. Emphasis in both developing and developed countries needs to be placed on training and the utilization of comprehensive safety programs.

Hassain (2007) conducted a surveyed on the nature of safety programs in the largest 100 construction firms in the USA, and concluded that larger firms had more formal safety programs. The large companies also had the safest performance. Lower injury rates were in companies that provided workers with formal safety orientation; companies that gave incentives to workers and foremen and companies that employed full time safety representatives. Safer performance was noted to occur when safety representatives were hired and trained by safety directors. Furthermore, the studies conducted by Tam et al. (1998) and Poon et al. (2000),to evaluate the influence of safety program on improved construction safety performance revealed that successful safety program, however, do not need extensive elements, but should at least include the critical elements including safety policy, safety committees, safety inductions, safety training, and safety inspections.

In the same vein, Hassain (2007) presented the results of apostal survey of contractors in Singapore. The findings revealed that site accidents are more likely to happen when there are inadequate company policies. He found out the health and safety policy statement should contain the aims which are not measurable, and objectives which are measurable of the organization or company.

Finally, Hughes et al.(2001) aver that insurance companies play an important role in the improvement of health and safety standards. Since 1969, it has been a legal requirement for employers to insure against liability for injury or disease to their employees arising out of their employment. This is called employers' liability insurance. Certain public sector organizations are exempted from this requirement because any compensation is paid from public funds. Other forms of insurance include fire insurance and public liability insurance (to protect members of the public).Premiums for all these types of insurance are related to levels of risk which is related to standards of health and safety. In recent years, there has been a considerable increase in the number and size of compensation claims and this has placed further pressure on insurance companies. Insurance companies are becoming effective health and safety regulators by weighing the premium offered to an organization according to its safety and fire precaution record.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter describes the research design, target population, sample and sampling procedures. Further, this section also describes the data collection instruments, validity and reliability of the instruments, procedure for data collection and data analysis techniques.

3.2. RESEARCH DESIGN

Research design is a blue print which indicates how data relating to a given problem should be collected and analysed (Sekaran, 2000). The researcher employed the descriptive survey method. A descriptive survey research intends to present facts concerning the nature and status of a situation, as it exists at the time of the study. The descriptive survey research involves the use of structured questionnaires which was considered to be the most appropriate tool to reach the population of the study especially when data required for the study can be obtained by the instrument. Further, Sekaran posits that descriptive survey involves the collection of data in order to answer questions concerning the current status of the problem.

According to Bryman and Bell (2007), the major techniques or tools used in collecting data in this type of research are the questionnaire and structured interview. Since this study intends to assess the health hazards of casual workers in building construction in Accra Metropolis, the descriptive survey study is found most appropriate.

3.3 POPULATION

The target population of the study comprised all casual workers in the construction industry in Accra metropolis of Ghana. The target population comprised masons, carpenters, painters, electricians, steel benders and plumbers who work with Ghanaian construction registered with the Ministry of Works and Housing classes D3K3 and D4K4.

3.4 SAMPLE AND SAMPLING PROCEDURES

A sample size of 120 casual workers was used for the study. The researcher adopted the use of non-probability sampling techniques (purposive and convenience sampling techniques) to select the respondents for the study. Purposive sampling technique is used by researchers to choose samples that are likely to be knowledgeable and informative about the phenomena under study (Saunders, et al, 2007). In view of this, the researcher purposively selected 30 registered contractors in category of D3K3 and D4K4. Then, a convenience sampling technique was used to select 120 casual workers from D3K3 and D4K4. To (Saunders, et al, 2007), convenience sampling method is adopted because the respondents were selected based on their convenient accessibility and proximity to the researcher. More so, convenience sampling is fast and inexpensive in recruiting the respondents for the study.

3.5 SOURCES OF DATA

The study made use of both primary and secondary sources of information from selected public institutions. The primary sources of data include information that was gathered from the questionnaires that were administered to the respondents. The advantage of using primary data is that, they are more reliable since they come from the original sources and are collected especially for the purpose of the study.

3.6 RESEARCH INSTRUMENT

The research instrument used for the study was a questionnaire comprised of open and closed questions. The questionnaire was developed from the literature review based on research questions proposed for the study and covered three major sections. Section "A" of the questionnaire indicated background data of respondents. The section "B" examined factors affecting health hazards of casual workers in construction industry and Section "C" finally, identifies challenges associated with safety measures in improving health hazards in construction industry.

3.7 DATA COLLECTION PROCEDURE

An introductory letter was collected from the Department head of Kwame Nkrumah University of Science and Technology (Department of Building Technology) and this enabled the researcher to have a good rapport with the respondents selected for the study. The purpose of the study was explained to the respondents as well as the instructions for completing the questionnaire. The study took three weeks (from August 5 to August 25, 2014) to collect the data and throughout these periods the researcher availed himself to answer questions that bordered on the study.

The researcher personally administered the questionnaire which contained series of structured questions which were related to the research work and directed to respondents with the aim of gaining first-hand information. The questionnaire consisted of both open ended and close-ended questions. Thus, in some cases, respondents were to choose the option that best reflected their opinions. The questionnaire afforded respondents much flexibility and privacy in answering the questions without any undue influence. The questionnaire was in simple and unambiguous language and as such, did not pose any problem as regards

interpretation. The respondents were also assured that the information would be kept confidential. All questionnaires were filled and returned by the respondents.

3.8 RELIABILITY AND VALIDITY

Reliability is defined as be fundamentally concerned with issues of consistency of measures (Bryman and Bell, 2007). There are three prominent factors related to considering whether a measure is reliability: stability, internal reliability and inter-observer consistency. In this study, internal reliability will be considered. Bryman and Bell suggested that a multiple-item measure in which each answers to each questions are aggregated to form an overall score, we need to be sure that all our indicators are related to each other.

Validity is defined as how much any measuring instrument measures what it is intended to measure. Bryman and Bell (2007) also suggested that the important issue of measurement validity relates to whether measures of concepts really measure the concept. Validity refers to the issue of whether an indicator (or set of indicators) that is devised to gauge a concept really measures that concept. In this thesis, construct validity has been used.

3.6 DATA ANALYSIS

The responses to the item on the questionnaires will be analyzed using frequencies and percentages, with the use of Statistical Package for Social Science (SPSS) Version 18.0. To ensure consistency, the responses in the questionnaires will be edited and coded. The responses for the open-ended questions will be grouped based on common ideas that the respondents expressed. The data collected were analyzed using tables and simple percentages, mean score and standard deviations.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 INTRODUCTION

This chapter presents the results and discussion of the field data on health hazards of casual workers in building construction industry in Accra Metropolis of Ghana. Further, the data were gathered from 120 casual workers who selected from four major construction sites and their opinions were analysed in frequency tables, graphs and percentages. Also, the chapter was organised into five main sections. These are:

- Section 'A' dealt with the demographic profile of the respondents and this included the respondents', gender, age, level of education and years of working experience
- Section 'B' discussed the knowledge level of health hazards on building construction site
- Section 'C' described the data on sources of health hazards of casual workers on building construction sites
- Section 'D' describes the data on types of health hazards of casual workers on building construction sites
- Section 'E' described the data on strategies to improve health hazards of casual workers on building construction sites

4.2 DEMOGRAPHIC PROFILE OF THE RESPONDENTS

This section describes the demographics characteristics of the sampled respondents on their gender, age group, level of education and occupation. Tables 4.1 to 4.4 discuss the results of demographic data of respondents selected from the respondents selected for the study.

4.2.1 Distribution of Respondents by Gender

Table 4.1 shows the distribution of the respondents by gender during the time of the study.

Table 4.1: Distribution of respondent by gender

Gender	No	%
Male	112	93.3
Female	8	6.7
Total	120	100

Source: Survey data, 2014

The results presented in Table 4.1 were based on the data collected from the questionnaires issued to 120 casual workers during the time of the study. The results showed that 112 out of 120 respondents representing 93.3 % were males whereas 8 respondents representing 6.7 % were females. The results indicate that more males participated in the survey than females during the time of the study.

4.2.2 Distribution of Respondents by Age

Table 4.2 shows the distribution of the respondents by age. The results presented below were based on the data collected from the questionnaires issued to 120 casual workers during the time of the study.

Table 4.2: Distribution of respondent by age

Age	No	%
20 - 29 years	56	46.7
30 – 39 years	34	28.3
40 – 49 years	12	10.0
50 years and above	8	6.7
Total	120	100

Source: Survey data, 2014

The results presented in Table 4.2 showed that 56 out of 120 respondents representing 46.7 % had their age group of 20 – 29 years, 34 respondents representing 28.3 % aged between 30 – 39 years and 12 respondents representing 10.0 % aged between 40 – 49 years. Finally, 8 respondents representing 6.7 % recorded their age group of 50 years and above were sampled for the study. It is clear from the findings that the age group of 20 – 29 years formed the majority of the study. This study shows that, since most activities on construction sites in Ghana are done manually, one needs to be physically strong, and so they are not activities that older men would want to do.

4.2.3 Level of Educational Status of the Respondents

Table 4.3 displays the level of educational qualifications of respondents sampled for the study.

Table 4.3: Respondents' level of education

Education	No	%
No formal education	22	18.3
Primary/ M.S.L.C	42	35.0
Voc / Technical	40	33.4
Secondary school	16	13.3
Total	120	100

Source: Survey data, 2014

As shown in Table 4.3, 22 out of 120 respondents representing 18.3 % had no formal education, 44 respondents representing 35.0 % had obtained Primary/ M.L.S.C Certificates and 40 respondents representing 33.4 % had Vocational or Technical certificate formed the sampled population of the study. Finally, 16 respondents representing 13.3 % had Secondary certificate. The findings showed that 81.7 % respondents had obtained some level of education which implies that they were in the best position to express their views on health hazards at the construction sites.

4.2.4 Years of working experience in construction industry

Respondents were asked to indicate their working experience in construction industry and the results are indicated in Table 4.4.

Table 4.4: Years of working experience in construction industry

Age	No	%
5 years	34	28.3
6- 10 years	58	48.3
More than 10 years	28	23.4
Total	120	100

Source: Survey data, 2014

Regarding their experience, 34 out 120 respondents representing 28.3 % had 1-5 years working experience in construction industry, followed by 58 respondents representing 48.3 % with 6 to 10 years' experience, 28 respondents representing 23.4 % had more than 10 years working experience in construction industry. It is clear from the findings that majority the respondents representing 48.3 % of the sampled population have worked in construction industry for 6-10 years represents which implies that the respondents are familiar with the topic under study.

4.3 KNOWLEDGE LEVEL OF HEALTH HAZARDS OF CASUAL WORKERS IN CONSTRUCTION SITES

The respondents were asked to indicate their on the knowledge level of health hazards on construction sites. The researcher also asked yes or no question about their knowledge level of health hazards on construction sites by casual workers.

Table 4.5 Knowledge of health hazards on construction sites by casual workers

Responses	Yes		No	
	No	%	No	%
➢ Have you ever received training relating in health hazards on construction sites	43	(35.8)	77	(64.2)
➢ Have you ever been involved in a major accident while performing task	34	(28.3)	86	(71.7)
➢ Have you ever been had a minor injury while performing work	94	(78.3)	26	(21.7)
➢ I think that wearing personal protective clothing and equipment affect productivity	72	(60.0)	48	(40.0)

Source: Field survey, 2014

As shown in table 4.5, 43 respondents representing 35.8 % said they had ever received training relating to health hazards on construction sites whiles 77 respondents representing 64.2 % asserted they had never received training regarding health hazards on construction sites which confirms an earlier study by Susan et al. (2008) concluded employers are of the view that, investing in casual workers has less of a long-term return for their businesses. Indeed from this statement, it appears it may not be profitable to use resources to train a casual worker only for him or she to leave after the assigned task is completed. The respondents were asked to select "Yes or No" to the question "Have you ever been involved in a major accident while performing your task?" 34 respondents representing 28.3 % said "Yes" to the statement while 86 respondents representing 71.7 % "No" to the question. The findings showed that majority of the respondents have never been involved in a major injury at

the construction sites. Also, 94 respondents representing 78.3 % said "Yes" to the question that they have been involved in minor accidents while performing task at the construction sites but 26 respondents representing 21.7 % said No to the question. The study finding disagrees with ILO (2005) that data on health hazards of casual workers in building construction industry indicates that each year at least 60,000 fatal accidents occur on construction sites around the world or one fatal accident in every ten minutes. Finally, the results showed that 72 respondents representing 60.0 % replied "Yes" to the question that wearing personal protective clothing affects productivity while 48 respondents representing 40 % said "No" to the question. The findings indicated that majority of the respondent agrees that wearing personal protective clothing and equipment affects their productivity.

SECTION B: The Sources of Health Hazards of Casual Workers in Building Construction Industry

The mean (M) and standard deviation (SD) were computed from the scores obtained from the respondents using likert scale scores as follows: Strongly Agree =5, Agree=4, Undecided =3, strongly disagree = 2, and Disagree=1 while the frequencies were obtained from the percentage of response to each research statement. The mean was computed from the range 1-5 are presented in Table 4.6.

Table 4.6: Sources of Health Hazards of Casual Workers in Building Construction Industry

Responses	1	2	3	4	5	M	SD	Rank
Lack of knowledge about safety rules	0	2	14	84	20	4.02	.59	2
Management's poor safety measures	6	0	12	42	60	4.25	1.00	1
Nature and physical layout of the construction sites	10	6	24	63	17	3.59	1.07	7
Improper operation of equipment and materials	0	16	22	66	16	3.68	.87	6
Labourers working in close proximity	0	28	10	65	17	3.59	1.00	8
Handling load manually	4	14	14	66	22	3.73	1.00	5
Improperly fixed scaffolding	10	0	8	92	10	3.77	.92	3
Not using personal protective equipment	28	10	5	60	17	3.23	1.43	10
Noise from excavation sites	5	11	8	79	17	3.77	.95	4
Expose to bad weather condition	6	7	34	63	10	3.53	.92	9

Source: Field data, 2014

Table 4.6 shows the overall degree of agreement of casual workers selected from four construction sites in Accra Metropolis with respect to variables under study. The table further shows that with respect to "Lack of knowledge about safety rules" out of 120 respondents, 2 respondents disagreed with the statement, 14 were neutral and 104 respondents agreed (strongly agree and agree) with the statement resulting in a mean value of 4.09 and standard deviation of 0.59. The results showed that lack of safety rules was ranked second among the sources of health hazards of casual construction

workers. The result agrees with a view is held by Lubega et al. (2001) that the causes of construction accidents in Uganda include a lack of knowledge about safety rules, engaging an inexperienced workforce, and lack of respect for safety. The degree of agreement to the statement regarding the second statement that "Management's poor safety measures" showed that 6 respondents strongly disagreed with the statement, 12 respondents remained neutral and 102 respondents agreed (strongly agreed and agreed) with the statement. The majority of the respondents were of the view that management's poor safety measures was the main sources of health hazards at the constructions is in line with Tam et al (2004) study that the main factors affecting safety in China construction industry were managers' poor safety awareness and reluctance to commit resources to safety. The responses to the third statement "Nature and physical layout of the construction sites" revealed that out of 120 respondents, 16 disagreed with the statement, 24 were neutral and 80 respondents agreed with statement given a mean of 3.59 and a high standard deviation of 1.07. The respondents' agreement to the statement was positive as majority of the workers believe that physical layout of the construction sites are sources of health hazards in construction was ranked ninth. Furthermore, the responses to the statement "Improper operation of equipment and materials used on construction sites" recorded mean of 3.68 and a standard deviation of .87 with 16 respondents disagreed to the statement, 22 remained neutral and 82 respondents agreed to the statement. The results showed that majority of the respondents agreed that improper operation of machines and materials uses such as cement, paints among others are sources of construction health hazards. According to Sarah (2011), many building construction activities are inherently risky to health and safety such as handling hazardous substances, and using plant and equipment.

The statement "Labourers work in close proximity or confine area" recorded a mean of 3.59 and standard deviation of 1.00. Therefore, the respondents believed that when labourers work in close proximity or in overcrowded space it could result in health hazards to the workers.

With a mean of 3.73 and a standard deviation of 1.00 for the statement "Handling load manually" indicated an agreement with Sarah (2011) that handling loads manually is one of the sources of health hazards. Hughes and Ferret (2011) defined manual handling as the movement of a load by human effort alone. They argued that lifting bricks, cement blocks and cement bags weighing 50 kilos has been regarded as risky activities on construction sites.

The statement "Improperly fixed scaffolding", out of 120 respondents 10 disagreed with the statement, 8 were neutral and 102 respondents agreed with statement given a high mean of 3.77 and a standard deviation of .99. The respondents' agreement to the statement was positive. The degree of agreement to the statement regarding the statement "Not using personal protective equipment" showed that 38 respondents disagreed (strongly disagreed and disagreed) with the statement, 5 respondents remained neutral and 77 respondents agreed (strongly agreed and agreed) with the statement elicited low mean of 3.23 and highest standard deviation of 1.43.

The table further showed that with respect to "Noise from construction sites" out of 120 respondents, 17 respondents disagreed with the statement, 8 were neutral and 96 respondents agreed (strongly agree and agree) with the statement resulting in a mean value of 3.77 and standard deviation of .95. The results showed that noise at the construction site was ranked fifth among other sources of construction health hazards.

Finally, the statement "Expose to bad weather condition", out of 120 respondents 13

disagreed with the statement, 34 were neutral and 73 respondents agreed with statement given a mean of 3.53 and a standard deviation of .92.

RESEARCH QUESTION 3: What are the types of health hazards in construction industry?

Figure 4.5 displays the views of respondents on the types of health hazards on construction site.

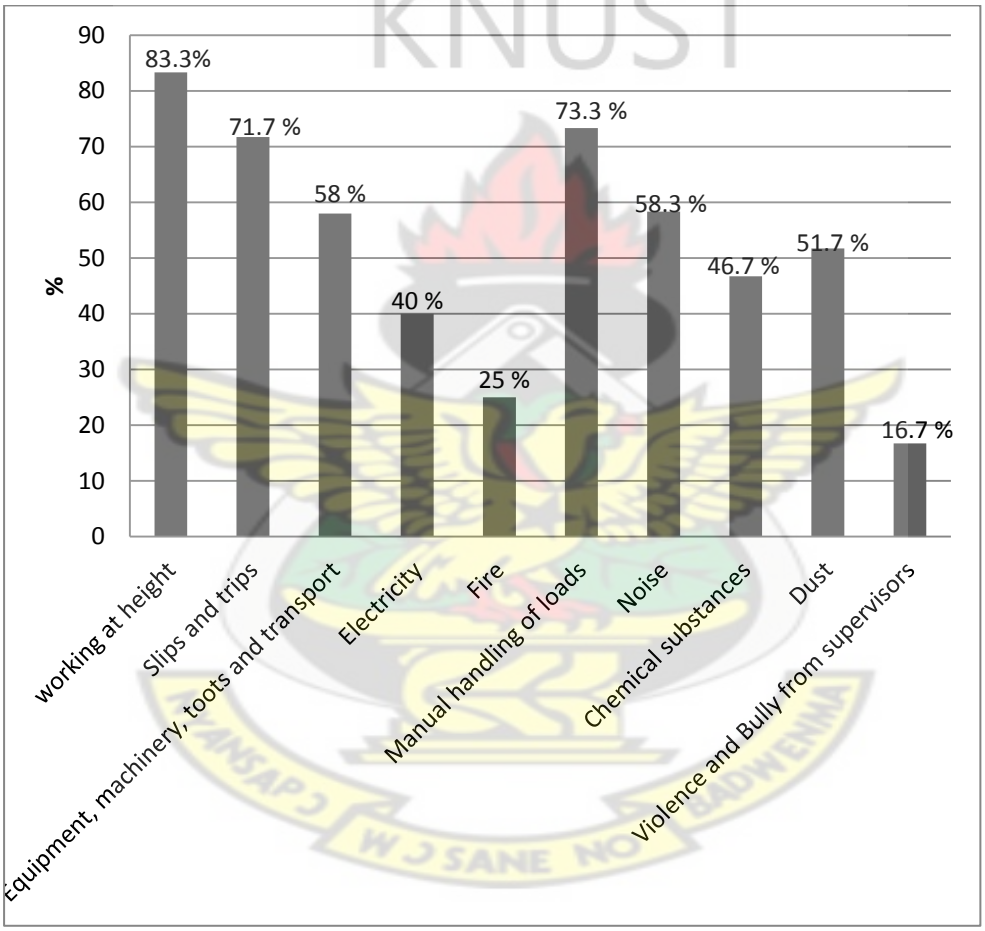

Figure 4.5

4.5 Type of health hazard in building construction industry

Figure 4.5, shows the respondents responses on the types of health hazards on construction site. One hundred respondents representing 83.3 % said one of the types of health hazards on construction site is working at height. According to ILO (2005),

falls from height have been viewed as the one of the most frequent killers of the workers on construction sites. Further, 73.3 % responded manual handling of loads was the second highest of the type of health hazards on construction sites, and 71.7 % said the slips and trips accounted for third health hazards on construction sites. However, the least type of health hazards recorded in the study was fire.

RESEARCH QUESTION 3: What strategies can be employed to improve health hazards at construction sites?

Figure 4.6 displays the views of respondents on the strategies to improve health hazards on construction site.

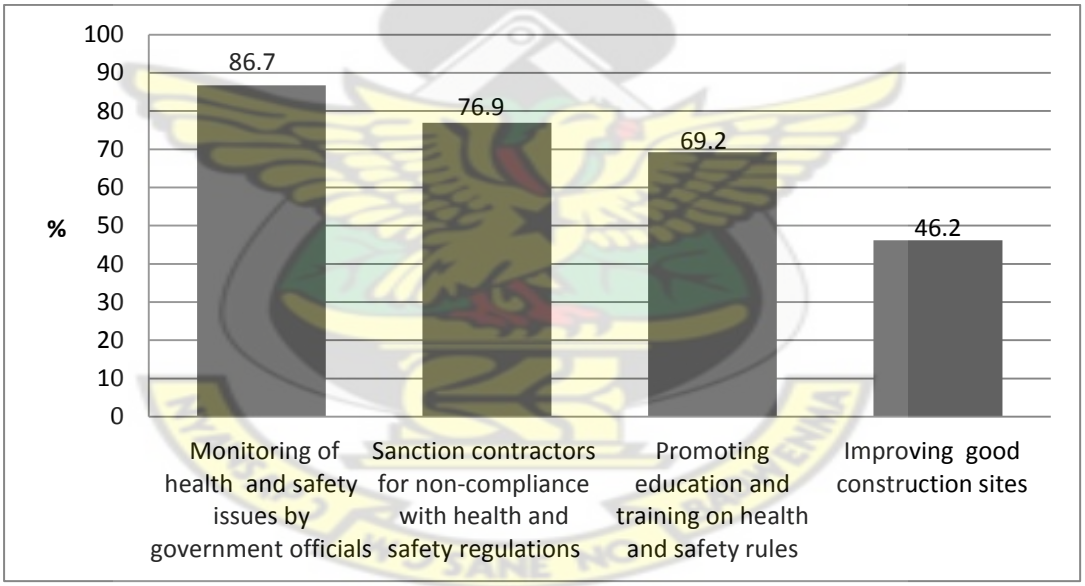

Figure 4.6 strategies to improve health hazard at building construction site

Figure 4.6, the respondents were asked to indicate their responses on the strategies that can be employed to improve health hazards on construction site received varied responses. Majority of the respondents 86.7 % said the monitoring of health and safety issues by government officials would improve the health hazards on

construction site. The results agree with assertion by Kheni (2008) that inadequate government support for regulatory institution and inefficiency in institutional frameworks responsible for poor health and safety standards. Thus, the study suggests that these institutional should be resourced to perform statutory duties. Further, the results showed that sanctioning contractors who do not adhere to health and safety at construction should be enforced. The respondents hope that if stiff punishments are meted out to offenders it would serve as example for others. Moreover, 69.2 % respondents agreed that promoting health training and education on construction would equip casual workers the knowledge to prevent hazards on construction site. Hence, employees should be trained to carry out construction work on site so as to fit perfectly on the job without putting their own or others' health and safety at risk. Finally, 46.2 respondents were of the view that improving construction site conditions would reduced accidents and injuries that occur at the sites.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter presents the summary of findings, conclusion drawn from findings, recommendations and suggestions made for further research. The study sought to provide information on health hazards of casual workers in construction industry of Accra Metropolis in Ghana. Four research questions were used to guide the study and these included; level of awareness of health hazards on building construction site, sources of health hazards of casual workers on building construction sites, the data on types of health hazards of casual workers on building construction sites and the strategies to improve health hazards of casual workers on building construction sites.

The study adopted the descriptive survey method by the use of questionnaire to collect from casual workers selected from four construction site. A sample size of 120 respondents was selected for the study through the use of purposive and convenience sampling techniques were used to select respondents for the study. Data gathered through the administration of questionnaire were analysed and presented with the help of mean, standard deviation, percentages, graphs and frequency tables.

5.2 CONCLUSION

This part of the research study concludes the main findings of the research per objective, based on the opinions of the respondents as follows:

5.2.1 Knowledge Level of Health Hazards on Building Construction Site

The results revealed that majority of the respondents (64.2 %) asserted they have never received training regarding health hazards on Building construction sites which confirms earlier study by Susan et al. (2008) concluded employers are of the view that, investing in casual workers has less of a long-term return for their businesses. Indeed from this statement, it appears it may not be profitable to use resources to train a casual worker only for him or she to leave after the assigned task is completed. Further, the findings of the study revealed that 94 respondents representing 78.3 % said they have been involved in a minor while performing task at the construction sites which disagrees with ILO (2005) that data on health hazards of casual workers in building construction industry indicates that each year at least 60,000 fatal accidents occur on construction sites around the world or one fatal accident in every ten minutes. Finally, the results showed that 72 respondents representing 60.0 % accepted that wearing personal protective equipment affects their productivity.

5.2.2 Sources of Health Hazards of Casual Workers in Building Construction Industry

The results indicated that majority of the respondents were of the view that management's poor safety measures were the main source of health hazards at the constructions is in line with Tam et al. (2004) study that the main factors affecting safety in China construction industry were managers' poor safety awareness and reluctance to commit resources to safety. The second sources of health hazards was unreliable income compels labourers to work under risk condition indicated a mean of 4.23 which is high and a low standard deviation of .69. The findings of the study showed that majority of the respondents representing 86.7 % (104 respondents)

averred that lack of safety rules was ranked third among the sources of health hazards of casual construction workers which concurs with a view is held by Lubega et al. (2001) that the causes of construction accidents in Uganda include a lack of knowledge about safety rules, engaging an inexperienced workforce, and lack of respect for safety.

5.2.3 Types of Health Hazards on Construction Site

The results showed that 83.3 % respondents rated working at height as the first type of health hazards among construction workers, followed by manual handling of loads recorded 73.3 % and 71.7 % of the respondents assert that the third type of health hazards on construction site identified in the study was slip and trip.

5.3 RECOMMENDATIONS

The recommendations under this section are group in two: firstly recommendation arising from the study (section 5.3.1) and secondly recommendation for future research (section 5.3.2)

5.3.1 Recommendation Arising from the Study

The study recommends that, adequate government support for local regulatory institutions will enhance their monitoring efficiency in improving health and safety standards at building construction site. Thus, the study suggests that the institutions in charge of health and safety department should be adequately resourced to carry out their regulatory duties. Furthermore, it is recommended that employers or contractor should train personnel employed for construction site so as to carry out construction work on site fit perfectly on the job without putting their own or others' health and safety at risk. The study recommend that adequate construction protective materials

should be provided at construction site in order to ensure health and safety standards at work.

5.3.2 Recommendation for future research

It is recommended that, further research be conducted to ascertain the level of compliance of the statutory regulatory institutions to ensure effective monitoring of health safety on building construction sites.

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APPENDIX

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF BUILDING TECHNOLOGY

TOPIC:

HEALTH HAZARDS OF CASUAL WORKERS IN BUILDING CONSTRUCTION INDUSTRY IN GHANA: A CASE STUDY OF ACCRA METROPOLIS

QUESTIONNAIRE FOR CASUAL WORKERS IN BUILDING CONSTRUCTION SITES

Dear respondents:

This is a questionnaire designed to collect data on health hazards of casual workers in building construction sites in Accra Metropolis which will be used as an input for a dissertation in a partial fulfillment of Master of Science degree. Your objective response will be solely used for academic purpose and the data will be treated with utmost confidentiality. Therefore, your kind cooperation is appreciated in advance.

SECTION A:

Demographic Data of Respondents

Please tick **[√]** the appropriate box that corresponds to your response.

1. Gender :

   a. Male [ ] b. Female [ ]

2. Age:

a. 20 – 29 years [ ] b.30 – 39 years [ ]

c. 40 – 49 years [ ] d. 50 years and above [ ]

3. What is your level of education?

a. No formal education [ ] b. Primary / M.L.C [ ]

c. Vocational / Technical education [ ] e. Secondary education [ ]

f. Any other……..

4. How long have been working as casual worker in this company?

a. up to 6 months [ ]

b. more than 6 months [ ]

5. Years of working experience in construction sites

a. Less than 5 years [ ] b. 5 – 10 years [ ] c. Above 5 years [ ]

6. How did you join construction?

a. Through labour office [ ]

b. Through friends or relatives [ ]

c. Apprentice [ ]

d. Personal search [ ]

e. Other (please specify) _____

SECTION B: Knowledge of health hazards on construction sites

Please indicate your level of agreement on the scale: Yes or No.

Knowledge of health hazards on construction sites		**Yes**	**No**
7	Have you ever received any training relating to health hazards on construction sites?		
8	Have you ever been involved in a major accident while performing your task?		
9	Have you ever been injured (minor) while performing your tasks?		
10	Do wear personal protective equipment at the construction sites?		

SECTION B: The Sources of Health Hazards of Casual Workers in Building Construction Industry

Please indicate your level of agreement on the Likert scale of 1 to 5 where 1= strongly disagree, 2= disagree, 3= neutral, 4= agree and 5 = strongly agree.

Source of health hazards at the construction sites		**1**	**2**	**3**	**4**	**5**
11	Lack of knowledge about safety rules					
12	Engaging inexperienced labourers at construction sites					
13	Lack of concern on the part of management for ensuring safety awareness at the construction sites					
14	Lack of training on health hazards issues					
15	Nature and physical layout of the construction sites					
17	Improper operation of equipment and materials use on construction site					
18	Labourers working in close proximity / overcrowded sites					
19	Bad weather/ expose too much to the sun for a long time					
20	Improperly fixed scaffolding / Unprotected edge					
21	Noise from excavation and equipment					
22	Unreliable income of casual workers forces them to under risky jobs					

SECTION C: Type **of Health Hazards at Building Construction sites**

Please indicate your level of agreement on the Likert scale of 1 to 5 where 1= strongly disagree, 2= disagree, 3= neutral, 4= agree and 5 = strongly agree.

Type of Health Hazards at Building Construction sites		**1**	**2**	**3**	**4**	**5**
27	Working at a height					
28	Hit by falling object / Trip and fall					
29	Manual handling					
30	Bullying and Stress from the work					
31	Noises					
32	Wrong operating attitude of the users of equipment or plant					
33	Chemical substances					
34	Dust					

SECTION D: Strategies to prevent health hazards at construction sites

35. Suggest some strategies that can be adopted to prevent health hazards at construction sites

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