UNIVERSITY OF EDUCATION, WINNEBA

COLLEGE OF TECHNOLOGY EDUCATION, KUMASI

TOPIC

THE IMPACT OF POST ACCIDENTS AND HAZARDS AT CONSTRUCTION SITE ON THE SOCIO ECONOMIC LIFE OF CONSTRUCTION WORKER AND THEIR FAMILY (A CASE STUDY KUMASI METROPOLIS).

SAMPSON KWAME AFRIFA

AUGUST, 2016.

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7101190002

A dissertation in the department of CONSTRUCTION AND WOOD TECHNOLOGY EDUCATION, faculty of TECHNICAL EDUCATION, submitted to the school of Graduate Studies, University of Education, Winneba in partial fulfillment of the requirements for the award of Master of Technology Education (Construction) degree.

AUGUST, 2016

DECLARATION

STUDENT'S DECLARATION

I, **Sampson Kwame Afrifa,** declare that this Project Report with the exception of quotations and references contain in the publish workers which have all been identified and duly acknowledged, is entirely my own original work and it has not submitted either in part or whole, for another degree elsewhere.

SIGNATURE .....

DATE.....

SUPERVISOR'S DECLARATION

I hereby declare that the preparation presentation of this work was supervised in accordance with the guidelines for supervision of Project Report as laid down by the University of Education, Winneba.

NAME: DR. PETER PAA KOFI YALLEY

SIGNATURE .....

DATE.....

DEDICATION

My Wife and Children, Emelia Agyeman, Emmanuel Gyamfi Frimpong, Nana Asante Afrifa, Kelvin Takyi Agyeman Afrifa.

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to my staff members for their support in the preparation of this research work. I also want to thank my supervisor Dr. Peter Paa Kofi Yalley for his supervision and constructive criticisms during the preparation of this report. I needed to make in the course of the work. I cannot mention everybody's name at this moment for luck of space and time but I express my appreciation to all who's effort in one way or the other contributed to the success of this research work.

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ABSTRACT

The objective of this research is to examine the various types of accident and hazards that construction workers are exposed to at work, the causes of accident and hazards at industries can be reduced and prevented. Six (6) construction industries in Kumasi metropolis were selected to identify impact of post-accident and hazards on construction sites on the socio economic life of workers and their families. The same structured and non-structured interview were used to collect data. Twenty-eight (28) construction workers, 2 managers and 2 supervisors were interviewed by using snowball sample test, to identify only accident in six (6) industries.

Findings that the rate of accident at construction industries was not regular since the researcher had only 28 participants in 6 construction industries. The main causes of accidents were identified to be ignorance and complacency of employees' unsafe behavior and working conditions. Measures were also adopted by management to curtail these causes. Health and safety is linked to the economic progress of the country. It is therefore economical and cheaper to maintain a healthy working environment and manage risk than to administer loss due to job related injuries and illness. Recommendation that there should be well established and abreast safety sections in each construction industry. Again, there is the need to intensify training methods, in-service training, safety regulations and the need of using the protective devices, to reduce and prevent accident and hazards at the construction industries. It is concluded that the main causes of accident and hazards are identify to be ignorance, negligence and complacency of workers, unsafe working

environment and conditions. The management are to adopt measures to educate workers to reduced accident and hazards in construction sites.

CHAPTER ONE

INTRODUCTION

1.2 Background of the Study

The human suffering and financial loss caused by accidents and illness at work each year is tremendous. Accident at work is an unpleasant event which occurs within a planned programme and is actually or potentially harmful to the workers.

Workers in any occupation face hazards of various types. Dust is thought to be perhaps one of the greatest killers of workers. There is therefore a growing global concern about the acute health effects of chemical exposure which can affect workers ranging from eye and upper respiratory track irritations, skin problems and systematic poisoning which can lead to death.

Since workers may know more about daily hazards they face than the employer, it makes sense for them to have an essential role in hazard identification, assessment and control in the past, pieces of law had sought to protect employees in factories, mines, quarries and in office and shops.

However, some people worked in circumstances where no statutory control existed. The Act brought all sections of the working community under its aegis. In addition, the Act

sought to protect the public at large against risk to health or safety arising out of, or in connection with, activities of persons at work.

Management has a legal responsibility, if not a moral one, to ensure that the workplace is free from hazards and that conditions surrounding the workplace are not hazardous to employees' physical or mental health.

There are approximately about 10,000 reported work related death and about 2 million injuries each year in the United States of America USA resulting in over 90-million-day loss of productive time: (Decenzo and Robbins, 1996). It must be realized that it is easier and cheaper to manage risk than administer loss and that accident prevention and prevents losses.

Employers must be concerned about employees' health and safety if for no reason that, accidents cost money.

Construction is the most dangerous land-based work sector in Europe, after the fishing industry. In the European Union, the fatal accident rate is nearly 13 workers per 100,000 as against 5 per 100,000 for all sector average.

Loosemore Dainty Lingard (2003) Human Resource Management New York (U.S.A) August (1988). In the United States, there were 1,225 fatal occupational injuries in the construction sector in 2001 with an incidence rate of 13.3 per 100,000 employed workers. For the same year the construction industry experienced 481,400 nonfatal injuries and illnesses at a rate of 7.9 per 100 full-time workers in the industry. Construction has about 6% of U.S. workers, but 20% of the fatalities - the largest number of fatalities reported for any industry sector. Hong Kong is also notorious for its high construction accidents rates.

Although the accidents rate dropped from 350 per 1000 workers in mid-1980 to 60 per 1000 workers in 2007, it still accounted for nearly 20% of all the industrial accidents in Hong Kong in the United Kingdom, the construction industry is responsible for 31% of fatalities at work and 10% of major workplace injuries despite accounting for a mere 5% of employees. What is more, most deaths on construction sites are actually caused by non-construction activities such as electrical faults.

Ritz, J. G (2003) Total construction Management. Chicago. In Australia, the construction industry experienced 5.6 fatalities per 100,000 employees which is more than twice the average for all the industries in 2007–2008.

The problem is not that the hazards and risks are unknown, it is that they are very difficult to control in a constantly changing work environment.

Furthermore, the costs of construction are very high. In Ghana, for example, although there were 10% of the reported accidents claims were settled, the total amount was $150,000 which was quite expensive when we try to compare the income of the country. (Lester, 1985)

Construction projects, especially large ones, are complex and dynamic. Several employers may work on one site simultaneously, with the mix of contractors changing with the phases of the project; for example, the general contractor is present at all times, excavating contractors early, then carpenters, electricians and plumbers, followed by floor finishers, painters and landscapers. And as the work develops—for instance, as a building's walls are erected, as the weather changes or as a tunnel advances—the ambient conditions such as ventilation and temperature change too.

Construction workers typically are hired from project to project and may spend only a few weeks or months at any one project. There are consequences for both workers and work projects. Workers must make and remake productive and safe working relationships with other workers whom they may not know, and this may affect safety at the work site. And in the course of the year, construction workers may have several employers and less than full employment. They might work an average of only 1,500 hours in a year while workers in manufacturing, for example, are more likely to work regular 40 hour weeks and 2,000 hours per year. In order to make up for slack time, many construction workers have other jobs—and exposure to other health or safety hazards—outside of construction.

For a particular project, there is frequent change in the number of workers and the composition of the labour force at any one site. This change results both from the need for different skilled trades at different phases of a work project and from the high turnover of construction workers, particularly unskilled workers. At any one time, a project may include a large proportion of inexperienced, temporary and transient workers who may not be fluent in the common language. Although construction work often must be done in teams, it is difficult to develop effective, safe teamwork under such conditions.

Seeley (1994), Building Technology London: MacMillan Press Ltd. Like the workforce, the universe of construction contractors is marked by high turnover and consists mainly of small operations. Of the 1.9 million construction contractors in the United States identified by the 1990 Census, only 28% had any full-time employees. Just 136,000 (7%) had 10 or more employees. The degree of contractor participation in trade organizations varies by country. In the United States, only about 10 to 15% of contractors participate; in some

European countries, this proportion is higher but still involves less than half of contractors. This makes it difficult to identify contractors and inform them of their rights and responsibilities under pertinent health and safety or any other legislation or regulations.

As in some other industries, an increasing proportion of contractors in the United States and Europe consist of individual workers hired as independent contractors by prime- or sub-contractors who employ workers. Ordinarily, an employing contractor does not provide subcontractors with health benefits, workers' compensation coverage, unemployment insurance, pension benefits or other benefits. Nor do prime contractors have any obligation to subcontractors under health and safety regulations; these regulations govern rights and responsibilities as they apply to their own employees. This arrangement gives some independence to individuals who contract for their services, but at the cost of removing a wide range of benefits. It also relieves employing contractors of the obligation to provide mandated benefits to individuals who are contractors. This private arrangement subverts public policy and has been successfully challenged in court, yet it persists and may become more of a problem for the health and safety of workers on the job, regardless of their employment relationship. The US Bureau of Labor Statistics (BLS) estimates that 9% of the US workforce is self-employed, but in construction as many as 25% of workers are self-employed independent contractors.

1.2 Statement of the Problem

In United Kingdom, Armstrong (2006), researched into accident in the construction industries and came out that, about 500 people are killer at work every year and several hundred thousand and more are injured or suffer from accident.

In United States of America, Wayne (1992), who researched into the Extent of safety and health of workplaces, came out that roughly every 12 workers are injured or become ill in the job, almost 11,000 workers die in workplace by accident; 2 million workers are disabled; 137000 new cases of disabling illness occur; 1.8 million workers suffer injuries involving lost working days; 35 million work days are lost.

Research in Ghana by the Department of Employment indicates that the number of total accidents that occur at work currently average between about 500 and 600 per annum, and that each year there were approximately, 300 to 400 thousand serious industrial accidents. The cost of accidents at work is enormous both in human suffering and in lost production.

According to Lossemore et al (2003), in Canada and many parts of the world under construction industries, health hazards are often invisible and can take a long time to manifest themselves. It may take perhaps 10 to 30 years. This can make it difficult to link the illness with the work process and the worker may have resigned, retired or moved and it may be difficult to get the employer to pay for treatment or compensation. More serious is the fact that these health problems may never be cured.

The study by Lossemore et al (2003) limited the effect of accident on loss of working days, how individuals suffered, but fail to consider the effect it had on the immediate family of the victims of accident. This present study therefore examines the effect of accidents and hazards on construction workers and their families.

1.3 Aims and Specific Objectives of Study

AIM: to study the impact of post-accident and hazard at construction site on the socio-economic life of construction workers and their family.

The specific objectives of the study are to:

- Examine the link between the working environment and the health of workers.
- Examine the various types of hazards and the causes of industrial accidents.
- Find how to reduce industrial accidents and how to prevent hazards with the involvement of management and employees.
- Find how workers can take care of themselves.

Examine the laws regarding the health and safety of workers.

1.4 Research Questions

Research intends to study the impact of accidents and hazards in the construction industries, the health of workers and on their family which is alarming in the country.

1. What are the impacts of accidents and hazards in construction industry?
2. What are the societies attitudes towards accidents and hazards in construction industry?
3. What are the effects of accidents and hazards in construction industry?
4. What are the causes of accidents and hazards in construction industry?
5. How can the accidents and hazards in construction industry be reduced?

-

1.5 Significance of the Study

Health and safety concern the lives of the economically active proportion of the national population. It is linked to the economic progress or otherwise of the country. Figure issued by the department of employment indicates that the number of fatal accidents occurring at work currently average between about 500 and 600 per annum, and that each year there are approximately, about 300 to 400 thousand serious industrial accidents. The cost of accidents at work is enormous, both human suffering and in lost production.

a) This study is focused on accidents at the workplace and how the health and safety of workers could be assured with the involvement of the Government, Management, supervisor and the workforce.
b) Expose the problems at the workplace concerning accident, safety and hazards to employees.
c) Prompt employees to be self-assured of accident, safety and hazards in construction industries.
d) To inform management, authorities and Government to strength accident, safety and hazardous measures in construction industries.
e) To educate and create awareness of the employees in the industries, the need to take care of accident, safety and hazards at industries.

The human suffering and financial loss caused by accidents and illness at work each year is tremendous. Accident at work is an unpleasant event which occurs within a planned programme and is actually or potentially harmful to the workers.

Workers in any occupation face hazards of various types. Dust is thought to be perhaps one of the greatest killers of workers. There is therefore a growing global concern about the acute health effects of chemical exposure which can affect workers ranging from

eye and upper respiratory track irritations, skin problems and systematic poisoning which can lead to death.

Since workers may know more about daily hazard identification, assessment and control in the past, pieces of law had sought to protect employees in construction industries.

1.6 Scope of Study

The study report consists of five (5) chapters.

Chapter one (1) presents the introductory aspect of the research comprising background to the study, statement of problem, significance of the study, scope of study, objectives of the study and research questions.

Chapter two (2) contains the literature review, chapter three (3) covers the research methodology used in the study, four (4) findings and discussion.

Chapter five (5) presents the summary of the study, conclusion drawn together with research recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The literature review outline is as follows:

Occupational health and safety, the extent and cost of safety and health problems, the working environment and health safety workers, efforts to improve safety. It also covers the sick building syndrome, Noise, Heating and Ventilation, Illumination, health hazards in construction site, construction hazards, hazards to non-workers, Safety Hazards, hazards to construction workers Health Hazards, road construction safety, controlling occupational hazards. Visual Display units, stress, health and safety hazards in the construction industry accident at the work place, office accidents, places of industrial accidents, causes of accidents, principal causes of fire in the workplace, firefighting in the workshop, preventing accidents at the workplace, reducing unsafe conditions, reducing unsafe acts, managing health and safety at work, benefit of workplace health and safety, the laws regarding the health and safety of workers in Ghana, were also reviewed.

2.1 Occupational Health and Safety?

Occupational health and safety deals with the causes and effects of various hazards workers are exposed to at work. It also refers to the employees' freedom from illness, work related accidents and their general physical and mental well-being.

The occupational health and safety committee manual explains occupational health and safety as: the promotion and maintenance of the highest degree of physical, mental and

social well-being of workers; the prevention among workers of ill health caused by their working conditions; the placing and maintenance of workers in working environment that are adopted to their individual physiological and psychological conditions and the promotion and maintenance of the working environment that is free of harassment (Lester, 1985).

Every manager who understands the importance of the saying "a sound mind is a healthy body" should ensure that there are measures to take care of the health, safety and welfare of his employees (Turkson ,1997). "Health is wealth" so goes the popular adage but wealth is not measured only in terms of riches but also by the state of our mind and our body. Our health must therefore be preserved and promoted.

2.1.1 The Extent and Cost of Safety and Health Problems

According to Wayne (1992), every year in the United States workplaces, roughly 12 workers are injured or becomes ill in the job; almost 11,000 workers die in workplace accidents; 2 million workers are disabled; 137,000 new cases of disabling illness occur: 1.8 million workers suffer injuries involving lost working days; 35 million work days are lost.

Armstrong (2006), explained that in the United Kingdom about 500 people are killed at work every year and several hundred, thousands more are injured or suffer ill health. It also estimated that, apart from the pain and misery caused to the employees directly and indirectly concerned, the total cost to British employers of work related injury and illness exceeds £4 Billion a year.

2.2 The Working Environment and the Health and Safety of Workers

The environment is anything and everything that we come into contact with, whether seen or unseen. The environment determines who we are as people, the cultural norms and practices that shape our society. The state of our environment is the product of the activities we carried out on a daily basis either in our homes, offices and the economic activities that we engage in. The state our environment has a bearing on the state of our wealth; the more we reduce the environmental hazards the more we become more productive (Lester, 1985).

2.2.1. Efforts to Improve Safety

Although construction work often must be done in teams, it is difficult to develop effective, safe teamwork under such conditions.

Ritz, (2003). The universe of construction contractors is marked by high turnover and consists mainly of small operations. Of the 1.9 million construction contractors in the United States identified by the 1990 Census, only 28% had any full-time employees. Just 136,000 (7%) had 10 or more employees. The degree of contractor participation in trade organizations varies by country. In the United States, only about 10 to 15% of contractors participate; in some European countries, this proportion is higher but still involves less than half of contractors. This makes it difficult to identify contractors and inform them of their rights and responsibilities under pertinent health and safety or any other legislation or regulations.

As in some other industries, an increasing proportion of contractors in the United States and Europe consist of individual workers hired as independent contractors by prime- or sub-contractors who employ workers. Ordinarily, an employing contractor does not provide subcontractors with health benefits, workers' compensation coverage, unemployment insurance, pension benefits or other benefits. Nor do prime contractors have any obligation to subcontractors under health and safety regulations; these regulations govern rights and responsibilities as they apply to their own employees. This arrangement gives some independence to individuals who contract for their services, but at the cost of removing a wide range of benefits. It also relieves employing contractors of the obligation to provide mandated benefits to individuals who are contractors. This private arrangement subverts public policy and has been successfully challenged in court, yet it persists and may become more of a problem for the health and safety of workers on the job, regardless of their employment relationship. The US Bureau of Labor Statistics (BLS) estimates that 9% of the US workforce is self-employed, but in construction as many as 25% of workers are self-employed independent contractors. (Ritz, 2003)

In United States of America, although construction is one of the worst industries in Europe in terms of safety, there have been, and are, various groups working towards improving construction conditions and safety. Construction conditions have improved ten-fold from 15 years ago, and as technology increases, so does the safety and working conditions of construction jobs. (Wayne, 1992).

In the United States, efforts have been made in the first decade of the 21st century to improve safety for both road workers and drivers in construction zone. In 2004, Title 23

Part 630 Subpart J of the Code of Federal Regulations was updated by congress to include new regulations that direct state agencies to systematically create and adopt comprehensive plans to address safety in road construction zones that receive federal funding

Though the regulations are mostly very broad in defining how states must create and implement plans, the regulations do set out specific requirements on how state agencies must plan for "significant project": "Significant projects are those anticipated to cause sustained work zone impacts greater than what is considered tolerable based on state policy and/or engineering judgment." For these "significant projects", state agencies are required to create Traffic Management Plans (TMP) and Temporary Traffic Control (TTC) plans to address ongoing safety concerns. State agencies must also create Public Information (PI) strategies to educate the public about potential safety and traffic disruption concerns.

2.2.2 The Sick Building Syndrome

The Sick Building Syndrome refers to office environment that contains harmful air borne chemicals, asbestos or indoor pollution. De Cenzo & Robbins (1996) explained that if workers cannot function properly at their jobs because of constant headaches, watering eyes, breathing difficulties, or fear of exposure to materials that may cause long term health problems production will decrease.

Deficiencies are some environmental factors such as heating, ventilation, illumination, noise etc. that can combine to create a sick building syndrome (Graham & Benneth, 1992).

2.2.3 Noise

According to Graham & Bennett (1992), noise can be measured by meters and its intensity expressed in numerical terms, the unit of measurement being the decibel.

The authors further explained that noise has four effects in industry which are:

i. **Deafness**

Exposure to loud and prolonged noise will in most people produce deafness, beginning with inability to hear high notes and it may occur so slowly that the workers may not notice it. This is not to say that every deafness is caused by laudable noise.

ii. **Efficiency**

Works which require accuracy concentration and alertness deteriorates with noise. For example, inspection and calculation become less efficient under noise.

Noise will help drivers not to sleep when driving but, silence in a vehicle helps driver to sleep or lose concentration.

iii. **Annoyance**

Some workers become annoyed and complain about it when noise becomes occasional, unnecessary, unexpected and unexplained, although some workers become annoyed and complain about noise but, at times noise alert a worker to be of him/herself.

iv. **Interference with communication**

In noisy conditions oral messages may be unheard making communication ineffective.

2.2.4 Heating and Ventilation

Heating and Ventilation comprise three factors: temperature, humidity, and air movement. All the factors can affect work performance and comfortability of the recipients (Dew, 1982).

This is not to say heating and ventilation always negatively affect work performance and comfortability of the recipient but, some heating and ventilation help productivity at work place, when the situation demands.

2.2.5 Illumination

Research has established the minimum standard of illumination necessary for many industrial tasks. Insufficient illumination at the workplace can lead to eye problems and accidents (Decenzo and Robbins, 1996).

This is not to say that all eye problem(s) and accident(s) are caused by illumination.

2.3 Health hazards on construction sites

A hazard is something that can be dangerous or cause damage to human beings and animals (Lloyd and Leslie et al. 1991) but some hazard(s) are negligence of duty. Construction workers are exposed to a wide variety of health hazards on the job. Exposure differs from trade to trade, from job to job, by the day, even by the hour. Exposure to any one hazard is typically intermittent and of short duration, but is likely to reoccur. A worker may not only encounter the primary hazards of his or her own job, but may also be exposed

as a bystander to hazards produced by those who work nearby or upwind. This pattern of exposure is a consequence of having many employers with jobs of relatively short duration and working alongside workers in other trades that generate other hazards. The severity of each hazard depends on the concentration and duration of exposure for that particular job. Bystander exposures can be approximated if one knows the trade of workers nearby.

2.3.1. Hazards to construction workers

Various workplace safety signs commonly used at construction sites and industrial work environments.

The leading safety hazards on site are falls from height, motor vehicle crashes, excavation accidents, electrocution, machines, and being struck by falling objects. Some of the main health hazards on site are asbestos, solvents, noise, and manual handling activities.

Falls from heights are the leading cause of injury in the construction industry. In the OSHA Handbook (29 CFR), fall protection is needed in areas and activities that include, but are not limited to: ramps, runways, and other walkways; excavations; hoist areas; holes; formwork; leading edge work; unprotected sides and edges; overhand bricklaying and related work; roofing; precast erection; wall openings; residential construction; and other walking/working surfaces.

The height limit where fall protection is required is not defined. It used to be 2 metres in the previous issue of Work at Height Regulations. It is any height that may result in injury

from a fall. Protection is also required when the employee is at risk to falling onto dangerous equipment.

Fall protection can be provided by guardrail systems, safety net systems, personal fall arrest systems, positioning device systems, and warning line systems.

All employees should be trained to understand the proper way to use these systems and to identify hazards. The employee or employer will be responsible for providing fall protection systems and to ensure the use of these systems.

Employees on construction sites also need to be aware of dangers on the ground. The hazards of cables running across roadways were often seen, until cable ramp equipment was invented to protect hoses and other equipment which had to be laid out.

Motor vehicle crashes are another major safety hazard on construction sites. It is important to be safety cautious while operating motor vehicles or equipment on the site. Motor vehicles shall have a service brake system, emergency brake system, and a parking brake system. All vehicles must be equipped with an audible warning system if the operator chooses to use it. Vehicles must have windows and doors, power windshield wipers, and have a clear view of site from the rear window.

Equipment on the job site must have light and reflectors if intended for night use. The glass in the cab of the equipment must be safety glass. The equipment must be used for their intended task at all times on the job site. Temporary fencing on a building site in Sydney, Australia

Before any excavation has taken place, the contractor is responsible for notification of all applicable companies that excavation work is being performed. Location of utilities is a must before breaking ground. During excavation, the contractor is responsible for providing a safe work environment for employees and pedestrians. The contractor shall comply with all standards set forth in 29 CFR Subpart P.

Access and egress is also an important part of excavation safety. Ramps used by equipment must be designed by a competent person, qualified in structural design.

No person is allowed to cross underneath or stand underneath any loading or digging equipment. Employees are to remain at a safe distance from all equipment while it is operational. Inspect the equipment before every use.

2.3.2. Road Construction Safety

According to American Recovery and Reinvestment Act of (2009), created over 12,600 road construction projects, over 10,000 of which are currently in progress. Workers in highway work zones are exposed to a variety of hazards and face risk of injury and death from construction equipment as well as passing motor vehicles. Workers on foot are exposed to passing traffic, often at high speeds, while workers who operate construction vehicles are at risk of injury due to overturn, collision, or being caught in running equipment. Regardless of the task assigned, all construction workers work in conditions of poor lighting, poor visibility, inclement weather, congested work areas, high volume traffic and speeds. In 2011, there were a total of 119 fatal occupation fatalities in road construction

sites. In 2010 there were 37,476 injuries in work zones, about 20,000 of those injuries are construction workers.

American Recovery and Reinvestment Act of (2009). Because they are so complicated, slight lapses in safety or awareness that might lead to mild accidents in other construction sites can be deadly for roadway construction workers. Causes of road worksite injuries include being struck by objects, trucks or mobile equipment (35%), falls or slips (20%), overexertion (15%), transportation incidents (12%), and exposure to harmful substances or environments (5%). Causes of fatalities include getting hit by trucks (58%), mobile machinery (22%), and automobiles (13%).

Media Safety Campaigns Road construction safety remains a priority among workers. Several states have implemented campaigns addressing construction zone dangers and encouraging motorists to use caution when driving through work zones. National Work Zone Safety Awareness Week is held yearly. The national event began in 1999 and has gained popularity and media attention each year since. The purpose of the event is to draw national attention to motorist and worker safety issues in work zones.

2.3.3 Safety Hazards

These are dangers which can be easily identified. Here are some examples of these hazards and their corresponding effects.

Safety Hazards	Effects
Slippery surface	Falls and fractures
Sharp edge	Wounds and infection
Fire	Burns and suffocation
Flying objects	cuts
Mechanical Accidents	cuts, fractures, shocks

2.3.4 Construction Hazards

According to American Recovery and Reinvestment Act of (2009), hazards for construction workers are typically of four classes: chemical, physical, biological and social.

Chemical hazards

Chemical hazards are often airborne and can appear as dusts, fumes, mists, vapours or gases; thus, exposure usually occurs by inhalation, although some airborne hazards may settle on and be absorbed through the intact skin (e.g., pesticides and some organic solvents). Chemical hazards also occur in liquid or semi-liquid state (e.g., glues or adhesives, tar) or as powders (e.g., dry cement). Skin contact with chemicals in this state can occur in addition to possible inhalation of the vapour resulting in systemic poisoning or contact dermatitis. Chemicals might also be ingested with food or water, or might be inhaled by smoking.

Several illnesses have been linked to the construction trades, among them being;

- Silicosis among sand blasters, tunnel builders and rock drill operators;

- Asbestosis (and other diseases caused by asbestos) among asbestos insulation workers, steam pipe fitters, building demolition workers and others;

- Bronchitis among welders;

- Skin allergies among masons and others who work with cement;

- Neurologic disorders among painters and others exposed to organic solvents and lead.

Elevated death rates from cancer of the lung and respiratory have been found among asbestos insulation workers, roofers, welders and some woodworkers. Lead poisoning occurs among bridge rehabilitation workers and painters, and heat stress (from wearing full-body protective suits) among hazardous-waste clean-up workers and roofers. White finger (Raynaud's syndrome) appears among some jackhammer operators and other workers who use vibrating drills (e.g., stoper drills among tunnellers).

Alcoholism and other alcohol-related diseases are more frequent than expected among construction workers. Specific occupational causes have not been identified, but it is possible that it is related to stress resulting from lack of control over employment prospects, heavy work demands or social isolation due to unstable working relationships.

Physical hazards

Physical hazards are present in every construction project. These hazards include noise, heat and cold, radiation, vibration and barometric pressure. Construction work often must be done in extreme heat or cold, in windy, rainy, snowy, or foggy weather or at night. Ionizing and non-ionizing radiation is encountered, as are extremes of barometric pressure.

The machines that have transformed construction into an increasingly mechanized activity have also made it increasingly noisy. The sources of noise are engines of all kinds (e.g., on vehicles, air compressors and cranes), winches, rivet guns, nail guns, paint guns, pneumatic hammers, power saws, sanders, routers, planers, explosives and many more. Noise is present on demolition projects by the very activity of demolition. It affects not only the person operating a noise-making machine, but all those close-by and not only causes noise-induced hearing loss, but also masks other sounds that are important for communication and for safety.

Pneumatic hammers, many hand tools and earth-moving and other large mobile machines also subject workers to segmental and whole-body vibration.

Heat and cold hazards arise primarily because a large portion of construction work is conducted while exposed to the weather, the principal source of heat and cold hazards. Roofers are exposed to the sun, often with no protection, and often must heat pots of tar, thus receiving both heavy radiant and convective heat loads in addition to metabolic heat from physical labour. Heavy equipment operators may sit beside a hot engine and work in an enclosed cab with windows and without ventilation. Those that work in an open cab

with no roof have no protection from the sun. Workers in protective gear, such as that needed for removal of hazardous waste, may generate metabolic heat from hard physical labour and get little relief since they may be in an air-tight suit. A shortage of potable water or shade contributes to heat stress as well. Construction workers also work in especially cold conditions during the winter, with danger of frostbite and hypothermia and risk of slipping on ice.

The principal sources of non-ionizing ultraviolet (UV) radiation are the sun and electric arc welding. Exposure to ionizing radiation is less common, but can occur with x-ray inspection of welds, for example, or it may occur with instruments such as flow meters that use radioactive isotopes. Lasers are becoming more common and may cause injury, especially to the eyes, if the beam is intercepted.

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.

Biological hazards

Biological hazards are presented by exposure to infectious micro-organisms, to toxic substances of biological origin or animal attacks. Excavation workers, for example, can develop histoplasmosis, an infection of the lung caused by a common soil fungus. Since there is constant change in the composition of the labour force on any one project, individual workers come in contact with other workers and, as a consequence, may become

infected with contagious diseases—influenza or tuberculosis, for example. Workers may also be at risk of malaria, yellow fever or Lyme disease if work is conducted in areas where these organisms and their insect vectors are prevalent.

Toxic substances of plant origin come from poison ivy, poison oak, poison sumac and nettles, all of which can cause skin eruptions. Some wood dusts are carcinogenic, and some (e.g., western red cedar) are allergenic.

Attacks by animals are rare but may occur whenever a construction project disturbs them or encroaches on their habitat. This could include wasps, hornets, fire ants, snakes and many others. Underwater workers may be at risk from attack by sharks or other fish.

Social hazards

Social hazards stem from the social organization of the industry. Employment is intermittent and constantly changing, and control over many aspects of employment is limited because construction activity is dependent on many factors over which construction workers have no control, such as the state of an economy or the weather. Because of the same factors, there can be intense pressure to become more productive. Since the workforce is constantly changing, and with it the hours and location of work, and many projects require living in work camps away from home and family, construction workers may lack stable and dependable networks of social support. Features of construction work such as heavy workload, limited control and limited social support are the very factors associated with increased stress in other industries. These hazards are not unique to any trade, but are common to all construction workers in one way or another.

2.3.5. Hazards to Non-Workers

According to New York (U.S.A) August (1988), many construction sites cannot completely exclude non-workers. Road construction sites must often allow traffic to pass through. This places non-workers at some degree of risk.

Road construction sites are blocked-off and traffic is redirected. The sites and vehicles are protected by signs and barricades. However, sometimes even these signs and barricades can be a hazard to vehicle traffic. For example, improperly designed barricades can cause cars that strike them to roll over or even be thrown into the air. Even a simple safety sign can penetrate the wind-shield or roof of a car if hit from certain angles. The majority of deaths in construction are caused by hazards relating to construction activity. However, many deaths are also caused by non-construction activities, such as electrical hazards. A notable example of this occurred when Andy Roberts, a father of four, was killed while changing a light bulb at a construction site when he came into contact with a loose bare wire that was carrying two thousand volts of electricity and died. Events like this motivated the passing of further safety laws relating to non-construction activities such as electrical work laws.

2.3.6. Health Hazard

According to Lossemore et al (2003), health hazards are often invisible and can take a long time to manifest themselves.

It may take perhaps 10 to 30 years. This can make it difficult to link the illness with the work process and the worker may have resigned, retired or moved and it may be

difficult to get the employer to pay for treatment or compensation. More serious is the fact that these health problems may never be cured for example cancer.

This is not to say all illnesses at old age stage attribute to the workplace because health hazards take long to manifest.

2.3.7. Controlling Occupational Hazards

Measuring and evaluating exposure to occupational hazards requires consideration of the novel manner in which construction workers are exposed. Conventional industrial hygiene measurements and exposure limits are based on 8-hour time-weighted averages. But since exposures in construction are usually brief, intermittent, varied but likely to be repeated, such measures and exposure limits are not as useful as in other jobs. Exposure measurement can be based on tasks rather than shifts. With this approach, separate tasks can be identified and hazards characterized for each. A task is a limited activity such as welding, soldering, sanding drywall, painting, installing plumbing and so on. As exposures are characterized for tasks, it should be possible to develop an exposure profile for an individual worker with knowledge of the tasks he or she performed or was near enough to be exposed to. As knowledge of task-based exposure increases, one may develop task-based controls.

Exposure varies with the concentration of the hazard and the frequency and duration of the task. As a general approach to hazard control, it is possible to reduce exposure by reducing the concentration or the duration or frequency of the task. Since exposure in construction is already intermittent, administrative controls that rely on reducing the frequency or

duration of exposure are less practical than in other industries. Consequently, the most effective way to reduce exposure is to reduce the concentration of hazards. Other important aspects of controlling exposure include provisions for eating and sanitary facilities and education and training.

2.3.8 Visual Display Units (VDU)

According to Ritz (2003), protracted exposure to computer visual display units is perhaps the most problematic working hazards of recent times. Heavy VDU users suffer eye strain, headaches, muscular disfunctions and absorb excessive amounts of radiation.

The point is not to attribute all sickness e.g. eye strains, headaches, muscular disfunctions and excessive amount of radiation to Visual Display, for especially those who are always on visuals.

2.3.9 Stress

Stress is the mental physical conditions that result from a perceived threat of dangers (physical and emotional) and the pressure to remove it. (Lloyd et al, 1991).

Some workers face problems not only of physical but also mental firedness.

According to Kerzner (2009), continued exposure to stress can cause extreme tiredness irritability, physical upset such as headaches, rashes, insomnia, and aggression towards fellow employees. Some other examples of health hazards and their corresponding effects are:

HEALTH HAZARDS	EFFECTS
Fumes and dust	Lung damage and suffocation
Asbestos and Silica	Death, Disability, Cancer
Lead	Infertility
Noise	Deafness and headaches
Chemicals	Toxic poisoning

2.4. Health and Safety Hazards in the Construction Industry

According to Weeks (2009), Construction workers build, repair, maintain, renovate, modify and demolish houses, office buildings, temples, factories, hospitals, roads, bridges, tunnels, stadiums, docks, airports and more. The International Labour Organization (ILO) classifies the construction industry as government and private-sector firms erecting buildings for habitation or for commercial purposes and public works such as roads, bridges, tunnels, dams or airports. In the United States and some other countries, construction workers also clean hazardous waste sites.

Construction as a proportion of gross domestic product varies widely in industrialized countries. It is about 4% of GDP in the United States, 6.5% in Germany and 17% in Japan. In most countries, employers have relatively few full-time employees. Many companies specialize in skilled trades—electricity, plumbing or tile setting, for instance—and work as subcontractors.

2.4.1. Accident at the Workplace

An accident at work is an unplanned event which occurs within a planned programme and is actually or potentially harmful to the worker (Cloush et al, 2000).

But some accident(s) are planned and not harmful to a worker but just to claim insurance to get huge sum of money at workplace, to establish business.

2.4.2 Office Accidents

According to Obeng-Fosu (1999) one of every twenty-seven office workers are injured each year. These accidents tend to happen in the normal work areas or in stock rooms. Bittel explained that the culprits of office accidents are waste baskets left in the open aisle, desk or file drawers left opened and electrical extension cords, loaded files boxes that strain the back of those who carry them and paper edges that cut the fingers.

Dew (1982) grouped office accidents in four (4) main categories which are

i. **Handling materials and equipment**

   This includes cutting fingers on the sharp edge of paper, leaving drawers of cabinets open, closing a stapler, tempering with machines in an effort to correct a fault and overloading the power supply.

ii. **Slipping, falling and tripping**

   These are caused by floor polished under loose rugs, torn and wrinkled papers and other objects left on the floor etc.

iii. **Being struck by falling objects**

This may be caused by unevenly loaded filing cabinet, large items such as pictures not securely fixed to the wall etc.

iv. **Striking against objects and colliding with other people**

These are caused by filing cabinet drawer left open, desks with extensions left out and placement of furniture behind door.

2.4.3 Places of Industrial Accidents

According to Loosemore et al, (2003), accidents can happen anywhere but the most common places for industrial accidents are:

i. Around hand lift trucks, wheel barrows, ware-houses, cranes and shipping departments. Handling and lifting materials cause more industrial accidents that any other activity. According to Dessler (2005), this covers about 33% of industrial accidents.

ii. Near metal and wood work machine, saws, lathes and transmission machinery as gears and pulleys.

iii. On stairs, ladders, walkways and scaffolds.

iv. Anywhere hand tools are used, chisels, screw drivers and hammers. This accounts for seven percent of industrial accidents.

Everywhere electricity is used, especially near extension cords portable hand tools electric drop light, wiring switch boards and welded apparatus. A large portion of construction workers are unskilled labourers; others are classified in any of several skilled trades.

Construction workers include about 5 to 10% of the workforce in industrialized countries. Throughout the world, over 90% of construction workers are male. In some developing countries, the proportion of women is higher and they tend to be concentrated in unskilled occupations. In some countries, the work is left to migrant workers, and in others, the industry provides relatively well-paid employment and an avenue to financial security. For many, unskilled construction work is the entry into the paid labour force in construction or other industries.

2.4.4 Causes of Accidents

The causes of accident have been classified in different ways by Harris et al (2006). They classified the causes of industrial accidents under two headings which are physical causation factors and underlying causation factors. He further divided the physical causation factors into environment and work process factors. The physical causation factors relate to accidents which happen when people are handling and lifting goods and materials, working with machinery, fall from height or fall on the same level, hit by falling objects, bumps into objects, and using hand tools.

The environmental factors including unsafe factory building, rickety shops or dangerous openings in the floor, unsafe or badly maintained machinery, bad lighting system, utility work place, faculty electrical connections, fire outbreaks etc.

Kerzner (2009), refers to the environmental causation factors as unsafe conditions which include improper illumination, ventilation, defective equipments etc.

Stroud (1993) included inadequate machine guards, lack of protective equipments in unsafe physical conditions and the unsafe environmental conditions include noise, radiation, dust, fumes and stress.

The second major cause of industrial accidents according to Kerzner (2004), is underlying causation factors. Dessler (2005) refers to it as unsafe acts. Safety experts and managers have come to realize that it is impossible to eliminate the occurrence of accidents simply by reducing unsafe working conditions. The reasons are that some accidents are caused by the employees themselves, no matter the precautions taken by management to make the workplace safe. The unsafe acts include failing to secure equipments failure to use protective attire and equipment, working at unsafe speed, throwing materials, teasing, abusing distraction attention, starting quarrels etc.

2.4.5 Principal Causes of Fire in the Workplace

i. Welding and Burning

Welding against a wooden backing or dust may result in a fire that does not ignite until several hours after the job has been completed.

ii. Electrical Sources

This can be caused by motor burning, faculty electrical wiring, and light bulbs on contact with fine dust or oily surface, unprotected bulbs and unshielded switches in the dust areas.

iii. Friction

Fallen materials on fast moving equipments such as a belt running off centre and rubbing against a fixed surface can be cause fire outbreak in the workshop.

iv. Accidental Fires in the Workshop

There are three components that require starting a fire. They are often described as the fire triangle and included the combustion and heat, the specific temperature of which it will ignite.

2.4.6 Fire Fighting in the Workshop

The main principle of firefighting procedure is to reduce or eliminate one or more of the three components of the fire triangle. Thus, move the fuel in the workshop;

Displace oxygen by covering a small fire with wet blanket, sheet, sand or dirt; uses types of fire extinguishers that can displace oxygen, remove the source of heat or reduce the heat to less than ignition temperature. This involves the use of water in the form of steam, spray, fog or water based components factories, offices and shops Act (1970).

2.5 Preventing Accidents at the Workplace

According to Decenzo and Robbins (1996), no matter the effort made to create a conducive working environment free from accident, a low accident rate can only be achieved by concentrating on the human element.

According to Kerzner (2004), accident prevention boils down to two activities which are; reducing unsafe condition and reducing unsafe acts.

2.5.1 Reducing Unsafe Conditions

This is always an employer's first line defense safety engineers should design job so as to reduce physical hazards. Sometimes the solution for eliminating an unsafe condition is obvious and sometimes it is subtler. For example, slips and falls are often the result of debris or slippery floors. Relative obvious remedies for problems like these include providing slip reducing floor coating, floor mats, and better lighting.

Again, unsafe conditions can be reduced by designing the job properly having managers watch for hazards (Seeley, 1994).

Reducing Unsafe Acts

This can be done in many ways. The first step of reducing unsafe acts is by emphasizing on safety. It is the responsibility of supervisors to set the tone so subordinate want to work safely. It is also necessary to show by both word and deed the safety behavior, listen to employees when they offer safety suggestions and visit plant areas regularly.

The second way of reducing unsafe acts is through training. This is most important with new employees who should be instructed in safe practices, procedures and warned of potential hazards. Motivation posters, incentive programmes and positive reinforcement are other ways of reducing unsafe acts. Safety poster and incentive programmes like safety awards and bonuses will also reduce workplace injuries (Stroud, 1993).

According to Harris et al (2006), safety measures could be by posting highly visible signs that proclaim safety slogans, placing articles on accidents prevention in construction sites newsletter or exhibiting a sign of proclaiming the number of days that plant has

operated without accident. Using behavior safety is another method. This can be achieved by identifying the workers' behavior that contributes to accidents and then training workers to avoid these behaviours. Another way of reducing unsafe acts is through employee participation. Dessler & Gary (2005), explained that there are two reasons for getting employees involved in designing safety programmes. Firstly, those actually doing the jobs are managements best source of ideas and it is easier to get employees to accept and follow the safety programmes when they have had a hand in designing it.

The last method of reducing unsafe acts is conducting health and safety audits and inspection.

2.5.3 Managing Health and Safety at Work

Managing health and safety at work includes developing health and safety policies conducting risk assessment which identity hazards and assess the risks attached to them; carrying out health and safety audits and inspection; implementing occupational health programs; managing stress; preventing accidents; measuring health and safety performance; communicating the need for good health and safety practices and organizing health and safety programmes (Armstrong, 2006).

2.5.4 Benefit of Workplace Health and Safety

According to Gilbreath (1992), benefits from better health and safety management include higher productivity, lower absences avoiding the cast of accidents and litigation, meeting clients/customers demand, and improving staff moral and employees' relations.

2.6 The Laws Regarding the Health and Safety of Workers in Ghana

i. It is the duty of every employer to ensure that every worker who works under him works under satisfactory, safe and health condition.

ii. It is the obligation of every worker to use the safety appliances, firefighting equipment and personal protective equipment provided by the employer in compliance with the workers.

iii. An employer shall not be liable for injury suffered by a worker where the injury is caused solely by non-compliance by the workers.

iv. An employer who without reasonable excuse, fails to discharge any of the obligations under above laws commits an offence and is liable on summary conviction to a fine not exceeding 1000 penalty units or to imprisonment for a term not exceeding 3 years or to both. Labour Acts (2003: Act 651 sec 118)

According to section 119 of the Labour Act (2003), when a worker finds himself in any situation at workplace which he has reasonable cause to believe present an imminent and serious danger to his life, safety or health, the worker shall immediately report this fact to his immediate supervisor and remove himself or herself from the situation.

An employer shall not dismiss or terminate the employment of a worker or withhold any remuneration of a worker who has removed himself from worked situation which has reason to believe presents imminent and serious danger to his life, safety or health. An employer shall not require a worker to return to work in circumstances where there is a continuing imminent and serious danger to life health or safety of the worker.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This study sought the opinions of workers in construction industries in Kumasi Metropolis on the health of construction workers and their families. This chapter deals with the methodology adopted for the study. It discusses the methods and procedures that the researcher employed in carrying out the study. It included the research design, population, sampling technique and sample, instrumentation, validity and reliability of the instruments, data collection procedures, presentation and analysis of the results.

3.2 Research Design

This study employed both quantitative and qualitative paradigms using the sequential explanatory design. This method, sequential explanatory design, consists of three major construction industries in Kumasi Metropolis. This design is characterized by the collection and analysis of quantitative and qualitative data in two consecutive phases within one study. Specifically, a case study design approach was adopted for this research to find out the impact of accident and hazards in construction industries on the health workers and their family, on six construction industries in Kumasi Metropolis.

3.2.1 Data Collection Procedure

The qualitative data were collected and analysed data to either confirm or disprove claims during the first phase. Data collecting technique included interviews for the

qualitative. The rational for this approach is that, the quantitative data and their analysis refine and explain those statistical results by exploring participants' views in more depth. The interview of the participants was conducted through personal contact with the assistance of three trained research assistants. This was normally done between 2.00 and 4.00 pm during meetings with the study participants. This criterion was used to ensure high degree of accessibility of information and high response rate.

In the researcher's view the qualitative research helps to understand social phenomena in a natural setting with emphasis on views and experience of the participant. Again, the quantitative technique gives the data of the peoples' experience as well as opinion.

3.3 Population

The target population for this study consists of construction industries in the Kumasi Metropolis. Thus, six major industries were randomly selected comprising three (3) building construction companies and three (3) civil or road construction companies, with five respondents in each of the six companies including trades men, their assistants and labourers. All these workers are on file to be able to identify or point out such problems in construction industries on the health of workers and their family.

3.4 Sampling Size and Sampling Techniques

Kumasi Metropolis was selected due to the fact that many construction workers are suffering mostly from health hazards are sick and this could have effect on them and their

families. Opinions snowball sampling techniques were used to identify workers who have had an accident and their responses were collected and analysed

The participants were mostly from Consar Limited, PW Construction, China GEO Construction, Nickseth Building Construction, Taysec Construction Company and Hype Company Ltd.

3.5 Data Collection Instruments

Structured and non-structured interview schedule to gather the primary data for participant. Data was collected from the population using the interview data collecting techniques.

3.5.1 Interview Schedule

The researcher also used a semi-structured interview guide. Specially, the face-to-face interview was adopted. The researcher adopted interview as an additional instrument in this research work to complement the data collected. The technique was used for the study because it offers participants the opportunity to construct their own word. Secondly, the researcher using the instrument got the opportunity to seek clarification through probing and expand the responses of interviewees to ascertain their feelings and experiences. The interview schedules for the participant contained open-ended items.

3.5.2 Observation

The researcher also made observations on environmental conditions on construction sites. How workers lift objects with their bare hands not using prescribed protective clothing at site. Most workers complain of delay payment of salary. Some company unions are strong enough that when workers fall into an accident the union can claim their compensation.

Outmoded tools, equipments and machines using at site. Faulty tools, equipments and machines using at site. Employers do not provide employees the needed protective clothing to be used at site.

3.6 Validity and Reliability of Instruments

The structured interview was first scrutinized by two building construction experts and the research supervisor. This was done to establish content validity. Construct validity was ensured by critically developing it within established theoretical framework.

After two weeks, a test-retest procedure was then used to further ensure validity and reliability of the instruments. The interview was conducted on the same participants. This yielded similar responses. This result gave proof to the fact that the interview was reliable and could be applied in the main data collection.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Introduction

This chapter presents results and discussions of the information sought from the survey instrument and structured interview guide. The results have been interpreted and analyzed based on the research objectives.

4.1 Analysis of Interview

Personal Data of the Participant

The participants were construction workers who have had accidents at the construction site. Twenty-eight (28) participants were interviewed through snowball of sampling.

Justification:

Twenty-eight (28) participant were available during the research.

4.1.6 Types of Accidents

Minor Accidents: Accidents that occur at site without any serious wounds, that can be treated with first aid without sending to the hospital e.g. sliping,

Major Accidents: Accidents that occur at site with little wound treated with first aid and send to hospital for further treatment without admitted at the hospital.

Fatal Accidents: Accidents that occur with serious consequences that require hospitalization for 1 – 3 months.

Deadly Accidents: Accidents that occur with serious consequences that require for 3 – 8 months hospitalization with even amputation.

Other Accidents: These are accidents which involve non-construction workers like water carriers, food vendors, etc.

Table 4.1 shows that majority of the participants were males with 92.85 population and female with 7.15%. The findings also suggest that males have more accidents because there are more males in the construction industries than females due to the tedious nature of the work. Eight (8) participants representing 28.6% had a major accident, six (6) participants had a fatal accident representing 21.4%, twelve (12) participants had a minor accident represent 42.8% and two (2) participants deadly representing 7%.

The results also indicated that persons from all the specialized areas have one way or the other, been involved in minor accidents. In most cases the victims were treated at the site and asked to go home and dress their wounds. The causes of these minor accidents are falling due to slippery grounds. The food vendors have their accident to uncalculated sleeping on objects like steel bars, pieces of wood. It is also noticed that with exception of food vendors, all the specialized fields have their members involved in major accident. In most cases the victims of minor accident were given first aid on site before they were sent to the hospitals, after which they were discharged to go home. The 2 females among them indicated that they were given 3 days to rest, and were paid for that.

Further questioning revealed that three out of seven males whose accidents status was considered to be major went to work the following day, because they were working on contract bases. They lamented that but for daily wages; they would not have gone to work.

Twenty-eight percent (28%) of the participants have had accidents ranging from fatal to deadly. At least they were hospitalized for a month. The victims of these accidents are carpenters and masons. The accident type was falling from a height due to unstable scaffolding. The victims were catered for ranging from 3 months to 1 year depending on the company they were working for. One carpenter working for a foreign company affirmed that, he was paid full salary even after one year. He said he came to work after one and half year's sick leave.

Table 4.1 Types of Accident, Sex and Areas of Specialization

			Sex		Specialization					
Types Accident	**No.**	**Percentage**	**M**	**F**	**Plumbing**	**Carpentry**	**Mason**	**Steel binding**	**Food vendors**	**Total**
Minor	12	42.8	11	1	2	3	3	2	2	12
Major	8	28.6	7	1	2	2	2	2		8
Fatal	6	21.4	6			3	3			6
Deadly	2	7	2			1	1			2
Total	28	100	26	2	4	9	9	4	2	28

Fatal accidents

The participants who had accident due to falling from height and had fractured legs and hands, waist and body scratch, fall into the category of fetal accident.

Also, participants who had deadly accident with damage on hand, teeth, and other part of body are classified into this group.

The research approached 4 managing directors and a safety officer about the welfare of the accident victims; it was revealed that their companies have their rules and regulation governing the workers. The companies always try to ensure their workers comply with the rules and regulations of the company to avoid any accidents but workers do not abide by them, hence the companies hesitate to pay compensation to any accident victims.

4.1.1 Age Group of Participants – Personal Data

As shown in Table 4.1, eighteen (18) of the participants were of the age range from 31 – 39 years, ten (10) participants out of twenty-eight (28) falls in the age group of 20 – 30 years and 40 and above years, no participants were recorded. The finding suggested that those workers with major accidents happen to be 31 years old and above. The researcher of the view that the majority of the accident victims who are above 30 years might have deemed themselves to be experienced at the work and hence pay little attention to safety, due to complacency.

Table 4.2 Age of Participants

AGE RANGE	NO	PERCENTAGE (%)	MINOR	MAJOR	FATAL	DEADLY
20 – 30	10	35.7	5	2	2	1
31 – 39	18	64.3	7	6	4	1
40 above	0	0	0	0	0	0
Total	28	100	12	8	6	2

4.1.2 Marital Status

From Table 4.2 of participant representing 7% are and 1person representing 4% is single and 25 participant representing 89% are married. It was stated that they are staying with their family members because they are not able to earn extra income to pay for rents and utilities due to ill health as a result of accidents.

According to the two (2) divorce, the divorce was necessitated by their inability to cater for the home and the family due to their disability.

Table 4.3 Marital Status of Participants

MARITAL STATUS	NUMBER	PERCENTAGE (%)
Married	25	89
Single	1	4
Divorced	2	7
Total	28	100

4.1.3 Educational Background of Accident Workers

The researcher noticed that the accident rates are higher among those employees with lower qualification as shown in table 4.4.

According to Table 4.4 sixty-four (64) representing eighteen (18) participants have lower level of education. These attribute their vulnerability to their inability to read and understand safety precautions.

Secondary and tertiary level of education workers are also involved in accidents but not like the lower level of education workers. The twenty-one percent (21%) representing six participants have secondary education, whereas fifteen percent (15%) representing four (4) have tertiary education.

The sixty-four percent (64%) representing 18 participants, are detailed as follows 3 masons, 4 carpenters, I quantity surveyor, 1 surveyor, 2 steel binder, 2 tillers, 3 plumbers, 2 drivers. These are those workers with JHS/MSLC educational background.

The twenty-one percent (21%) representing six participants, are detailed as follows; I mason, I carpenter, 2 quantity surveyors, 1 surveyor and 1 driver are the secondary education background.

The fifteen percent (15%) representing 4 participants, are detailed as follows; 2 quantity surveyors and 2 surveyors.

Table 4.3 shows that accident workers are mostly skilled workers because they work closely with tools, machines and equipments. They work with life and emotional tools and equipments.

When further asked at their time of appointment were they given orientation on safety, they answered negatively. They further stated that even though the management of their various companies know their health status they assign task which are the same as their co-workers.

Through interview, those accident workers have complained about insufficient welfare and salaries from the management which makes them irresponsible workers.

Again, the accident workers demand reduction of working hours as well as increase salaries due to disability since they acquired the accident at the workplace.

When asked whether management support them? The answer was no, even though, the management is not responding to their request. They explained, they needed salary increment because, they spend almost half of their salary on their health at the end of the month, this lead to the shortage their income.

The researcher took the opportunity to meet two managers and two supervisors about the welfare of the disabled workers, their health insurance, health bills, disability allowance and many more.

The authorities told the researcher that the disabiled workers have been given priorities to work less hours but not up to eight hours as normal time per day to serve as incentives.

Again, the management has decided not to dismiss them but, to work up to retirement age or end of contract to be able to end living. They emphasized that their welfare, health insurances, salary adjustment would not be considered because they work less hours.

Table 4.4 Educational background of Accident Workers

EDUCATIONAL BACKGROUND	JHS/MSLC	SHS	TERTIARY	TOTAL
No	18	6	4	28
Percentage	64%	21%	15%	100%
Mason	3	1		4
Carpenter	4	1		5
Quantity Surveyor	1	2	2	5
Surveyor	1	1	2	4
Steel Binder	2			2
Tiller	2			2
Plumber	3			3
Driver	2	1		3
Total	18	6	4	28

4.1.4 Mode of Employment

Twenty-six (26) participants representing 92.8% are permanent workers and 2 participants representing 7.2% are casual workers. Though most workers are permanent, their welfare as accident victims has been over looked by their employers. The casual

workers have the same problem of insufficient salaries for themselves and their family since they are not able to do overtime to earn income.

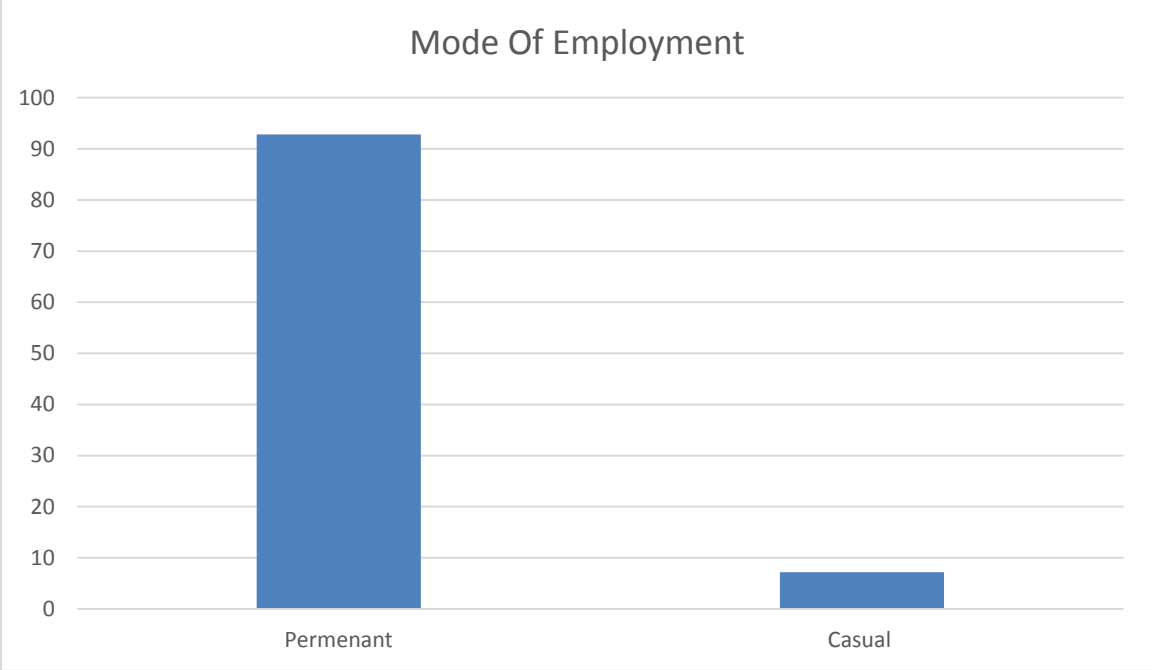

Figure 4.1 Employment Status Participants

4.1.5 Years at Work Experience

Result from Table 4.5 indicate that majority of participants 71% have between 10 and 30 years working experience in the construction firm while about 29% have between 1 to 9 years working experience.

The participants complained that working for so long in construction industries generate the developing of ill health due to the nature of work, dust, noise of equipments, severe sound and non-availability of enough protective clothing. However, care has not been given to them as a motivation to continue to work for their companies. Notwithstanding, they continue to work for their companies because they have no other

working option. The above emotional expression came with tears and that was the problem of all the accident victims.

Table 4.5 Years at Work Participants

YEAR AT WORK	NUMBER	PERCENTAGES %
1 – 9	8	28.6
10 – 19	10	35.7
20 – 30	10	71.7
Total	28	100

RESEARCH OBJECTIVE 2

4.2 Examine the financial status of accident victims

4.2.1 Spouse Working Status

According to Table 4.7, twenty-three participants representing 82% confirmed that their spouses are not working and 5 participants representing 18% confirmed that their spouses are working. Those spouses who are not working said that, formerly their spouses were working but, due to their husbands' accident went bankrupt. Their wives depend on their husbands for all their needs. The participants added that because their wives are working agreed that their wives' capital has reduced, because they depend on it for their husband medical expenditure and other expenses which they are not able to provide. All these have contributed to financial problems in their homes. Both spouse working and non-

working participants interviewed said they have applied for soft loan's form their companies to support their wives in doing petty trading to support in the house.

But, their companies did not consider the application. These have become challenges in their living condition for them and their families.

Table 4.6 Working Status of Spouse of Victims

WORKING STATUS OF SPOUSES	NUMBER	PERCENTAGE%
Working	5	18
Not working	23	82
Total	28	100

4.2.2 Sources of Income

According to figure 4.2, 18 participants representing 64.2% confirmed that they depend on other sources of income for their livelihood and 10 participants representing 35.8% depend solely on their monthly salaries.

These are some of the sources of income: provision store, barbering, selling (hawking), domestic farming.

These participants confirmed that they do those part-time work when they are off-duty and at their leisure time. Moreover, the participants who live only on their monthly salaries explained that, since they are physically weak and unhealthy, they cannot do any work alongside their working hours to support themselves financially. The participants said

they have tried to negotiate with their employers to increase their salaries but they are not complying. They confessed that their monthly income is not sufficient for their needs due to higher expenditure and this has affected their family financial status.

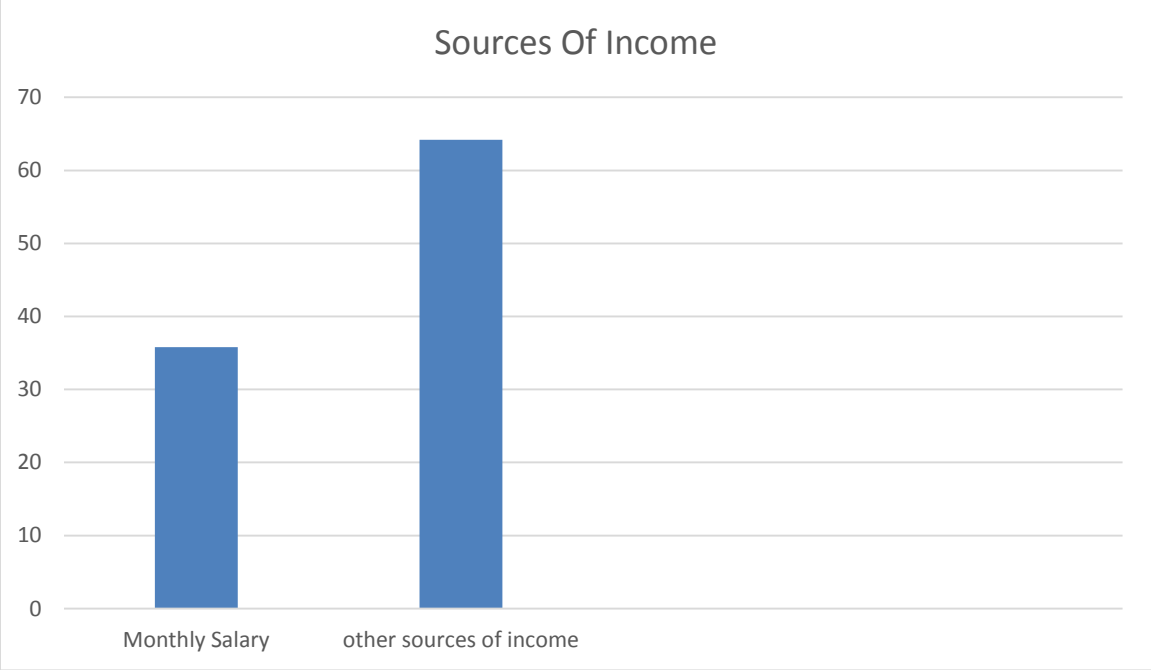

Figure 4.2 Sources of Income Participants

4.2.3 Employer Paying Extra Disability Income

Table 4.8 shows that 26 participants representing 92.9% confirmed that their employers do not pay any bonus or incentives to accident victims as a form of compensation and 2 participants representing 7.1% confirmed that their employers pay accident victims compensation allowance. They added that their efforts to contact their employers through their trade union to pay extra payment to accident victims in the construction industries have become fruitless and their employers are not willing to listen and solve their grievances or petition. However, the 7.1% who confirmed that they receive

compensation added that for six months now the extra payment has ceased. These affected their general welfare. They have become dependent and a burden to the family.

Table 4.7 Extra Disability Income Participants

PAYING EXTRA INCOME	NUMBER	PERCENTAGE%
Yes	2	7.1
No	26	92.9
Total	28	100

RESEARCH OBJECTIVE

4.3 Examining the link between the working environment and the health of workers

4.3.1 Provision of safety gadgets

According to Table 4.9, 20 participants representing 71.4% confirmed that their employers do not provide them with gloves, helmets, boots and other protective equipment that lead to the rampant accidents at site. Workers have been complaining but, no action is taken and 8 participants representing 28.6% said that their employers provide them with protective equipment to protect themselves but they do not use them. Even the little provided and available to them they do not know when, where and how to be used. In-service training, education and awareness were not provided by management. They claim management do not provide the them with adequate protective cloths to work, this lead to the accident at the work place.

Table 4.9 Protective Equipments by the Employers

ITEM	NUMBER	PERCENTAGE%
No	20	71.4
Yes	8	28.6
Total	28	100

4.4 Discussion

The participants complained that their disability has affect their finances, in that they work less hours which does not attract extra income which came as a result of overtime hours.

Again the participants confirmed that disability affects their personal life. They highlighted disability affected their personal life with regards to having sensory, visual, physical and other impairment. Also, disability affects personal life especially when walking, speaking and others, on unhealthy grounds, body weaknesses, eye irritation, headaches, and many others all these affect the personal life of accident workers. All these affected the family because when the bread winner is disabled and financially weak, it affects the family's finance. Decenzo & Robbins (2007) explain that, if workers cannot function properly at their jobs because of constant headaches, watering eyes, breathing difficulties or fear of exposure to materials that may cause long term health problems production will decrease.

Furthermore, the participants complained that employers do not organize periodic workshops and seminars on safety at the site. They complained about expertise and prevention of accidents of the site. This is in contrast with Turkson (2007), what every manager who understands the importance of the saying "a sound mind is a healthy body" should ensure that there are measures to take care of the health, safety and welfare of employees. "Health is wealth is wealth" so goes the popular adage but wealth is not measured only in terms of riches but also by the state of our mind and our body. Our health must therefore be preserved and promoted. (Turkson, 2007)

The participants complained that they have petitioned their individual companies to give scholarship to their children but the companies have not answered their petitions yet. They again complained of health insurance for the disabled workers and their families but the companies turn their grievances down. They complained of poor welfare of themselves and their families. They talked about promotions that since they had the accident their promotions are stand still; they are not promoted since they had the accident years ago. They said their employees promised to give their wards scholarship, health insurance, cater for their good welfare and promote the accident victims every three (3) years but their employers are not fulfilling their promises.

To prevent accidents at the workplace, management should provide protective clothing and equipment to the employees. Management should organize periodic workshop, seminars and in-service training to boost workers' expertise and prevent accidents at the site

All the participants are ignorant of the health and safety laws in Ghana. Instead of participants to go by the health and safety laws they look adamant, because they were green to know the laws. Also most of them cannot read and understand this contrast. According to Decenso and Robbins (2007), no matter the effort made to create a conductive working environment free from accident a low accident rate can only be achieved by concentrating on the human element. According to Kerner (2004), accident prevention boils down to two activities which are reducing unsafe conditions and reducing unsafe acts.

Hard hats and steel-toe boots are perhaps the most common personal protective equipment worn by construction workers around the world. A risk assessment may deem that other protective equipment is appropriate, such as gloves, goggles, or high-visibility clothing.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The issue of industrial safety and hazards has engaged the attention of manager's, workers and the general public.

This study was undertaken to examine the various types of hazards that workers are exposed to at work, the causes of accidents and how hazards and industrial accidents can be reduced.

A sample size of 28 employees, 2 managers and 2 supervisors were interviewed to dilate information on the topic. The main hazards facing the employees were revealed, the causes of accidents at the construction industries were defective or faulty machinery inadequate protective clothing and the nature of job/work.

Measures adopted to reduce accident at construction industries are provision of protective equipment, regular maintenance and training or educating employees.

5.2 Conclusion

It is evident from the analysis and findings that the rate of accident at construction industries was not regular since the researcher had only 28 participants in 6 construction industries. The main causes of accidents were identified to be ignorance and complacency of employees' unsafe behavior and working conditions. Measures were also adopted by

management to curtail these causes. Health and safety is linked to the economic progress of the country. It is therefore economical and cheaper to maintain a healthy working environment and manage risk than to administer loss due to job related injuries and illness.

5.3 Recommendations

Based on the findings of the research the researcher recommends the following to the management of industries attended. A safety section should be established and well abreast with a clear line of authorities. There is the need to intensify the training methods, safety regulations on safety working methods, safety regulations and the use of protective devices. Employees who refuse to adhere to the safety rules in the organisation should be disciplined. Also, there should be regular education, training and awareness on health and safety issues for the workers. Again, routing monitoring and inspection should be integral part of the organizational programmes.

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