

**OCCUPATIONAL HEALTH AND SAFETY PRACTICES AMONG  
HEALTHCARE WORKERS IN SOME SELECTED HOSPITALS IN  
TAMALE METROPOLIS**

**BY**

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## DECLARATION

I hereby declare that this thesis titled “*occupational health and safety practices among healthcare workers in some selected hospitals in Tamale metropolis, Ghana*”, submitted to the Graduate school of University for Development Studies for the award of Degree of Master of Philosophy (MPHIL.) in Community Health and Development. This work has not been submitted for any other degree.

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Date



## DEDICATION

This work is dedicated to the loving memory of my late father Mr. Abbot Awudu; who taught me the importance of acquiring knowledge and the need to continuously climb the academic ladder to the end. To my mother Hajia Bintu Seidu, I thank her for her boldness and support in taking care of us despite all the troubles we put her through. To my lovely wife Yakubu Zakia, I thank her for her patience and understanding for all the nights I had to stay awake just to finish this research. Thank you for your encouragement, motivation and support throughout this work.

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I would also like to dedicate this thesis to all workers of Central and Seventh Day Adventist Hospitals, both in the Tamale metropolis for their patients, commitment and dedication to duty.



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## ABSTRACT

Occupational health and safety hazards at a work environment are of critical public health concern. Many developing countries are battling with this canker particularly among healthcare workers and Ghana is not an exception. The study aimed to assess the occupational health and safety hazards among healthcare workers in some selected hospitals in the Tamale Metropolis. This was a cross sectional descriptive study carried out in two hospitals in the Tamale Metropolis (Tamale Central Hospital and Seventh Day Adventist Hospitals) Ghana. Purposive and simple random sampling methods were employed to gather data from 200 study participants. Data was presented as frequency, percentages and graphs. Mean and standard deviation were used to describe the data. Binary logistic regression analysis was used to assess the risk factors associated with occupational health and safety hazards and p-value <0.05 was considered statistically significant. Majority of the respondents were females (70.5%) and aged between 20-34 years, 50.5% married and 89.0% had attained tertiary education. The study participants were stratified into clinical and non-clinical staff with majority (86.5%) of the clinical staff being nurses and midwives. Biological hazards being experienced by workers were mainly cuts and wounds; 141(70.5%), pathogens/Agents, 66(33.0%), irritation from disinfectant, 52(26.0%) and toxic fumes, 22(11.0%). On the other hand, the non-biological hazards experienced were lower back pain, 99(49.5%), slips, trips and falls, 54(27.0%), noise and vibration, 30(15.0%), electric shock, 16(8.0%), extreme pressure from work, 86(43.0%) assault (verbal abuse), 81(40.5%) and sexual abuse 2(1.0%). Risk factors associated with biological hazards were being Clinical staffs [OR= 2.487 (1.146-5.397), p=0.021], poor maintenance of hospital items [OR=0.446 (0.240-0.831), p=0.011], assault (verbal) abuse [OR=2.581(1.317-5.059), p=0.006] and extreme pressure from work [OR=2.975 (1.519-5.829), p=0.001]. Non-biological hazards were associated with being single [OR=0.499 (0.263-0.947), p=0.034] being verbally assaulted [OR=3.581 (1.865-6.876), p< 0.0001]. In conclusion, clinical healthcare providers are more vulnerable to occupational health and safety hazard. Poor maintenance of hospital items, verbal (assault) abuse and extreme pressure at work are factors associated with biological hazards whilst being single and verbal (assault) abuse are factors associated with non-biological hazards. Occupational safety policy and frequent training on safety in hospital (three times yearly) will go a long way to help curb this menace.



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## LIST OF ACRONYMS

AIDS – Acquired immune-deficiency Syndrome  
ANC – Antenatal Care  
GDP – Gross Domestic Product  
GHS – Ghana Health Service  
HAV - Hepatitis A virus  
HBV – Hepatitis B Virus  
HCV – Hepatitis C Virus  
HCWs – Healthcare workers  
HIV – Human immune-deficiency virus  
HFs – Health facilities  
ILO - International Labour Organization  
IOHA - International Occupational Hygiene Association  
MOH – Ministry of Health  
NHIS – National Health Insurance Authority  
NIOSH - National Institute for Occupational Safety and Health  
OHS – Occupational Health and Safety  
OPD – Outpatient Department  
PPE - Protective Personal Equipment  
SARS - Severe Acute Respiratory Syndrome  
SDA - Seventh Day Adventist  
SEM - Safety Engineering Model  
TB - Tuberculosis  
WHO – World Health Organization



## INTRODUCTION

### 1.1 BACKGROUND

Hospitals are places of work for healthcare workers or institutions that provide healthcare services, such as treatment, consultations, counselling, clinical, surgical and psychiatric services for the healthy, sick and the injured (Aluko *et al.*, 2016).

Occupational hazards exist whenever a hospital or health institution is available for healthcare services (Gestal, 1987). Those at highest risks of occupational health and safety hazards are the staff of hospitals. The outcomes of occupational diseases and injuries among hospital staff include economic, physical, and psychological effects to the worker as well as his family (Gestal, 1987).

According to Maier (2009), occupational health hazards refers to the possible risks to health and safety of workers who work outside the home. Healthcare workers can develop health complications or sustain injuries when exposed to these risks at the work environment.

Healthcare workers, according to WHO (2010), refer to all people engaged in actions whose primary intent is to enhance health. They make important contributions and are critical to the functioning of most health systems (Ghosh, 2013). The Report by WHO (2005) also defined health workers as people whose job is to protect and improve the health of their communities. Together these health workers, in all their diversity, make up the global health workforce.

Healthcare workers do not only provide health services and sustain health systems, but also influence health outcomes for individuals and populations. These workers may include; doctors and physicians, nurses and other Allied health professionals, pharmacist, administrators and hospital orderlies, working within healthcare systems,





either in the community, clinics or in hospitals(Rebman, 2009). As a result of their crucial roles, World Health Organization(WHO) labeled healthcare workers as “the most valuable resource for health” and declared 2006 to 2015 “The Decade of Human Resources for Health” (Rebman, 2009).

Despite the importance of healthcare staffs, many countries and regions do not have adequate numbers of healthcare personnel. According to the WHO (2006a) 57 countries around the world are presently experiencing critical shortages of healthcare personnel. Although health facilities (HFs) worldwide employ approximately over 59.2 million workers that represent 12% of the working population in the world and 4.3 million more are needed to meet the minimum threshold of 2.5 healthcare professionals per 1000 population (WHO, 2006a; WHO, 2006b).

These workers provide a variety of services to their patients and clients and operate in an environment that is considered to be one of the most hazardous places to work (Guidotti, 2011). In addition to the usual workplace related exposures, healthcare workers encounter diverse hazards due to their work related activities (Nsubuga Fredrich, 2005). As a result, in most Africa and Asia countries health workers are leaving their jobs due to the growing threat of illness or death related to occupationally acquired disease or illness (Hämäläinen *et al.*, 2007)

Healthcare workers have a wide range of hazards on the job; including needle stick injuries, back injuries, latex allergy, violence, and stress. Healthcare workers need protection from these workplace hazards. However, because their job is to care for the sick and injured, these workers are often viewed as “immune” to injury or illness (Ghosh, 2013).



Healthcare personnels are of higher risk of infection from hazardous agents than the general population. Those most at risk are those whose work involve exposure to blood and blood products (MOH/GHS, 2010). The World Health Organization (WHO) estimates that Sharps injuries contribute 30% of new cases of HBV and 2.5 % of annual infections of HIV among healthcare workers in Sub-Saharan Africa (WHO, 2002).

Hazards are inherent property of a substance, agent, and source of energy or situation that has the potential of causing undesirable consequences (Adib-Hajbaghery and Lotfi, 2013). For example, chemical inhalation, slippery floor, working while standing on a ladder can constitute a hazard. However, risk is the probability that damage to 'life, health, and or the environment' may occur from a hazard (such as; exposure to toxic chemicals). In this regard, occupational hazards refer to workplace activities that have the potential to cause/increase the risk of injury or ill health (Tziaferi *et al.*, 2011).

The Ministry of Health in Ghana is striving to identify and bring under control workplace health and safety hazards; establish effective policies that will protect vulnerable groups at risks of occupational health and safety hazards; find out and improve workplace circumstances that may lead to the existence of health and safety hazards; and to educate stakeholders comprising employers, employees and the community members on occupational health and safety (OHS). Employers, including the government and private sector are required to provide information for employees to ensure that current legislative requirements are known, and that relevant, up-to-date



information is given regarding all identified hazards and their control (Hryhorczuk *et al.*, 2004).

Like most other developing countries, the healthcare service in Ghana plays a very crucial role in achieving economic and social development goals of the country. This is achieved by providing quality healthcare to all its citizens, as well as providing employment which contributes significantly to the Gross Domestic Product (GDP) of the country.

However, studies conducted by the Occupational and Environmental Health Program of the Ghana Health Service( GHS) indicated that workers do not only work under conditions that are hazardous to their health, but also they are not sensitized to Occupational Health and Safety (OHS) issues (MOH/GHS, 2010).

## **1.2 PROBLEM STATEMENT**

Occupational health and safety hazards in the work environment are of critical public health concern in Ghana. Previous studies have shown that occupational injuries and illnesses among HCWs are ranked among the highest of any industry, though could be reduced or eliminated. The predominant hazards to HCWs include blood-borne infections (such as Human Immunodeficiency Virus (HIV), Hepatitis B virus (HBV) and Hepatitis C virus (HCV)), back and neck pain, burn-out stress, allergic reactions to latex materials, spills from chemicals, exposure to radiation and assault from patients; among others (Amosu *et al.*, 2011).

Even though there has being advancement in occupational health and safety practices in most industrialized countries, the protection of workers from work-related injury is



not a priority in most third world countries (Developing) countries, partially because several other health problems have competed with occupational health and safety (Kumar *et al.*, 2000). Many developing countries, including Ghana are lacking adequate laws and policies that regulate the workplace. As a result, it exposes most health workers to hazards which may be life threatening. Research has shown that only 10% of the populations in these third world countries have occupational health and safety laws, excluding many major hazardous industries and professions such as the health industry (Ahasan and Partanen, 2001; LaDou, 2003). Even in conditions where occupational health and safety laws are available in some countries, workers are still being engaged in conditions that can be described as deplorable and deprive them of their dignity and value but also expose them to a number of occupational injuries and diseases (Caillard, 1993).

Another challenging issue has to do with under reporting of occupational health and safety hazards in Ghana and sub-Saharan Africa due to inadequate research; it has been established that a lot of occupational diseases or injuries are associated with third world countries lacking the necessary expertness and resources to manage it (Ahasan and Partanen, 2001).

It has also been recognized that medical waste management poses a great danger to healthcare workers in third world countries. For instance, poor handling, collection, sorting, segregation and disposal of medical waste such as sharp medical instruments, blood and body tissues (Patwary *et al.*, 2011). Unsafe disposal of medical wastes is a major challenge in Ghana as it contributes largely to occupational injuries and infections (Patwary *et al.*, 2011).



Patwary *et al.* (2011), established in their study that the rise in occupational health safety hazards in developing countries are largely blamed on Healthcare Workers (HCWs) not practicing universal safety precautions such as hand washing, wearing of gloves and the usage of Protective Personal Equipment (PPE). This dangerous pattern increases the risk of injuries as well as transmission of infections to HCWs.

In Ghana and other parts of the world for all types of hospitals, the healthcare workers' general duties involve regular contact with patients, permanent contact with diseases and death, the use of specific procedures and instruments which expose them to several occupational diseases and injuries (Hryhorczuk *et al.*, 2004). As a result, healthcare workers are at a greater risk of increased morbidity and mortality of occupational health and safety hazards. This Loss of experienced health personnel will adversely affect healthcare provision which is already suboptimal in developing countries like Ghana (Osungbemi *et al.*, 2016).

Amosu *et al.* (2011), Studies by (Nsubuga and Jaakkola, 2005; Nsubuga Fredrich, 2005) and Tinubu *et al.* (2010) indicates that healthcare workers are frequently exposed to biological, chemicals, physical and psychosocial occupational hazards and this is so because they are constantly in contact with patients that expose them to infections. These exposures do not only affect the quality of care being delivered by HCWs but also affects the safety and well-being of care providers.

Even though many researches have been done in the area of occupational health and safety, there is still a big gap which needs to be filled by this study particularly by localizing the challenges facing the health workers. This is to say that, most of the research conducted on occupational health and safety in the health sector are foreign



based and as such available literature lack local content. The study therefore, is important as it gathers and analyzes information in two major hospitals in the Tamale metropolis of Ghana.

Furthermore, knowledge on the predisposing factors of occupational hazards among healthcare workers is essential to inform occupational health and safety policy and programs for healthcare workers.

This study therefore aims at assessing the occupational health hazards among healthcare workers in some selected hospitals in the Tamale metropolis.

### **1.3 RESEARCH QUESTIONS**

- What are the socio-demographic characteristics of healthcare workers in Tamale Central and Seventh Day Adventist Hospitals in Tamale Metropolis?
- What are the biological and non-biological hazards being experienced by healthcare workers in Tamale Central and Seventh Day Adventist Hospitals in the Tamale Metropolis?
- What are the risk factors associated with exposure to biological and non-biological hazards among health workers in Tamale Central and Seventh Day Adventist Hospitals in Tamale metropolis?

### **1.4 MAIN OBJECTIVE**

The study aims at; “To assess the occupational health and safety practices among healthcare workers in some selected hospitals within the Tamale Metropolis”.



### 1.5 SPECIFIC OBJECTIVES

- To determine the socio-demographic characteristics of healthcare workers in Tamale Central and Seventh Day Adventist Hospitals within Tamale Metropolis.
- To determine the biological occupational hazards experienced by health workers in Tamale Central and Seventh Day Adventist Hospitals within Tamale Metropolis.
- To determine the non-biological occupational hazards experienced by health workers in Tamale Central and Seventh Day Adventist Hospitals within Tamale Metropolis.
- To assess the risk factors associated with exposure to biological and non-biological occupational hazards and safety practises among health workers in both hospitals.

### 1.6 CONCEPTUAL FRAMEWORK

“Work” generally is used to denote the exertion of effort toward some end; economically it refers to activities oriented toward producing goods and services for one’s own use or for pay (Eichler and Matthews, 2004).

WHO (2009) defines a health hazard as property damage, loss of livelihoods and services, and social, environmental or economic disruption or caused by any dangerous phenomenon, substance, human activity or condition. Working environment has a strong impact on the health and wellbeing of workers in hospitals. Hospitals that do not have supportive working environment as well as those that do



not take occupational health and safety into consideration can expose healthcare workers to hazards.

Working in health facilities are the most hazardous places to work not only for the healthcare workers but also for persons who visit there for other purposes (Triolo, 1989). These healthcare workers are made up of males and females who sacrifice their lives in serving the sick, injured and even the healthy. This healthcare workers because their work involves regular contact, permanent contact with diseases, injuries and death it exposes them to biological and non-biological hazards that can affect the health of the healthcare workforce operating in these hospitals.

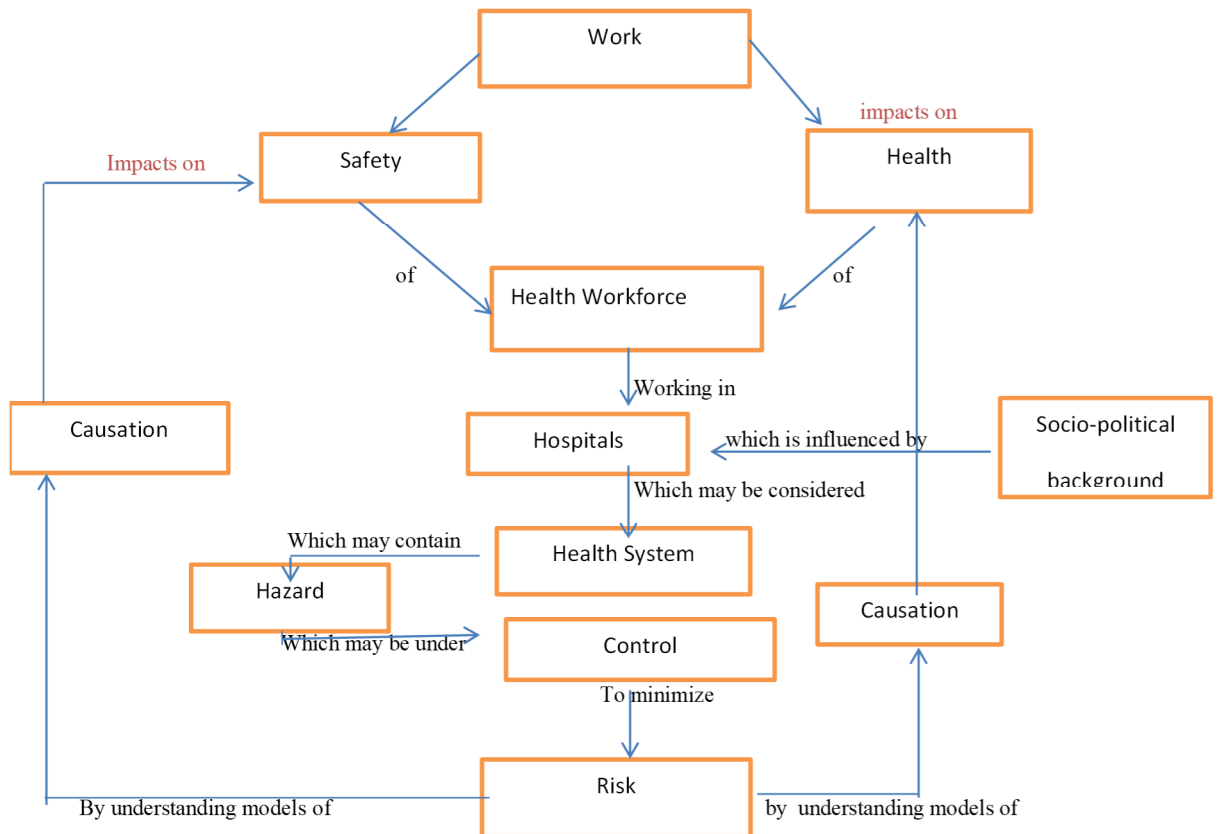
Work can impact on the health and safety of healthcare workers working in health facilities. This is because the hospital as a working environment contains hazardous materials and substances that expose healthcare workers to occupational diseases and injuries. These hazards must be control to reduce risks of exposure to biological and non-biological diseases to the health workers in hospitals.

The hospitals as organizations may be considered a health system. WHO (2002) defines a health system as “all activities whose primary purpose is to promote, restore, and maintain health.” Presently the definition has been farther extended to include the prevention of household poverty as a result to illness. Health system also called healthcare system can also be define as the process of organizing people resources to deliver healthcare services to meet the health needs of a target population. This health system contains health hazards that expose the workers to biological and non-biological risks. These hazards can contribute to the exposure of the healthcare workers to occupational risks that can affect the health and safety of healthcare





workers. As a result, the hazards must be controlled to minimize the risk of the healthcare workers from getting infected with occupational health and safety hazards at the hospital.



**Figure 1.1: Conceptual frame work**

The conceptual frame work was adopted from (Groothoff and Coh, 2012) with little modification.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 INTRODUCTION

Literature review is a vital sum-up of research on a subject of interest, frequently prepared to put a research problem in context or to authenticate existing evidence (Polit and Beck, 2008). The literature review aided the researcher to identify what other people have carried out and reported on the study problem. The main aims of the literature review are to place the present research inside the scheme of literature and to give context to the specific reviewer. A review of literature affirms the study and also indicates that a problem exists and constitutes the need for the current research. The researcher used the literature review process to formulate a detail apprehension of the topic. The literature review process assisted the researcher to identify disparities in current knowledge levels and helped in assessing the occupational hazards in the hospital (Norwood, 2010). The findings and perspectives of previous researchers were used in order to establish the intellectual discourse for aligning the research in relation to other research, and this was done through the review of literature. Literature review looked at journal articles, online resources, books, and reports that were related to occupational health and safety hazards at the hospital environment.

#### 2.2 HAZARD

Hazards are an inherent or integral property of a substance, agent, and source of energy or situation that has the potential of causing undesirable consequences (Australia, 2012). For example, chemical inhalation, slippery floor, and working



while standing on a ladder can constitute a hazard. Hazard may also be define as any source of possible impairment, harm or untoward health consequence on something or someone (Gillen *et al.*, 2003). The World Health Organization (WHO, 2009) defines a health hazard as property damage, loss of livelihoods and services, and social, environmental or economic disruption or caused by any dangerous phenomenon, substance, human activity or condition.

Working conditions have a strong impact on the health and wellbeing of workers in hospitals. Hospitals that lack supportive working environment and those tha do not take occupational health and safety into consideration; expose the healthcare workers to occupational health and safety hazards. In this respect, occupational hazards refer to all the activities that have the possibility to cause or increase the risk of accident or illness at the work environment (MOH/GHS, 2010; Tziaferi *et al.*, 2011). Maier (2009), defines occupational health hazards as the potential risks to health and safety for workers who work outside the home. Employees can develop health conditions or sustain injuries if exposed to these risks at the workplace.

Studies conducted by Aremo (2001) shows that healthcare workers who do not get occupational health and safety training are susceptible to sharp injuries that give rise to blood-borne diseases. Sakai *et al.* (2010) indicates that symptoms of acute mental fatigue are often seen in healthcare workers particularly nurse who take on additional responsibilities. It is stated that healthcare workers who perform chemotherapeutic agents report an increased incidence of severe health signs like nausea, vomiting, headaches, and hair loss (Martin, 2005). Martin (2005) further stated that there was an association between exposure to the drugs and adverse effects on reproductive



health among female staff members, including infertility, pre-term deliveries, spontaneous abortions, foetal abnormalities, and small-for-gestational-age births.

Healthcare workers are at a high risk of hazards such as needle stick injuries and blood-borne pathogens as they perform their daily duties (Phillips *et al.*, 2012). As a result of sharp injuries and daily contact with blood and other bodily fluids, healthcare workers are vulnerable to blood-borne infections such as Human Immunodeficiency Virus (HIV), Hepatitis B and Hepatitis C viruses (Ferrari *et al.*, 2015). Recapping, disassembly, and inappropriate disposal of hospital waste increase the risk of needle stick injury (Prüss-Üstün *et al.*, 2005) especially in developing countries, where the prevalence of HIV-infection is very high. Needle stick injuries were also reported as the most common occupational health hazard in a Nigerian teaching hospital (Iliyasu *et al.*, 2016).

### **2.2.1 OCCUPATIONAL HAZARD**

Occupational hazard refers to the endangerments, jeopardy or danger as an outcome of the type or working conditions of a specific job (Chopra and Pandey, 2007). It also means a work, equipment, substance, process, or condition that predisposes, or can causes injury or disease by itself at the work environment (Fasunloro and Owotade, 2004). Occupational hazard refers to a risk to an individual usually arising out of job (Muchiri, 2003). it can also refer to a work, material, substance, process, or situation that predisposes, or it causes accidents or disease, at a work place (Corrao *et al.*, 2004).

In 1950s, the first session of the joint International Labour Organization (ILO) and the World Health Organization (WHO) Committee on Occupational Health adopted a



definition of occupational health. The definition was subsequently revised in 1995 and states “Occupational health should aim at the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations”. These means the protection of workers from hazards resulting from factors adverse to health and the maintenance of safe working environment to meet their physiological and psychological capabilities (Guidotti, 2011).

Occupational health should target at the promotion and maintenance of the highest level of physical, mental, and social wellbeing of employees in all professions; the divergence from health among workers caused by their working conditions; their protection from risks resulting from factors antipathetical to health (Park, 2009). Healthy healthcare workers are particularly important for a successful healthcare practice and well-being of the patient (Leggat *et al.*, 2001).

Presently, occupational health and safety is seen by World Health Organization (WHO) as a top most agenda for health promotion in the 21st century (Hämäläinen *et al.*, 2007; WHO, 2010). The International Labour Organization (ILO) and the World Health Organization (WHO) reports showed that, in manufacturing sector many employees suffer from work-related injuries and property loss resulting in economic loss (ILO, 2010; WHO, 2010). Some studies have argued that the hazards can never be eliminated but minimized. However, it is difficult to minimize occupational health and safety practices when it focuses on less than 1% of organizational and national research issues (Jagger *et al.*, 1998).

### **2.3 THE HEALTHCARE SYSTEM IN GHANA**

The healthcare in Ghana is mainly rendered by the state and largely managed by the Ministry of Health (MOH) and Ghana Health Service (GHS). The healthcare system



has five levels of providers: health posts which are first level primary care for rural areas, health centers and clinics, district hospitals, regional hospitals and tertiary hospitals.

The healthcare sector is epitomized by the government health facilities that serve most of the population and a growing private sector that serves about 40 percent of healthcare needs. The healthcare sector is displaying positive growth as the body. MOH is investing more resources into the revival of all public health institutions. The National Health Insurance Scheme (NHIS) implemented by the government through MOH has made healthcare delivering more affordable and accessible to Ghanaians (MOH/GHS, 2010).

### **2.3.1 THE ROLE OF THE HEALTH SECTOR IN HEALTH DELIVERY**

The government is improving the healthcare industry in Ghana. This is because the sector plays a vital role in any economy and its activities are also important to the success of the socio-economic growth of the country. Among the social and economic priorities, health sector is one of the major concerns confronting government and policy makers. The health sector was at the forefront of the Millennium Development Goals (MDGs) which was attained in 2015 (Rhule, 2012).

The public health system however is experiencing a variety of challenges that includes shortages of staff, funding, as well as inadequate distribution of health personnel in the regions of the country (Van den Boom *et al.*, 2008).

### **2.3.2 PUBLIC HEALTH CARE SYSTEM IN GHANA**

The public health care system in Ghana is run through the NHIS, which allows other



three kinds of insurance schemes (Saeed *et al.*, 2012). Trends in the utilization of out-patient department (OPD) by holders of NHIS for the whole population indicates a rise from 2005 forward, compared to stable and lower patronage in the past. The timing and pattern of this rising trend agrees with the increasing levels in the National Health Insurance Scheme (NHIS) patronage (Witter and Garshong, 2009).

The Network of Mutual Health Organizations in 2009 approximated an average of 1.4 to 1.5 million attendants by NHIS members annually, showing that there has been the expected rise in the utilization of health service by NHIS holders (Witter and Garshong, 2009). Therefore, it is apparent that the enforcement of the NHIS for rendering healthcare services in public hospitals in Ghana, has led to the rise in clients access to these facilities.

### **2.3.3 CHALLENGES OF THE HEALTHCARE SYSTEM IN GHANA**

The healthcare system in totality, despite massive efforts by the government to resource health facilities, the health care system is still characterized by low funding, brain drain or lack of personnel. This led to the Ghana Health Service admitting that there is an “urgent need for additional health facilities and more qualified health personnel, especially in rural communities” (Friedman, 2008).

### **2.4 HEALTH HUMAN RESOURCE**

The persistent challenge in the health sector in Ghana is the issue of poor staffing. While the government is showing signs of transforming the health sector by providing infrastructure, the sector is losing personnel to higher income countries. An emerging report indicates a high influx of Ghanaian healthcare workers into western countries (Abdullah *et al.*, 2009). The organization for Physicians for Human Rights (PHR)



stated that in Africa, “health professional shortages are the most severe, by far, in rural and other poor areas” (Friedman, 2008). The overall ratio of medical staff in 2006 indicated that one doctor per 10,000 Ghanaians and one nurse per 1,587 people. Hospital admission per 1,000 Ghanaians was estimated at 36.5 in 2005 (Brillhart *et al.*, 2004).

According to PHR, “the Ghana Medical Service estimates that 1,200 Ghanaian physicians are in the US. Ghana currently has only about half the number of nurses it had in the mid-1980s”, when its population was close to half of what it was in 2008. “In 1999 alone, 328 nurses emigrated from Ghana, approximately equivalent to the number of nurses Ghana produces annually. In 2002, along with 70 physicians and 214 nurses, Ghana lost 77 pharmacists to other countries. The retail giant Wal-Mart is reported to be recruiting pharmacists from sub-Saharan Africa to work in their Canadian stores” (Friedman, 2008).

#### **2.4.1 SAFETY TRAINING IN THE HOSPITALS**

As a result of the importance of safety and training, occupational health specialists in their meeting identified the need for training and development across all the major groups of staffs in the healthcare sector. They included occupational safety professionals, administrative staffs, nurses, medical practitioners and occupational hygienists (Cole, 2002). During this training, it was found that only South Africa had occupational health and safety training programs that touched on all disciplines (Cole, 2002). Hence, the meeting concluded by calling for regional collaboration in advancing many issues of occupational health safety training.





According to Norman *et al.* (2006), education and training are the grounding factor that improves on Occupational Safety and Health, and that the enforcement of efficient health and safety hazards prevention plans necessitates level-headed basic education for work, certified induction and refresher training, and certified hospital specific training as part of lifelong learning. It has also being established that there is a linkage between poor education and training, and poor occupational health and safety execution (Norman *et al.*, 2006). Competency-based training has aided the initiation of occupational health and safety competences into various health competence criteria's, and this new advance to certification is linked to career progression.

Ek *et al.* (2014), stated that, safety practice indicates, individual, group and organizational attitudes, values and behaviors pertaining safety. On the other hand, Safety management relates to the formal safety practices and obligations authenticated in a safety management system. A well- established safety practice in an institution endows the sustenance and betterment of safety performance, with focus on safety work and advancement procedures for safety. Safety practice or culture is a robust preminent indicator or forecaster of safety consequences across industries and nations. According to Ek *et al.* (2014), organizations and corporate societies with well-established operational and proactive health and safety management systems are probably to encounter less work- related accidents and diseases.

In a study conducted by Sakai *et al.* (2010), about knowledge, awareness and compliance with universal precautions among healthcare staffs, established that nurses, medical doctors and medical technologists had good knowledge of universal precautions. In countries like Malaysia, human resource departments are responsible



for managing the control and prevention of workplace hazards. The preventative procedures should include hazard elimination and minimization, and the provision of personal protective equipment (Aw *et al.*, 2007). Research by the Occupational Global Health Network has associated workplace vulnerability to hazardous chemicals with health outcomes such as skin rashes, adverse reproductive outcomes, and likely leukemia and various cancers (Yassi *et al.*, 2009).

Furthermore, Vredenburg (2002), stated that for workers to be participating in a safety activities, they must get training in occupational health and safety. Vredenburg (2002), contended that a well-planned and administered training activity should focus on safe work practices and must surmise from a reliable appraisal of the need of employees. This is to ensure that safety training renders the means for making accidents more predictable. To ameliorate the quality of health and safety for all workers, institutions should initiate a systematic and detailed health and safety training program for fresh workers, assign a mentor for these staffs and use a buddy system to acquaint new staffs in the occupational health and safety quality systems, as well as regular re-educating and re-training staffs in current health and safety practices (Vredenburg, 2002).

Presently, the laws governing occupational health and safety are disjointed across a number of Acts such as the Labour Act, Workers Compensation Law, the Factories Act and Mining Act all under the Ministry of Employment and Social Welfare. In Ghana, health and safety legislative instruments are seen in different Ministries and they are not specific to solving health and safety problems bedeviling the hospitals or health sectors. Hence, if there is no specific Law enacted in the form of a health and



safety Act, healthcare staffs will endanger their lives by being infected by occupationally acquired diseases at the work environment.

## **2.5 OCCUPATIONAL HEALTH AND SAFETY HAZARDS IN GHANA**

Occupational health and safety are an essential challenge due to high rates of morbidity and mortality that affects workers. It is estimated that about 100,000 workers lost their lives as a result of occupational accidents and illnesses, and over 400,000 new cases of occupational illness or diseases are diagnosed annually (Ajayi *et al.*, 2006; Bell *et al.*, 2013). This has impact on the life of employees in several professions due to their exposure to varied kinds of hazards in different levels in the workplace. However, research shows that employees in the farming, general contracting, steel, automobile, truck driving and nursing industries records the higher exposure to high risk occupational and safety hazards (Bell *et al.*, 2013).

Occupational health and safety should be dealt with in a holistic manner that will ensure full wellbeing of the worker at the job. The World Health Organization (WHO, 1995), define occupational health to include the activities for occupational medicine, occupational hygiene, occupational psychology, safety, physiotherapy, ergonomics, rehabilitation and so on. Safety on the other hand includes the security of people from physical injury (Hughes and Ferrelt, 2008). The International Occupational Hygiene Association (IOHA) broadly defines occupational health and safety (OHS) as the science of anticipation, recognition, evaluation and control of hazards arising in or from the workplace that could impair the health and well-being of workers, taking into account the possible impact on the surrounding communities and the general environment (Rebman, 2009). Hence, occupational health and safety



must be perceived to be concentrating on the promotion and maintenance of the highest level of physical, mental and social welfare of employees in all professions (WHO, 1995).

Ghana is in the process of becoming a middle-income country, and this modification is leading to exposure of a great number of the workforce to different health and safety hazards at the work environment. The Annual Report of Ghana Labour Commission (Amponsah-Tawiah, 2013) stated that a total of 8,692 work-related disorders were reported to the Department for compensation claims. However, in the year 1999, the rate of work-related disorders stood at 4,088. This figure excludes those occurring in the informal sector (Amponsah-Tawiah, 2013). The constitution of the International Labour Organization (ILO) highlight on the protection of the workforce against sickness, diseases and injury arising out of job as fundamental element for social justice. Occupational safety and health is a human right and decent work promotes safe work (WHO, 2010).

“People at work face a variety of hazards owing to chemicals, biological agents, physical factors, adverse ergonomic conditions, allergens, a complex network of safety risks, and many and varied psychosocial factors” (Cox and Griffiths, 2005).

Occupational injuries or accidents may, have great consequence on the mental health of employees and those present at the scene of the accident (Costa, 2003). The safety and health of workers at the work environment is expensive to the individual workers as well as their families, employers and the country at large. In addition, there is fiscal significance for the workers who are injured, as well as the employer (Marmot and Wilkinson, 2005). The Ghana Workmen’s Compensation Law 1987 (PNDC 187), Adei and Kunfaa (2007), requires that the employer pays all medical expenses related



to any work place related accident, and in addition, pay some compensation to the accident victim. Occurrence of accident at the work place can also have serious implications for the organization's profile (Awino, 2011) .

## **2.6 THE WORK ENVIRONMENT OF HOSPITAL WORKERS**

The work environment in hospitals varied from one setting to the other, and these variations make hazards inherent in the healthcare industry (Wagner, 1997). Comparatively, hazards at work settings also varied contingent on the activities done at a specific work environment. Hospitals are workplaces in which healthcare is rendered to patients and includes treatment, diagnosing, antenatal care, prenatal care, family planning services and many other primary healthcare services. Healthcare settings have been recognized as the most hazardous occupational settings as a result of the activities carried out and the various hazards encountered in these environments (Triolo, 1989; Moore and Kaczmarek, 1990; Rogers *et al.*, 1999).

The healthcare settings are unique from other work environments. These is because healthcare workers are more vulnerable to occupational health and safety hazards similar to other work environments; for instance, manual handling of patients and loads as well as noise are some hazards that cut across most occupations. In addition, some hazards are regarded as unique to healthcare industry. For example, biological hazards that are transmitted through exposure to infectious pathogens and inhalation of poisonous chemicals are common hazards in the healthcare sector (Wafula, 2012).



### **2.6.1 DISPOSAL OF MEDICAL WASTE PRACTICES IN HOSPITALS**

Every health facility has the obligation to ensure that waste generated is disposed safely to protect healthcare workers from potential exposure and harm to the clients and the environment. Hospitals must engage environmental officers who will be responsible for waste management and have a sanctioned place for dumping waste. All healthcare staffs are expected to have a plan of action and guidelines for waste disposal. All hospitals should establish a waste management scheme to ensure that all relevant regulative demands are met. Waste management programs must also be established as part of the overall scheme. A designated environmental officer or committee must ensure that the waste management program is implemented (Aseweh Abor and Bouwer, 2008).

Generic waste management road maps have been established in some countries. For instance, road maps for the management of medical waste have been created by the Health Professions Council of South Africa in 2008. Hospitals must provide storage places with sufficient lighting, ventilation and make room for providing containment of spills within the storage place. Waste security and confinement of access to only authorized people should be ensured. Storage places must be planned in such a way that routine cleanliness, maintenance of hygienic standards and post-spill decontamination is all simple to carry out. Healthcare institutions should be held responsible for little medical and related waste spill that may happen both at site and during transportation. They should establish a spill management program and train healthcare staffs on it (Thatiparti, 2017).

There are some common processes that must be followed at the hospitals in dealing with medical waste, including:



- Sharps should all be put together, irrespective of whether or not they are contaminated.
- Sharps containers should be perforation resistant and are usually made of metal or high-density plastics.
- Sharps containers should be tamperproof and fitted with covers that do not allow access to the sharps contained within. The containers should be rigid and impermeable so that they safely retain not only the sharps but also residual liquids from syringes.
- Containers for infectious waste should be red and marked with the international infectious substance symbol.
- Containers and bags should be removed when they are not more than three quarters full to enhance their safe handling.
- Some bags can be closed by tying the neck of the bag while heavier gauge bags may require plastic sealing ties of the self-locking type (Wafula, 2012).

In a study in Ghana on disposal of medical waste by (Abor, 2007), indicated that both public and private hospitals have waste management policies and committees to handle waste in hospitals. They have a place within the hospital internally for storing the waste before its final disposal. This is in accordance with the waste management guidelines (Abor, 2007).

In a related development, there are some nations whose practices in respect of medical waste are inadequate. A study conducted in Brazil in 2014, on the reality of waste management in primary healthcare units, shows that waste containers were overloaded above the proposed limits, temporary storage of waste takes place in



improvised places, normally in more obscure areas of the hospital where waste are left exposed to possible environmental, people and animal actions (Alves *et al.*, 2014).

Segregation of medical waste should be carried out at the location of generation and disposed according to the relevant categorization. The practice concerning medical waste disposal in Korea as per the study undertaken on medical waste management in 2006, endorse the statement. The study indicates that medical waste is segregated or separated at the point of generation by the many hospitals. Human tissues are put in a red container, pathological waste and discarded sharps are stored in a yellow container and all other wastes are kept in an orange container (Jang *et al.*, 2006).

Good segregation practices are also enforced in some nations. A study undertaken in Ghana also shows that both public and private hospitals segregate their waste into varied classifications, by first recognizing the type of waste and then segregating non-infectious from the general waste (Aseweh Abor and Bouwer, 2008).

Many nations and organizations are faced with problems of medical waste disposal, this is apparent in the research conducted in several areas. A survey of medical waste disposal which was undertaken in Lagos by Longe (2012), revealed that waste was collected in a mixed form, carried and dumped along with district solid waste. Several hospitals in the area lacked proper systems for medical waste management for some reasons such as poor funding, lack of priority for medical waste management as well as the absents of competent waste administrators (Longe, 2012).

Another study by (Azage, 2013), in the hospitals of Gondar Town in Ethiopia, on factors associated with risk perception of hospital workers towards the disposal medical waste in the hospitals, indicates that separation of medical waste is not carry





out the hospitals. All other hospitals do not have color coded containers and medical waste management roadmaps.

Another study undertaken in southern Nigeria by (Longe, 2012), on medical waste disposal shows that the standard procedures were not followed with regard to the disposal of medical waste. About 2,000,000 kg of medical waste is produced yearly with hazardous wastes and sharp things constituting almost 19%. These wastes are dumped in public waste containers along streets and often disposed in open and unlined landfills (Longe, 2012).

In some nation's hospitals abide by medical waste disposal regulations as guidelines for practice. Tertiary and secondary hospitals in Gansu province of China generally abide with natural rules, render better occupational health and safety measures to all related healthcare staffs, develop an internal program, set up a medical waste management team and have a reasonable composition of waste management directors (Zhang *et al.*, 2013).

In the city of Allahabad India, many of the hospitals both government and private including nursing homes, resort to private waste management companies for the collection, management, treatment and disposal of medical waste. This waste management companies sometimes also conduct training concerning medical waste disposal to the healthcare staffs (Alves *et al.*, 2014).

Unconventional medical waste dumping practices have also occurred in South Africa. A study conducted in a hospital at Cape Town, South Africa, indicates that the separation of medical waste was not done according to the standard regulations and guidelines. There are no policy guidelines for dumping medical waste. Healthcare workers left used sharps such as needles on their clients bed which posed a risk of



needle pricks (Abor, 2007). Policies and guidelines stand as a point of reference for worker and enforcement thereof will advance their practice. Another study on medical waste dumping at Tygerberg Hospital in Western Cape, South Africa in 2006 shows that the hospital does not have any regulation or plan for buying the needed equipment or tools for rendering appropriate medical waste disposal. Color coding was not enforceable because only one color was used for all kinds of waste. Thus, the medical waste disposal in that hospital is not following the World Health Organization recommended standards (Abor, 2007).

Other factors that can impact on waste management practices are; poor supervision and the magnitude of the work. In a study by (Manaf *et al.*, 2009), at Ataturk Training Research Hospital in Turkey, the reason given by the participants concerning the challenges been experienced on the issue of medical waste was the magnitude of the work and supervision challenges. Research findings from developing countries highlights financial challenges and the absents of specialized medical waste employees, as contributing to poor dumping of medical waste (Babanyara *et al.*, 2013).

## **2.7 HEALTHCARE WORKERS AS HIGH-RISK EMPLOYEES**

Healthcare workers, according WHO (2012), refer to all people engaged in actions whose primary intent is to enhance health. They make important contributions and are critical to the functioning of most health systems (Ghosh, 2013).

The healthcare workers are at high risk of exposure to occupational health and safety illness or disease if not properly protected against exposure to hazards. The healthcare worker have been recognized to be among the most neglected category of workers with regard to monitoring of their occupational health status, and has also proven



that the safety of health workforce does not receive the necessary recognition that it deserves (Mitchell, 2000). Below are the reasons that have been attributed to that:

- The first reason is the misconception that healthcare workers know the dangers that are associated with the performance of their duties at work and thus can prevent themselves from those hazards. This misconception has, however, been proven to be false.
- The second reason is that healthcare training generally excludes an understanding of occupational health, and this makes health workers mostly uncertain of their own hazards. In an unpublished work by Mitchell (2000), indicated that nineteen (19) hazards in hospitals were identified to be present. However, professional nurses were only able to identify 4 of those hazards (range 0-9). This finding agrees with the international research findings which states that healthcare workers were asked to identify three chemicals which go into the body through the respiratory tract. 1.9% of respondents selected ethylene oxide, 11.8% selected gluteraldehyde and 44% selected waste anaesthetic gases.

## **2.8 SAFETY HAZARD**

According to Mitchual *et al.* (2015) safety hazards are those aspects of the work environment that have the potential of immediate and sometimes violent harm to an employee; for example, loss of hearing, eye sight, or body parts, cuts, sprains, bruises, broken bones, burns and electric shock. Health hazards as those aspects of work environment that slowly and cumulatively (and often irreversibly) lead to deterioration of an employee's health; for example: cancer, poisoning and respiratory



diseases. Typical causes include physical and biological hazards, toxic and carcinogenic dusts and chemicals and stressful working conditions (Cole, 2002).

There is growing international realization that health workforce attrition is created by occupational hazards is unnecessarily high and demands urgent attention (WHO, 2006b). For instance, about 90% of nurses surveyed by the American Nursing Association (Association, 2010) showed that health and safety issues will determine whether they would stay in the profession or not. In Africa and Asia, the growing threat of illness or death related to occupationally acquired disease is increasingly a reason healthcare workers leave their jobs (WHO, 2006b; WHO, 2006a).

Even though many workplace hazards can be minimized or controlled, health workforce have the highest proportion of occupational related accidents and diseases of all workers. In the year 2000, the Canadian Institute for Health Information, stated that Canadian healthcare workers were 150% more possible to miss work than other workers to miss work due to injury and illness (Maslove and Fooks, 2004). In the United States, the number of healthcare workers injured at workplace is becoming alarming whilst injuries in two of the most dangerous industries, like agriculture and construction, are decreasing (NIOSH, 2010).

This is readily apparent that in order to address the occupational health and safety hazards around the world, the health and safety of these workers must be made a priority. Healthcare workers face many types of occupational hazards including exposure to infectious diseases, physical, chemical, ergonomic, and biological hazards; slips, trips, falls, noise, and vibration are examples of physical hazards. Fires, explosions, leaks, spills, and exposure to gases, vapours, mists, dust, and fumes are common chemical hazards. Muscular-skeletal problems resulting from repetitive



activities such as lifting and carrying, or from spending long periods in one single position such as sitting at desks and working with computers, are typical ergonomic hazards. Lastly exposure to bacteria, viruses, biogenic toxins, and allergens is characteristic of biological hazards.

## **2.9 BIOLOGICAL HAZARD AND ITS ASSOCIATED RISK FACTORS**

A chunk of work performance or activities results in hazards to workers, and among these is biological hazards which are especially important, mostly due to the different types of exposure, contact with extremely dangerous agents, and presence of workers with defective immune systems. Bio aerosols and dust are regarded vital sources of microorganisms at a work setting (Memish *et al.*, 2013).

Furthermore, biological hazard can be substantial in countries with larger economic growth. Some biological hazards are also classified as carcinogenic to human. Specific emergent biological hazards have been pointed out recently by the Risk Observatory of the European Agency for Safety and Health at work, that the worker's attitude and behaviour, influenced by his own perception of hazard should be considered more than his real knowledge, which could over-underestimate the hazard itself. Exposures of health workers to many risk factors are possible in work environments due to their daily contacts with patients as well as their work environments. Occupational illnesses and injuries can happen as a result of biological hazards (Corrao *et al.*, 1992; Corrao *et al.*, 2004) .

Where there is intentional and deliberate use of biological agents in work environments such as microbiological laboratories, the occupational exposure can easily be monitored and controlled. However, where there is unintentional exposure at



the workplace, risk assessment and management becomes unmanageable and exposure prevention and protection measures can be incompatible (Corrao *et al.*, 2012).

Biological hazard is a term used to describe microorganisms that are biological in nature and origin, to which exposure in sufficient quantities and duration may result in illness or injury to human health. Biological hazards include bacteria, viruses, fungi and parasites or parts thereof or products they generate (MOH/GHS, 2010).

It is approximated that biological hazards at work environment is responsible for causing the death of 320,000 workers annually in the world and about 5,000 deaths in the European Union, where occupational diseases due to infections are about 0.8% of the total death toll, with a prevalence of biological hazards at (65.21%) in health and social services (Driscoll *et al.*, 2005).

According to Eckebrecht (2000), workers with weak immune systems are more susceptible to biological hazards and have to be debarred from exposures. Accordingly, biological hazards at workplaces needs a complicated management approach in identifying which departments are mostly affected by the presence of such hazards. This is because, healthcare workers are distinct and unique in that clinical staffs are in daily contact directly or indirectly with body fluids, traumatize tissues, saliva, and blood on a daily basis (Hovius, 1992). Almost every member of the healthcare workforce is at risk of exposure to Hepatitis B virus (HBV), HIV infection, and other types of communicable diseases (Muralidharan *et al.*, 2013).

Healthcare workers are considered at higher biological risk because they are permanently exposed to blood and body fluids. Their exposure to infectious pathogens is widely regarded as the most important occupational risk factor, because of the high



probability that accidents at work can increase the risk of exposure to infections (Kumar *et al.*, 2000; Mohammed and Shaik, 2013).

### **2.9.1 COMMON BIOLOGICAL DISEASES AMONG HEALTHCARE WORKERS**

Healthcare workers encounter several kinds of occupational health and safety hazards that include exposure to infectious diseases, back and repetitive strain injuries, latex allergies, assault or violence from clients and caregivers, as well as stress (Gerberich *et al.*, 2011). Biohazards are among the major hazards that affect the health of healthcare workers. It is a fact that infectious pathogens exist in almost all healthcare facilities and include exposure to air-borne and blood-borne diseases (Hoffmann *et al.*, 2013).

Annually at least 3 million health workers globally are exposed to blood-borne pathogens as a result of needle prick injuries (Prüss-Üstün *et al.*, 2005). Out of this number 2 million of them are exposed to hepatitis B, 900 000 to hepatitis C, and 170 000 to HIV (WHO, 2005). These injuries lead to more than 40% of all hepatitis B and C infections and 2.5 % of HIV infections in healthcare workers (Hayden *et al.*, 2008). Furthermore, studies by Niu (2000), reported that Hepatitis B and HIV are the most common occupational diseases in hospitals. Phillips *et al.* (2012), also notes that HIV and AIDS are currently considered to be the infectious disease giving rise to most anxiety among hospital workers.

According to the WHO, HIV/AIDS further contributed to the high burden to already delicate health systems coupled with poor infrastructure, resources, and workers. For instance, among female nurses in two hospitals in Zambia, deaths increased from 2 per 1000 in 1980 to 26.7 per 1000 in 1991. In Botswana, an estimated 17% of the



health workers died as a result of AIDS between 1999 and 2005 (WHO, 2006b; WHO, 2006a).

In the United Kingdom for instance, the rate of transmission of HBV in the general populace is 0.5%, while Healthcare workers have a transmission rate of approximately 1.6% (Nelson *et al.*, 2005). Many of the common viral agents that can cause hepatitis have been detected in body fluids such as saliva and blood. The viruses most commonly implicated include hepatitis A virus (HAV), HBV, and hepatitis C (Pruss, 2003).

More and more healthcare workers are also exposed to air-borne diseases such as tuberculosis (TB), influenza, and Severe Acute Respiratory Syndrome (SARS) (Sadlier *et al.*, 2015). The 2003 SARS eruption especially exemplify how failure to use the right workplace precautions affected health workers. More than one fifth of worlds SARS cases were in health workforce; in Canada, healthcare workers represented 51% of cases (Yassi *et al.*, 2004). The SARS outbreak highlighted the need to not only render the proper instruments or equipment to healthcare workers, but also to render effective training and information on the identification, assessment, management, and control of occupational hazards (Gessesew, 2006).

The revitalization of tuberculosis (TB) and the step-up in multi-drug resistant TB has also become a dangerous occupational hazard for healthcare workers globally (Harries *et al.*, 1997). Increase TB transmission rates in developing countries make the risk of the disease for health workforce in those areas more significant. Over 90% of the global TB cases are found in hospitals in developing countries and 54% of healthcare workers in these countries are estimated to have latent TB (Joshi *et al.*, 2006).





## **2.9.2 INFECTION OF HEALTHCARE WORKERS TO HEPATIS B, C AND HIV**

According to World Health Organization risk assessment of hepatitis B and C, and HIV infections among HCWs, it was established that contaminated sharps, such as syringe needles, scalpels, and broken glass were responsible for the prevalence of hepatitis B and C, and HIV (WHO, 2002). This assessment shows the general challenges of high risks prevailing among the small worker population in the world that are vulnerable to this infection.

WHO (2005), also discovered that, out of the 35 million healthcare workers worldwide who are affected by hepatitis and HIV, there were 3 million percutaneous exposures to blood borne pathogens in 2000. This discovering is equivalent to between 0.1 and 4.7 sharp injuries per year per individual health worker. This research finding by World Health Organization concluded that among all the hepatitis B and C prevalence in HCWs, about 40% was caused by sharp injuries, with wide regional differences. It was also established that 1% - 12% of HIV infections in healthcare workers was caused by sharp injuries (WHO, 2005).

The comparison of risk analysis by region and type of infection shows that, action would be taken to ensure the safety of healthcare workers. Understandably, resolutions exist to these challenges, as indicated by the nations that have involved in grievous prevention efforts (Ratner and Sawatzky, 2009).

Good needle handling and medical waste management, substitutions for sharps, vaccination against hepatitis B virus, post exposure treatment, training, and legislative steps have been a success (Nelson *et al.*, 2005). Beyond the personal and work environment outcomes, the possible annihilating societal consequence of loss of this



vital healthcare group can be hoped-for if measures are not put in place for their protection in developing countries, where the proportion of HCWs in the population is already small (Rosenstock, 1997).

### **2.9.3 OCCUPATIONAL RISKS OF NEEDLE PRICKS IN HOSPITALS**

Needle stick injuries was defined as “introduction into the body of healthcare providers during the routine performance of their duties, of blood or other potentially hazardous material by a hollow bore needle or sharp instruments e.g. needles, lancets and contaminated broken glass” (Waqar *et al.*, 2011). Khraisat *et al.* (2014) also stated that needle pricks and sharp injuries were regarded the single most important occupational hazards endangering the lives of healthcare staffs.

Needles pricks and sharp injuries are the most common accidents to occur among healthcare givers, and results in them getting blood-borne pathogens like HIV, Hepatitis B Virus (HBV), or Hepatitis C Virus (HCV), which are dangerous threats to their welfare as well as their lives (O’Sullivan *et al.*, 2011).

Epidemiological information on needle pricks and sharp injuries, including factors associated with occupational transmission of blood-borne infections, are vital for directing, implementing, and evaluating measures at the local and national levels (Irmak, 2012). This is because over 80% of needle pricks injuries are avertible with the use of the right precautions strategies (Zaidi *et al.*, 2009). There are several dangerous pathogens that can be carried on or transmitted through needle pricks and sharp injuries, (Kebede *et al.*, 2012). There are over thirty (30) known risky blood-borne pathogens that can be transmitted to healthcare employees by the incidence of a needle prick injury (Kebede *et al.*, 2012).



Hospitals are dynamic areas where many procedures are ceaselessly taking place at all levels of the structure, processes, and outcomes (Elverson and Samra, 2012). According to Cho *et al.* (2013), stated that there are some factors that influence the danger of needle prick injuries in hospitals. The factors include; re-capping needles, the absence of needle-disposing bins, job stress, lack of experience, and emotional stress. However, Zafar *et al.* (2009), stated that the most common factor responsible for needle prick injuries are recapping and the unsafe collection and disposal of sharp wastes. Hence, it is essential to explore what has been done to understand and prevent this problem.

Hospitals can supervise needle pricks by resorting to appropriate surveillance procedures, such as EPINet; which is a software tool that was created in 1992 by the International Healthcare Worker Safety Center at the University of Virginia (Jagger *et al.*, 1999). EPINet is widely used in the United States of America and some other countries like Japan to supervise needle pricks with the aim of developing interventions to reduce the canker (Khraisat *et al.*, 2015).

## **2.10 NON-BIOLOGICAL HAZARD**

### **2.10.1 PHYSICAL HAZARDS**

A physical hazard refers to those factors within the work settings that can cause damage or harm to the worker without necessarily coming into contact with it (Myers and Myers, 2004). These hazards among health workforce is ubiquitous in all health facilities particularly hospitals and clinics. Physical hazards include ionizing radiation, noise, heat and cold, vibration, electric and magnetic fields (Ndejjo *et al.*, 2015). Ionizing radiation exposes healthcare workers to some dangers not only in



radiological and radiotherapy departments, but also in laboratories, dental unit, electro-microscopy units, as well as in wards and theatres or operation rooms (Jankowski, 1984).

Radiation is used for both diagnostic and therapeutic uses in hospitals or health facilities. Work involving the preparation and assessment of radiopharmaceuticals and intervention radiology have the tendency to be affiliated with the highest occupational exposure in the medical use of radiation (Groothoff and Coh, 2012). Dosages of radiation to the hands can increase to a yearly limit of 500 mSv (Orji *et al.*, 2002). Hence, it is vital that radiation protection steps are rigorously complied, and the health care workers are adequately screened from radiation sources so that the dosages to the entire body and extremity can be drastically reduced to as low level as can be fairly attained (Sadoh *et al.*, 2006).

Vibration and noise are not major threats in healthcare industry except in dental and orthopedically surgery. High-speed dental turbines and surgical drills can create noises at the level of 80–90 dB (A) which could be harmful to the hearing of the health workers particularly those performing the surgery for long duration of time (Oluwagbemi, 2011).

High temperatures are usually not major worry among healthcare workers. However, in some developing countries, some groups of health workers performing certain tasks are affected by extreme temperatures that constitute a threat to their health. Poor design of structures and the maintenance culture can lead to the pollution of indoor air quality. For that matter, particular attention must be given to the ventilation of the structures to prevent the “sick building syndrome” (where the building is highly polluted by gases and considered a death trap) (Osborn *et al.*, 1999). This is especially



important in areas, such as laboratories and the surgery units or theatres where there is a specific need to suppress, reduce or control gases that are hazardous, (Niu, 2000).

## **2.11 WORKPLACE VIOLENCE**

Violence is an important challenge in our health facilities as well as community based health care settings (Cooper and Swanson, 2002). Studies have shown that more than one-third of healthcare workers indicated that they experienced some kind of psychological aggression, emotional harassment, or abuse while performing their job in the past one year. Psychological aggression at work environment can be expensive in terms of individual effects, such as high psychological stress, reduced satisfaction, and poor physical health. However, in terms of organizational impacts such as turnover, counterproductive work behaviors, and reduced productivity (Strickler, 2013).

Violence among HCWs at work is common with workers who are in regular contact with people in anguish. The most common factors responsible for this assault includes: Frustration and anger coming out of illness as a result of pain, problems of ageing, psychiatric disorders, alcohol and substance abuse can affect people's conduct and make them verbally and physically aggressive (Winchester *et al.*, 2012). Also, HCWs are at special dangers of work setting violence. Healthcare workers working in emergency care units and in psychiatric hospitals are at high risk of assault. Female HCWs are specifically vulnerable to assault at work (Niu *et al.*, 2010).



### 2.11.1 PSYCHOSOCIAL HAZARDS

Psychosocial hazard refers to the process of interactions between job content, work organisation and management, as well as other environmental and organizational conditions, on one hand, and the workers competencies and needs on the other (Amponsah-Tawiah, 2013). Hence, psychological hazards can be defined as the several kinds of workplace interactions that have a risky exposure on employees' health through their perceptions and experience (ILO, 2010).

A psychological hazard is any hazard that influences the mental well-being or mental health of the employee and may have physical consequence by overpowering the individual's coping mechanisms and impacting the employee ability to work in a healthy and safe condition (Government of Alberta, 2011). According to Cox and Griffiths (2005), psychosocial hazards refers to those aspects of the design and management of work, and the social and organizational contexts of work that have the possibility for causing psychological or physical danger. Milczarek *et al.* (2007) stated that substantial changes at the work environments lately are closely associated with the organization and management of work have ensued in emerging hazards and new challenges in the area of occupational health and safety. Work-related stress and workplace violence are widely accepted as major psychological hazards that bring-up tremendous setbacks to occupational health and safety (Milczarek *et al.*, 2007).

The psychological hazards, also called psychological risks, Khademloo *et al.* (2013) have been established to wallop on the health and safety of workers and the healthiness of organizations. The World Health Organization WHO (2010) argued that psychosocial hazards or risks go together with the experience of work-related stress. WHO again WHO and UNICEF. (2003) stated before that work-related stress



results from the responses individuals may have when they are confronted with work demands and pressures that do not correspond with their personal resources, knowledge and abilities and which challenge their ability to cope. These types of hazards colligated with work setting challenges such as workload, lack of control or respect, bullying, assault and many others. This leads or results in stress (short-term impacts) and strain (long-term impacts) among the healthcare workers. Psychological hazards for instance include: workload demands, workplace violence (assault), work pressure, disrespect for employees, work flexibility, individual control or say about issues at work, social support, and sexual harassment (Ramdurg, 2011). A study by the Ministry of Health in Ghana MOH/GHS (2010) showed that biological hazards, manual handling of patients and psychological stress are the most common hazards among healthcare workers.

According to Sadlier *et al.* (2015), psychological hazards such as high workload, highly demanding work, fatigue (both mental and physical), and burn-out are common in hospital settings and causes stress, depression and mental fatigue in the employees. A study conducted by the National Institute for Occupational Safety and Health NIOSH (2010), identified stress as one of the major occupational health and safety setbacks for health workers particularly nurses. For instance, clinical workers who work with terminally and chronically ill clients, and those who work in intensive care units, emergency rooms, and surgery rooms are particularly at risk for stress related syndromes (NIOSH, 2010). The early symptoms of stress include irritability, loss of appetite, ulcers, migraine headaches, emotional instability and sleep disturbance (Alli, 2008).



### 2.11.2 ERGONOMIC HAZARDS

Ergonomic hazard is the kind of hazard that occur when the type of work, put strain on the employees' body due to the body positions and working conditions. It is the application of scientific knowledge to the design of the environs, tools, work settings and the content of work to fit the mental and physical limitations and capabilities of workers (Kotze, 1997).

They are the most difficult hazards to spot since there are always impossible to notice at once. This is because the strain on the body will take time before appearing (Aremo, 2001). Short-term exposure may result in muscles pain, lower back pain within a day or in the days following exposure, but long term exposure can result in severe long-term illnesses. According to Tinubu *et al.* (2010), work-related musculoskeletal hazards can occur from work-related activities and are well known among health workforce. The healthcare workers who are mostly affected by the musculoskeletal hazards in the hospitals are nurses accounting for 60% of the reported cases (Tinubu *et al.*, 2010). The study added that musculoskeletal disorders wallop significantly on the quality of life, absenteeism, work restrictions, possibility of transferring to another job or developing a disability than any other category of illness, with a relatively large economic cost on the employee as an individual, as well the hospital or organization and the society at large (Tinubu *et al.*, 2010).

Back injuries come second among all etiology of occupationally acquired illness across professions (Gerberich *et al.*, 2011). Working in the hospital is physically demanding, as their tasks require heavy lifting, bending, twisting and other manual handling have resulted in back injuries of healthcare workers. The regular lifting of weak clients, debilitated and elderly clients, heightens the danger of back injuries





among healthcare workers caring for them. Another cause of the back injury is the gender of the healthcare workers; as females are more possible to suffer from this illness (Leka *et al.*, 2010). Healthcare tasks that involve lifting clients to bed, assisting clients out of bed, transferring clients from the bed and carrying medical equipment are the most frequent etiologies of back pains. Adegoke *et al.* (2008), established that the most common occupational health hazard among health workers is lower back pain.

## **2.12 CHEMICAL HAZARDS**

Chemical hazards exist when an employee is exposed to any chemical preparation in the work environment in any kind, whether; solid, liquid or gas. Some chemical hazards are safer than others, however, some employees are more sensitive to chemicals, and even common solutions can cause illness, skin irritation, or breathing problems (Manyele *et al.*, 2008).

Healthcare workers are susceptible to different variety of chemical hazards which are used in hospitals and other health facilities. These hazards include anaesthetic agents, disinfectants, chemical sterilizing agents, drugs and cytostatic or laboratory reagents. Most of these substances irritates the skin and affects the respiratory tract and can cause allergy. Others, like ethylene oxide, formaldehyde, hexachlorophene, are known mutagens, teratogens and human carcinogens (Rogers *et al.*, 1999).

Among the occupational allergic agents, latex, acrylic and epoxy chemicals in orthopaedics and dentistry, laboratory chemicals such as formaldehyde, chromium, cobalt and organic solvents can cause irritant dermatitis. Substances such as animal protein and antibiotics; especially the penicillin category: are well-known allergic agents that may cause not only asthma but also dermatitis and conjunctivitis. It is



significant to establish that once an allergy has occurred, it is very hard to keep the exposure levels minimal enough to prevent exacerbation of the disorder. Hence, it is very essential to prevent or minimize exposures in the first place (Rutala, 1996).

## **2.12.1 SOME CHEMICAL AGENTS THAT ARE HARMFUL TO HEALTHCARE WORKERS**

### **Cytotoxic drugs/Antineoplastic agents**

Antineoplastic agents may be prepared and distributed in a variety of health facilities. A lot of study has written on the dangers of cytotoxic drugs to healthcare workers who work in hospitals. These chemicals have been associated with mutagenic, teratogen, and carcinogenic effects as well as untoward consequences such as irritation of the skin, eyes, and mucous membranes or acute allergic reactions. Poor handling as result of mixing these agents can lead to exposure (Rhule, 2012)

Another study established that cyclophosphamide was seen in urine specimens of two oncology healthcare workers who were involved in the preparation of this drug (Hirst *et al.*, 1984). The finding of this study raises the probability that high absorption of the drug by the two oncology workers could have taken place. It was proposed that the high levels of mutagenicity seen in urine specimens of the oncology health workers might have arisen in part from metabolites of cyclophosphamide. In respect of the known side-effects of cytotoxic, such as second malignancies, this finding is essential to health worker especially nurses (Rhule, 2012).

Increased frequencies of sister chromatid exchanges in lymphocytes of healthcare workers handling cytostatic drugs has been reported (Mohammad, 2014). Workers who are mostly exposed to cytostatic agents with long period of time had significantly



increased numbers of chromosome-type breaks in their lymphocytes as against those with a reference group of unexposed laboratory workers and hospital administrative staff (Laitinen and Päivärinta, 2010).

In a related study, involving twenty four (24) oncology nurses and pharmacists and an equal number of matched referents found that the frequency of in vivo mutations in lymphocytes was significantly high in the former and appeared to be associated with the length of exposure (Rhule, 2012). Such findings put more weight to the suspicion that these drugs pose a potential carcinogenic danger to healthcare workers particularly, exposed nurses. Yet, the absences of a prospective study indicate a clear-cut neoplastic effect on exposed healthcare workers is a challenge. As a result of the potential adverse effects, care must be exercised in handling both these drugs and the waste products of patients undergoing cytotoxic chemotherapy. The urine of patients receiving cisplatin contained appreciable amounts of the drug (Geller and Robinson, 2015).

### **Ethylene oxide**

Ethylene oxide is a common chemical used in hospitals or health facilities to disinfect medical tools and heat-sensitive substances. One can come into contact with it in central supply, surgical services, and patient care areas. This chemical possesses carcinogenic, mutagenic and teratogen properties and can lead to respiratory tract irritation, central nervous system effects, and chemical burns (Rogers, 1997). A study by Hogstedt and Aringer (1986) established that bone marrow is the most risky component of the body to be affected by this substance.

### **Formaldehyde**



The carcinogenic effects of this chemical in humans remains debatable. Some studies have found excess of certain tumors among exposed healthcare workers. However, other findings are contrary to such findings. Nonetheless, the Environmental Protection Agency and the National Institute for Occupational Safety and Health in the United States have categorized formaldehyde as a possible human carcinogen (Pinkerton *et al.*, 2004).

### **Glutaraldehyde**

Glutaraldehyde is a germicide used in the cold sterilization of equipment. Healthcare workers performing cold disinfection in dialysis, endoscopy, and intensive care units are vulnerable to exposure to this agent. The exposure of this workers are associated to the practice of soaking instruments in open containers without benefit of local exhaust ventilation as well as during manual cleaning of instruments (Waters *et al.*, 2007)

Also, it is associated with skin and mucous membrane irritation and may lead to skin sensitization, asthma-like symptoms, headache, and flu-like symptoms. At increased levels of exposure it is associated with liver toxicity (Brown, 2007).

This chemical appears to act both as an irritant and as an allergen. Identified disorders as a result of exposure to glutaraldehyde include; rhinitis, asthma, and contact dermatitis (Curcani and Tan, 2009).

Occupational Safety and Health Administration (OSHA) has indicated that signs may be induced by airborne concentrations of 0.3 ppm or greater. A National Institute for Occupational Safety and Health study indicates that routine use of glutaraldehyde in



hospitals produced personal breathing zone and ambient air levels of 0.4 ppm (Curcani and Tan, 2009). A ceiling limit (maximum allowable level at any time) of 0.2 ppm has been set by the Occupational Safety and Health Administration for exposure to glutaraldehyde. Minimization of exposure may take place by the use of engineering controls and good safety precaution at workplaces (Brown, 2007).

### **Elemental mercury**

This instrument is mostly used in many healthcare environments. Those at high risk of getting exposed are health workers, when there is breakage of the glass part of a thermometer or Sphygmomanometer and the mercury spills onto the floor or countertop. Exposure to high levels can cause acute poisoning and loss of life. Short term high exposures are associated with pulmonary and central nervous system damage (Clarke, 2004).

## **2.13 OCCUPATIONAL DISEASES /ACCIDENTS IN THE HEALTH SECTOR**

Working environment has a great effect on workers' health. A non-supportive working condition can endanger the health of healthcare workers if not properly controlled, and can lead to occupational health hazards (WHO, 2009). Hospitals are moderate health-risk sectors as they provide health services to people with diverse illnesses (Shiao *et al.*, 2001).

Occupational disease is any disease or illness that is associated with a specific occupation or industry. Such illness can occur as a result of different biological, chemical, physical, and psychological factors that are in existence at the work setting



or are encountered in the process of performing your job. Occupational medicine on the other hand, has to do with the effect of all types of work on health and the effect of health on a worker's ability and efficiency (Berland *et al.*, 2008).

Occupational illness/diseases are basically preventable and can be attributed to defective working conditions (Phillips *et al.*, 2012). The management of occupational health and safety hazards minimizes the incidence of work-related illness and injuries and ameliorates the health and morale of the health workers, resulting to reduced absenteeism and high worker turn over. In most cases the moral and economic benefits far outweigh the costs of eliminating occupational hazards (Britannica, 2009).

Work settings have a strong effect on the health of workers. An un-supportive working environment can lead to harm if not properly managed, and can result into occupational health and safety hazards (WHO, 2009). Hospitals are average health-risk sectors as they are responsible for the provision of health services to clients or patients with different illnesses (Maier, 2009). A study conducted by Shiao *et al.* (2001) established that sharp related injuries remain the most dominant cause of exposure to blood-borne diseases or impairment that affect healthcare workers at their workplace. This means that occupational health and safety hazards continuous to remain a critical setback for health workforce in the workplace.

Studies conducted by the Occupational and Environmental Health Programme of the GHS indicate that not only do workers work under conditions that are hazardous to their health, but the staffs are also not sensitized to Occupational Health and Safety (OHS) issues (MOH/GHS, 2010).



## 2.14 MANAGEMENT OF OCCUPATIONAL HAZARDS IN HOSPITALS

Healthcare workers at any health facility may be exposed to a different kind of workplace hazards in the process of rendering their services to clients. The first step for addressing health and safety at the hospital environment is to ensure healthy work setting in the hospital and this requires effective assessment of the hazards. The major component for an effective health and safety management programme in the hospital is to identify and assess the hazards that exist at the various workplaces in the hospital, and then determine appropriate measures to deal with them. The risk assessment procedures can be used in the identification and control of hazards in the workplace (Leka *et al.*, 2010).

Risk assessment has been defined by the European Commission Corrao *et al.* (2004) as a consistent examination of the work undertaken to see what could cause injury or harm, whether the hazard could be removed or eliminated, and if not, prophylactic or protective measures are, or should be in place to control the risk. The UK Health and Safety HSE (2007/2008) also defined risk assessment as; ‘nothing more than a careful examination of what, in your work, could cause harm to people, so that you can weigh up whether you have taken enough precautions or should do more to prevent harm. The aim is to make sure that no one gets hurt or becomes ill (Smitha *et al.*, 2001).

WHO (2006a) and Cox and Griffiths (2005) stated that risk assessment should explain the amount of the hazard that exists at the work settings as well as the relationship between hazard-harm. Hence, the hazard assessment should uncover “how” and “why” the existence of hazard-harm relationship as well as the degree of that relationship.



#### **2.14.1 STEPS IN RISK ASSESSMENT IN THE HOSPITAL**

This study adopted the steps for health and safety assessment from “The guidance in Tackling Work-related Stress (HSE, 2007/2008) and Alberta’s Best Practice Volumes ( 5) (Alberta, 2011):

##### **Management Commitment and Leadership**

It is the obligation of management to make the hospitals safe for their employees to work by eliminating, minimizing or controlling hazards at the work setting and also put measures in place to extenuate the impacts of hazards when they happen. The hospitals management requires assessing the environments and identifying existing or possible hazards, and prepares a written and dated hazard assessment report (Kable *et al.*, 2011).

Management must do periodic review of hazard assessments when changes are made to healthcare workers assigned to a task, equipment or work environment of the hospitals. Safety performance will be high when management of hospitals take steps to involve the health workers in the hazard assessment and control procedures, to ensure that staff as well as contractors; (people or organizations that are hired by hospitals to under take some work or projects), are taught about the hazards and the methodology used to remove or control them (Alberta, 2011).

##### **Look for the hazards**

The persons appointed to do the assessment is requiring to walk around the hospital environment searching for any hazard that could reasonably be expected to endanger or harm the workers (Babich and Burakoff, 1997). It is important to list all work related tasks and activities. The health workers themselves or their representatives





must be included due to the fact that they might observe things that are not so noticeable from the beginning. Manufacturers' instruction manual or data sheets can also be helpful in recognizing possible hazards. Identify potential biological, chemical, physical, ergonomic and psychological hazards associated with each task (de Castro, 2003).

### **Decide who might be at risk and how**

Different groups of employees are potentially to go through wide- range of different degrees and kinds of harms. For example, youthful health workers, trainee nurses, new and expectant mothers, cleaners, contractors, maintenance workers, visitors and community members nearby organizations might be hurt by your activities (Bhardwaj *et al.*, 2013).

The hospitals should assess the risk of the hazard by viewing at the badness of the effects of the vulnerability and the likelihood that the exposure will happen as well as how often the task is carried out. The evaluation also involves determining if the current precautions are sufficient enough, or more are required to be carried out in the two hospitals where the study was done (Control and Prevention, 1997).

### **Communication and collaboration**

It is important to communicate the hazard assessments and the needed control measures to all the healthcare workers working in the Hospitals as they perform their tasks. Effective communication and a cooperative move are vital for a successful risk assessment programmes in the hospitals. The involvement of the healthcare workers in all facets of programme development is a fundamental feature of a prosperous occupational injury and illness averting programme (Aw *et al.*, 2007).



## **2.15 CONTROL OF HAZARDS**

The control measures for hazards include deciding whether the hazard can be removed or eliminated completely. However, since hazards cannot usually be eliminated, the engineering controls should be utilized due to its effectiveness. Engineering controls will minimize the potential of exposure by managing the hazard at its source. Administrative control measures, like training and strict implementation of rules and procedures; Personal protective equipment, should also be utilized (Hudson, 2003).

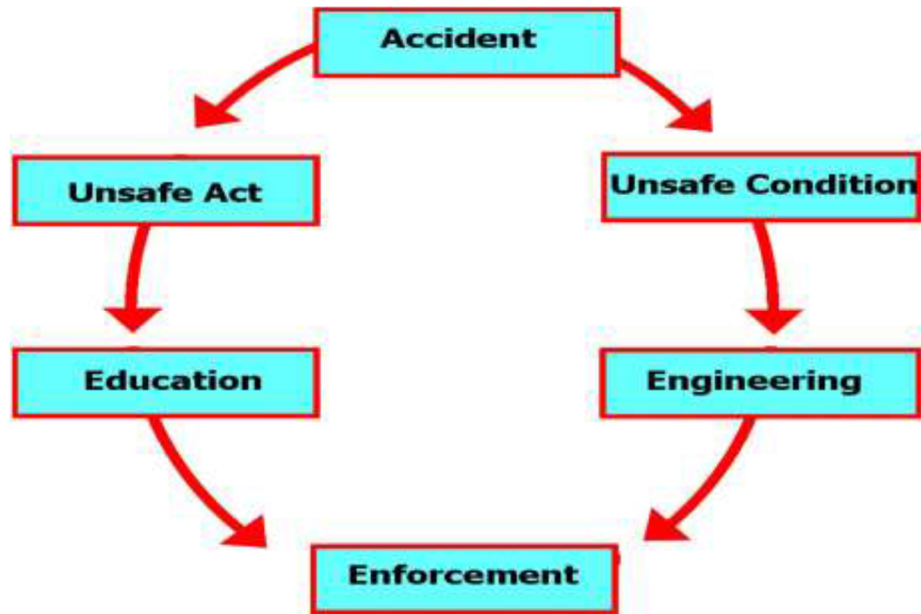
### **2.15.1 Controlling hazards at the hospital settings**

According to Pettinger (2000), the best procedure for controlling hazards in any work setting is the use of the three Es' (engineering, education and enforcement). Employers and safety Professionals chose this doctrine to direct their safety-related interventions in order to be successful and efficient in handling the occupational health and safety of workers. the three Es' of safety emphasis on establishing engineering control measures that minimizes the potentiality of worker pursuing in at-risky conducts; educating and training healthcare workers in respect of equipment, environmental hazards, policies and processes; and implementing the policies and procedures related to controlling equipment, wearing the right personal protective equipment, and dealing with specific hazardous substances (Pettinger, 2000).

Another theory is the Safety Engineering Model (SEM), which is essentially an improved form of the three Es'. In this theory, scholars affirmed that health and safety matters at the work environment originate from unsafe acts (85%) and unsafe conditions (15%). The researchers further proposed that unsafe acts are effectively avoided via education and enforcement, whereas unsafe conditions are effectively



avoided through more desirable engineering practices and enforcement of these practices (Cliff *et al.*, 2016).



**Figure 2.1: Safety Engineering Model (SEM) (Adopted from (Cliff *et al.*, 2016) Cliff/International Mining for Development Centre Mining for Development, 2012)**

## 2.16 THE HIERARCHY OF CONTROLS FRAMEWORK

The last and final model that this study used in assessing the occupational health and safety hazards in Hospitals was the hierarchy of controls framework, created by Hazpak in 1996. The hierarchy of control framework identifies hazards consistently and prioritizes intercession schemes. The framework assumes that the best way to control hazards is to remove them from the source (workplace) rather than relying on employees to minimize exposure. Extra means can also be used; however, these offer less protection. Additionally, the framework states that elimination, substitution, engineering controls administration controls and personal protective clothing equipment can also be used as control measures (Iliyasu *et al.*, 2016).



Some European countries such as Germany used a variation of the hierarchy, where emphasis is put on removing the hazard, guarding the employee from the hazard, protecting the employee with equipment to relief some of the impacts of any residual hazards that cannot be removed or guarded against efficaciously (personal protection), and supplying information, instruction and training to individual workers to equip them to work intelligently in the presents of those hazards un-removed or not managed sufficiently (Cliff *et al.*, 2016).

## **2.17 HARMFUL GASES THAT THREATENS HEALTHCARE WORKERS AT HOSPITALS**

The exposure to waste anesthetic gases may happen in the theaters or operating rooms, Labour and recovery rooms (McAbee *et al.*, 1993). Long period of exposure to these agents have led to high risk of renal and hepatic disorders and are also associated with a high risk of self-generated abortions and congenital abnormalities in vulnerable employees. While such gases are a serious danger to the lives of healthcare workers, the Occupational Health and Safety Laws have not written any standards for waste anesthetic gases. Patrician *et al.* (2011) stated that healthcare workers could be vulnerable to formaldehyde when they work in renal dialysis departments, during the process of transferring tissues to formalin in readiness for pathology, and as a residuum when utilized to sterilize operating rooms. Formaldehyde is associated with irritant allergic dermatitis, eye irritation and occupational asthma (Nelson *et al.*, 2005). Elementary mercury is used in various instruments found in the health care system (Johnstone, 2003).



The highest chance of exposure prevails when there is breakage of the glass part of the thermometer or the sphygmomanometer and the mercury spills on the floor or countertop. Exposure to high degrees can result to acute poisoning and loss of life. The short-term exposure can also lead to pulmonary and central nervous system impairment. Healthcare workers can also take mercury home on their shoes and clothing and, may lead, to exposing family relations to hazards (Mendeloff and Gray, 2005).

## **2.18 IDENTIFICATION AND ASSESSMENT OF RISKS IN OTHER ORGANIZATIONS**

Ayodele and Olubayo-Fatiregun (2013) proffered that identification and assessment is the programmed approach to the identification and assessment of all major risks and work procedures. This must involve formal hazards assessment criteria, and must be a continuous activity, with re-assessment upon alteration in the work setting or the availability of new information on the health and safety hazard, and the undertaken of periodic reviews to supervise the impacts of controls and to recognize any additional hazards. The assessment standards also take into consideration a variety of reactive hazard identification mechanisms, such as work environment inspection, incident investigations, use of injury data and laws, and worker hazard reports (Mitchual *et al.*, 2015).

Komaki *et al.* (2008) established in a study that while few companies have a planned approach to hazard identification and assessment, a many of the organizations recognize health and safety hazard on a more responsive basis, using such procedures such as the record of injury/illness and incidents; injury/illness/incident investigation;



inspections; job hazard analysis; regular analysis of procedures and systems of work; use of legislation, codes of practice and government guidance material; product information, industry or trade guidance; personal knowledge and experience of managers and workers; reporting of hazards by employees; and expert advice and opinion (Smitha *et al.*, 2001).

### **2.18.1 WORKPLACE INSPECTION**

Hale *et al.* (2010), stated that the audit criteria should stress on the need for frequent schedule inspection at work environment, organized around an inspection checklist and undertaken jointly by trained management and employee delegates, who request for input from employees at the time of the inspection. The records and corrective action tracking systems must be well-kept and follow-up inspections guarantee to ascertain the impacts of corrective actions (Hale *et al.*, 2010).

According to Petersen (1996), periodic review of the inspection procedures, should constitute part of the checklists carry out. Inspections should be seen as an ongoing part of the safety and health hazard identification, risk assessment and control process, and as a means of validating the sustenance of health and safety standards. There must avoid an 'inspect in' focus, on inspections as the primary tool or equipment for health and safety hazard identification and control, but rather inspection must concentrate on checking employee compliance with regulations and other day-to-day endeavors like good housekeeping (Ayodele and Olubayo-Fatiregun, 2013).

A study undertaken by Mendeloff and Gray (2005) established that the frequent inspection by a supervisor of equipment and availability of personal protective equipment has an 'inspect in' focus, as applied to the ongoing inspection activities of



the two mining and construction firms in South Africa, where the inspection is the basic device for ongoing hazard identification and control, for ensuring compliance with rules and other day-to-day task of housekeeping.

Osuala (2011), suggested they should be weekly inspection that must supplemented by a monthly inspection carried out by senior management inspectors external to the organizations environment. He added that the formal yearly inspection activities should complement the informal inspections carried out separately by the Safety Manager and the health and safety representatives. In other cases, a more detailed yearly inspection is carry out through yearly health and safety audits (Akosua Ganson, 2014).

### **2.18.2 INCIDENT IVESTIGATION**

According to WHO (2009) stated that incident investigations systems must be made to recognize the reasons for poor performance and inherent relapses in the health and safety management and should not aid an analysis which allows human error only. He further wrote that the organization must have a process for accident investigations which is managed by persons trained in incident investigation and modern- day approaches to corrective action. Inspection must be carry out by manager/supervisors, health and safety experts and worker were affected. Senior managers must be involved in the investigation of more fatal incidents. The investigation reports, discussion of corrective action with right employees anterior to enforcement and monitoring of the potency of the corrective action. He concluded that there must be an indication of the review of the investigation system or criticisms of specific



investigations in order to identify any weakness from the investigation process (Memish *et al.*, 2013).

Hale *et al.* (2010), in a related study found that less than half the organizations he investigated have tried to device an investigation activity focusing on the analysis of the inherent management system lapses, as against the one which supports and concentrates on human fault. The procedures used to elude a basic focus on human mistakes include the use of quality management analytical tools and guidance on higher order hazard control intervention procedures to channel the investigators in the appropriate direction (Harter *et al.*, 2003). Establishing an emphasis on system failure, as against individual failure, into the worksite culture and a wakeful approach by health and safety experts to treat as incomplete any reports concentrating on the individual employee alone (Harter *et al.*, 2003; Hale *et al.*, 2010).

Additionally, the most common procedure is for investigation forms to establish that the investigator must avoid a hasty ascription of fault to the worker. The use of such forms does not inevitably ensure a more fair probe, as indicated by the experience of the investigator where individuals are constantly seen as the factor for incidents (Rogers, 1997).

With regards to worksite inspection particularly in many health facilities, an emphasis on the follow-up of the effectiveness of corrective action is uncommon. Hale *et al.* (2010) stated that no procedures for a formal system for follow-ups, though there are many instances of tracking systems to ensure that appropriate action is carry out. Harvey *et al.* (2001) made it clear that some health institutions in China has health





and safety department system approved, but not enforceable, to supervise the continuous advancement procedures that should work in each facility. He underscored that the occupational health and safety system is made to 'close the loop' on investigation and to give objective advice on effectiveness, with approval given for a system whereby the Health and Safety officer and the relevant administrators will inspect and assess the effectiveness of countermeasures brought following an investigation. Brillhart *et al.* (2004) proposed that at this state, the emphasis must be put on the enforcement of recommendations for the appropriate action, with a monthly report by the Health and Safety officer emphasizing on the best corrective actions related to major incidents. The practice of Safety officers studying of the monthly report is seen as an input to enforce activity (Sylvester and Reisener, 2002).

### **218.3 INCIDENT REPORTING**

Effectual incident reporting is expected to move from the creation of a reporting process that is seen by workers and results in a high level of reporting. According to (Muchiri, 2003; Laitinen and Päivärinta, 2010), the reporting system must involve incidents that do not lead to an injury and ensure the right reporting to health and safety authorities within the institutions. Where applicable, the causes of poor reporting of injuries and incidents must be studied and strategies to motivate reporting enforced to the later.

Laitinen and Päivärinta (2010) indicated that it is not easy for some organizations to make enough appraisal of the level of reporting in the absence of a considered procedure to recognize possible reporting challenges and supervise modification as a result action. The procedure can be an easy one, when using the word of mouth campaign on the importance of reporting for assessing of the hazard removal program



(Kable *et al.*, 2011). This should include an appraisal of the implementation of the reporting process in its yearly inspection.

## **2.19 DEVELOPMENT OF OCCUPATIONAL HEALTH AND SAFETY STANDARDS**

Occupational health and safety has existed for ages since the introduction of formal work structures. Hippocrates (460-377 BC), for instance, wrote on the dangerous impacts of an unhealthy work environment on slaves, and Caesar (100–40 BC) reportedly had an officer responsible for the safety of his military units (Johnson, 1996). This unit proffers the history of the several interventions establish to better worksite safety and health.

In the midst of the Middle Ages, (Johnstone, 2003) wrote many books on mining/metallurgy depicting many modern propositions for advancing ventilation for workers in mining shafts (Dhillon, 2010a). Also, Bernadino Ramazzini (1633-1714) who is considered the father of occupational health and safety wrote extensively on the safety facets of mining including glass working, painting, grinding, and weaving. In his book titled “De Morbis Artificum,” or the “Disease of Workers,” (Ramazzini, 1964) wrote on the injurious consequences of working conditions on workers’ health and research into the impairment and mortality rates of several dissimilar professions. In his appreciation of the social essentiality of the advancement and economic growth of these professions, Ramazzini debated and proposed many preventive measures for minimizing occupationally acquired diseases and injuries (Dhillon, 2010b). Though these early safety engineers did not concentrate their efforts on enforcing intervention measures in the work environment, they surely laid the foundation for the present approaches to minimize occupational diseases and injuries.



When the machine age came, (Hilyer *et al.*, 1990) reported that during the late 1700s, employers recognized industrial morbidity and mortalities as part of the working benefits without looking at the economic ramifications. Workers were considered as volunteers, and were plentiful and replaceable (Leigh and Miller, 1998). Even though, the conditions in the early factories were awful, with two thirds of the workers being women and children worked for 12-hours a day. Employees would risk illness, torturing and death for jobs just to be able to afford food for their families. Even if a worker was involved in accident or acquired occupational disease or injury, they would rarely report the illness for fear of being dismissed or sacked (Heinrich *et al.*, 1980). Occupational health and safety has immense and varied history, and therefore a detailed scrutiny is beyond the ambit of this study. This study therefore, will concentrate on the main influences that consist of government, insurance, engineering and psychology. Also, apposite legislation that has shaped occupational safety and health strategies and interventions will be looked at.

### **2.19.1 GOVERNMENT INFLUENCE**

As a result of the growth of industrial centers, the dehumanization of living conditions arose and the mortality rate increased. In the United Kingdom, for example, the first effort of governmental intercession was in (1933) when factory inspections were operated federally. This marks important milestones in the growth strategy intervention in occupational health and safety. The outcome of the examination by government inspectors (who were mainly physicians) had small effect on the health and safety of workers until the mid-1800s when the Great Factory Act was passed. The Great Factory Act of 1844 ameliorated the United Kingdom's factory conditions somehow (Rhule, 2012). However, employers nevertheless saw any economic effect



of an unsafe or harmful work environment. The reality was that, the families of employees who loss their lives on the job had small legal assistance. At most they had their funeral expenditure paid by their employer (Heinrich *et al.*, 1980). The United Kingdom in 1880, initiated the Employers Liability Act that allowed employees, or their families, to take legal actions against their employer for damages. This Law made the employers more cognizance's of the costs of not dealing with the health and safety of their working conditions (Heinrich *et al.*, 1980) Nonetheless, the family still went through difficult times of proving that the employee (or a colleague employee) was not responsible for his own death, and was not aware of the danger, or that the employer was negligent. The factory inspections and the present laws boost employers cognizance of occupational health and safety, yet it was not until the employee compensation laws were initiated that industry players finally started to recognize the costs related to occupational accidents and illness (Rhule, 2012).

Worker compensation Acts covered worker illness or injury irrespective of who was at fault; however, employees could no longer take legal action against their employers under common law (third party lawsuits were still legal). Apparently, the employee compensation laws were initiated to guard workers. nevertheless, they were really initiated to control the high number of lawsuits against employers, and hence allowing a “predictable cost of doing business” (Leigh, 1995). As a result, the most efficient interventions for advancing occupational health and safety seemed to be implemented from top-down government approach. As Heinrich *et al.* (1980), suggested, “Legislation is one process by which government effects safety and Judicial process is another. Together, they change the impetus for safety or create a new impetus, and the impetus is defined as time, money and effort”. Hence, controls finally made it cost



effective for employers to respond to working benefits that untowardly affect employees health and safety, even though they were not always in the best interest of the worker (Heinrich, 1941; Heinrich *et al.*, 1980; Laitinen and Päiväranta, 2010).

### **Insurance Companies: The First Safety Consultants**

The worker compensation laws established a need for industries to invest in extra insurance and therefore, insurance companies were required to assess their customer's risks levels in order to assign proper rates. Thus, in the early 1900s, insurance companies established inspection departments. The inspectors would visit their clients to evaluate work environment hazards and place the right rate (i.e., underwriting) (Laitinen and Päiväranta, 2010). As these insurance inspectors advance valuable expertise in assessing hazards in respective industries, these safeties experts became the major impulse in organizational safety and health. At the period of inspection, for example, if the insurance agents finds a harmful condition he will make propositions on how the company could redress the safety hazard and cadge a lower premium (also to control the insurance companies losses) (Pinkerton *et al.*, 2004).

The insurance organizations were helping the employer while at the same time trying to minimize their losses. Subsequently, the only safety concerns targeted by the insurance inspectors were ones presently covered by Worker Compensation laws. Additionally, once the insurance inspectors' places coverage rates, there were many self-serving measures to motivate employers to better the health and safety of their worksite. Merit rating schemes (i.e., scheduled rating), for instance, rewarded loss control and punished high employee compensation claims. The scheduled rating system may have propel most industries to cover-up or not report certain claims to insurance companies in order to prevent a penalty or stick to their current coverage



rate (Leigh and Miller, 1998; Geller and Robinson, 2015). Whereas it seemed the early insurance organizations were striving for a safe worksite, they were alternatively striving to regulate their own loss and motivate employers to address only hazards covered by Worker Compensation (Heinrich *et al.*, 1980). In fact, many of the insurance agents time and safety tools was given to the big larger corporation who paid the highest premiums, leaving out the mid-sized to smaller companies. Insurance companies also establish safety guidelines and training equipment's that affected on health and safety. Nonetheless these interventions were directed by present government rules and regulations and the need to control loss and not for the safety of workers.

#### **2.19.2 THE THREE “E”S OF SAFETY**

The three “E” of safety was next traditional safety strategy that was used from the early 1900s to the current time. Many employers and safety consultants embraced the principles of the three E's (engineering, education, and enforcement) to guide their safety-related interventions (Heinrich *et al.*, 1980; Geller and Robinson, 2015). In order to make a difference in occupational health and safety of workers, the three Es of safety concentrate on:

- ❖ Establishing engineering controls that reduces the possibility of an employee engaging in risk behaviors
- ❖ Education and training of workers in respect to equipment, environmental hazards, policies and procedures
- ❖ Enforcing the policies and regulations related to operating equipment, wearing the right personal protective equipment, and handling specific dangerous substances.



Before the late 19th and early 20th centuries, employers managed their organizations as they deem it fit to make gains. The safety and health of their workers were not their business (Soglo, 2012). Indeed, in official position these things were not the concern anybody. In the U.S. workers who were involved in accidents and sustained some degree of injury had to litigate in order to be compensated (Myers and Myers, 2004). The amount of money involved in doing so in effect stopped them from resorting to court. In any case, workers were seldom victorious since, under common law, if the worker was aware of the hazards the work job contained or if the injuries came about due to the carelessness or negligence of the workers or a co-worker, the employer was not liable (Sadoh *et al.*, 2006).

From the birth of occupational health and safety, an approach and pattern has emerged in respect to occupational health and safety and welfare matters. As a result, the National Safety Council was constituted in 1913 in the U.S. after safety conscious administrators or managers and engineers led in its creation (major catastrophe lead to modifications in thinking). Importantly, the international Labour organization in 1959, ordered that occupational health and safety services should be created in or near a worksite for the staffs welfare (WHO, 2012)

## **2.20 HEALTH, SAFETY AND SECURITY**

Presently, workers from both formal and non-formal sectors expect their employers to establish workplaces that are safe, secure and healthy. Though, most employers once see accidents and occupational illness as inevitably end-products of work (Yassi *et al.*, 2004). This concept may still be dominant in most developed countries than the less developed nations. Luckily in many industrial countries, this belief has been changed with the idea of using preventive and control to reduce or eliminate dangers in work



environments. However, in most less developed nation's significant health, safety concerns prevail in worksites.

Health is defined as a general state of physical, mental and emotional well-being (Mathis and Jackson, 1991). A healthy person is the one who is free of disease, injury or mental and emotional challenges that impair normal human behavior. Healthcare management practices in health institutions are striving to keep the overall welfare of individual employees.

On the other hand, safety can also be defined the process of protecting the physical well-being of people (Çelik *et al.*, 2007). The major aim of efficient safety programs in institutions is to protect employees from work related diseases and accidents. However, the aim of security is to prevent workers and organizational equipment.

The basic objective of providing a safe, secure and healthy work environment is attained when there is collaboration between administrators and personnel officers. A personnel manager who is also occupational health and safety specialist can help organize health and safety activities, investigate accidents, provide safety program equipment and conduct formal safety training. However, department supervisors and managers play very important responsibilities in keeping safe working conditions and a healthy worksite. For instance, a supervisor in a warehouse has several health and safety roles such as reminding employees to wear safety equipment ; checking on the cleanliness of the work environment ; checking workers for any alcohol use, drug addiction or emotional impairment that may impact their work activities; and giving recommendation on equipment modification (e.g., screens, railings or other safety devices) to engineering consultants in the institution.





A view that is becoming more common in many organizations is the existence of the safety or environmental office. This combination may be reasonable in conditions where risk ensue from chemical and other sources of pollution that may be dangerous to both workers, clients the public as well as the immediate surroundings (Awino, 2011).

In respect of security, personnel managers and consultants should liaise their efforts with those in other operating sections to create access restrictions and staff identification processes, hire or manage institutional security providers such as guards and educate all managers and supervisors on how to deal with possible volatile conditions situations (Alli, 2008).

#### **2.20.1 SAFETY MANGEMENT AND HOSPITAL COMMITMENT**

Efficient safety management needs an institutional commitment to safe working conditions, particularly the hospitals. But more essentially, well plan and managed safety programs can return earnings for associated costs such as employee's emolument and potential fines. Additionally, accidents and other safety issues usually decrease due to management endeavor at accenting safety (Salon, 2001).

Mathis and Jackson (1991), indicate that at the heart of safety management is an institutional commitment to a comprehensive safety crusade. This crusade should be collaborated from the top level of management to include all employees of the institutions. It should also be indicated in management actions.

Employers can protect their employees against some accidents by having modern tools, machinery and equipment in work places so that employees who build castle in the air periodically or who execute possibly risky works cannot injure themselves or colleague workers. Providing personal protective equipment and guards on



machinery, installing emergency switches, installing adequate ventilation, installing emergency switches, installing safety rails, keeping aisles clear, lighting, heating and air conditioning can ensure occupational health and safety at workplace.

Designing jobs decently requires thoughtfulness of the physical environs of the job. The manner the work space encompassing a job is utilized can entice the employees performance of the work itself. Many factors that impress on occupational health and safety have been recognized; including size of work area, kinds of materials used, sensory conditions, distance between work areas, and interference from noise and traffic flow (Armstrong, 2006). Planning safety policies and legislations and punishing offenders is essential constituent of safety endeavor. Oftentimes, buttressing necessitates for safe conduct and providing feedback on positive safety practices could also impact effectively in improving employee safety. Such endeavor must involve workers, supervisors and administrators (Armstrong, 2006).

#### **2.20.2 SAFETY MOTIVATION AND INCENTIVES FOR WORKERS**

Armstrong (2006), indicates, to boost or encourage staffs to work safely, most institutions have used safety competitions and have given employees incentives for safe work conduct. Golden clocks, watches and even holiday trips have been given as offer for good safety records.

Regrettably, some indicant shows that incentives tend to reinforce understanding and “creative” classifying of accidents. However, the concern about safety incentives is that workers and administrators may not report accidents and injuries so that they may collect the incentive rewards that are meant for the employees.



## **2.21 INSPECTION, ACCIDENTS INVESTIGATION AND EVALUATION**

Inspection of work environment must be carried out regularly. It is bad to always wait for accidents to occur before inspection and investigation of safety hazards at the workplace are done. Inspections may be carried out by a safety committee or by a safety coordinator. They must be done on a frequent basis.

According to Hughes and Ferrelt (2008), when accidents occur, they must be thoroughly probed by the safety committee. Enquiring at the scene of accident must be carried out as early as possible to ascertain the circumstances that led to the accident. This is to ensure that the factors that led to accident have not been altered significantly. The next step of investigation is to interrogate the affected workers, including their supervisors and witnesses to the accident and this is accompanied by recommendations. The healthcare institutions, like any other organizations must monitor and evaluate their safety systems like how other organizational accounting records are audited, hospital safety efforts and records should be audited periodically as well.

## **2.22 ENSURING A HEALTHY WORKPLACE**

A study conducted by P.R. (1999), show that when employee's workplace is unhealthy, it becomes a source for concern to all. Employees cannot effectively work decently at their jobs due to frequent illness and injury, or afraid of being expose to hazardous substances or materials that may be harmful at the near future to the employees, can reduce productivity. Subsequently, establishing a healthy worksite is not only good but the decent thing to do, as it will benefit even the employer or management. "Sick buildings" as they are oftentimes called, refers to work



environments that has dangerous chemicals, asbestos, indoor pollutants (possibly caused by smoking), that have necessitated employers to take rigorous measures. For many, it referred to the removal or elimination of asbestos from their buildings.

Maslove and Fooks (2004), gave the following suggestions for making the work environment healthy and safe for employees: They include;

- ❖ Ensuring that employees get adequate fresh air. The cost of doing this, is insignificant equate with the expense of cleaning up the job.
- ❖ Abstain from using suspected building materials and furnishing. A basic rule rule is that if it fetors, it will release a smell.
- ❖ Screening new office complex for poisonous substances before occupancy. Refusing to implement this may result to possible health challenges.
- ❖ Establish a smoke-free environment in order not abolish smoking completely and then create a place for the smokers where there is ventilation.
- ❖ Ensure that air ducts are clean and dry. This is because when water gets into it, it becomes a fertile breeding place for fungi. Maintenance of the air ducts periodically can assist remove the fungi before it potentially affects employees.
- ❖ Giving much attention to employee's grievances and recording the dates, particulars of designated workers. This is because workers are often nearer to the problems; they are a valuable source of information.

## **2.23 LEGISLATIVE PROVISIONS ON OCCUPATIONAL HEALTH AND SAFETY IN GHANA**

The working ability of the workforce to maintain the economic and material resource



of society depends on their health and safety at the workplace. Hence, occupational health and welfare of the employees are important requirements for productiveness and are of furthestmost importance to the socio-economic and sustainable development (WHO, 1995). Perhaps, this is the reason why section 24(1) of the 1992 Constitution states that “Every person has the right to work under safe and healthy conditions”. This fundamental human right has been upheld by the Labour Act, 2003 (Act 651) (Adei and Kunfaa, 2007).

Ghana as country cares for the welfare of its workers introduced Acts such as Labour Act, 2003, Act 651 and Factories, Shops and Offices Act 1970, Act 328), Workmen’s Compensation Act (PNDC Law 187) (1987) and many other colligated policies to protect the health, safety and wellbeing of the workforce. The Labour Act, 2003(Act 651) upheld the position of the constitution by making it obligatory for the employer to “ensure that every worker employed in Ghana works under satisfactory, safe and healthy conditions (Labour Act, 2003 Act 651, Article 118:1). The Labour Act (651) makes it a requirement for all employees to use the safety appliances, fire-fighting equipment and personal protective equipment provided by the employer in compliance with the employer’s instructions (Labour Act, 2003 Act 651, Article 118:3).

The employers’ responsibility in the Labour Act subsumes setting standards to safeguard the welfare of their employees, providing personal protection equipment, and providing the requisite information, training and supervision coherent with the level of attainment of the employees. In addition, the Labour Act 2003 (Act 651) necessitates employers to report the happening of occupational accidents to appropriate state agencies (Ghana, 2003). Employees are obliged to exercise their



activities with caution as they perform their lawful duties at their workplaces to guarantee their safety and the safety of others. The Act did not touch on the standards that are required for employees but left that to the discretion of employer (Amponsah-Tawiah and Dartey-Baah, 2011).

Many accidents, injuries, illnesses, as well as damages to property take place at different workplaces. However, as a result of under reporting or misclassification because of the absents of proper standards, or strangeness with the existent guidelines (Adei and Kunfaa, 2007), people are not aware of such act as well as the real or potential outcome.

#### **2.24 CURRENT ORGANIZATIONAL HEALTH AND SAFETY (OHS) IN GHANA**

The promulgation of the Labour Act 2003, ( Act 651) (Ghana, 2003) has dedicated a section which deals with OHS (i.e., Section 15).the section was establish base on the demands of the International Labour Organization (ILO Conventions 155 and 161), however the government is yet to ratified the convention.

Two main statutes have accounted for the implementation OHS in Ghana. These are the Factories, Offices and Shops Act 1970, Act 328 and the Workmen's Compensation Law 1987, PNDC Law 187. Absent in the coverage of industries under the Act is the vast majority of industries, and organizations. Provisions in the Act are also very limited in scope providing inadequately for preventive strategies (like risk assessments, medical surveillance and control of hazards) and standards against which services will be measured. Apart from the Radiation Protection Convention, 1960 (No. 115) ratified in 1961, there are no regulations and rules for certain classes of hazardous work situations. This makes it more difficult for employers to comply with



laws and further add to the discretionary powers of inspectors (Soglo, 2012).

The Workmen's Compensation Law 1987 provides for the payment of cash compensation by an employer to an employee in the event of injury resulting from accident on the job and in the event of death, payable to dependents through the courts. Compensations as prescribed by the Workmen's Compensation Law bear no relation to the level of risk to which workers are exposed. In fact, the prosecution and court processes associated with compensation cases are laborious and time consuming for the meager amounts prescribed by the laws (Adei and Kunfaa, 2007).

## **2.25 THE RESPONSIBILITIES, RIGHTS OF EMPLOYERS AND EMPLOYEES ON OHS**

According to Dessler (1999), employers are responsible for ensuring sensible precaution to guarantee the health and safety of their employees. This is termed "due diligence" obligation.

Below are some specific obligations of the employer;

- ❖ Filing accident report forms
- ❖ Maintaining records of accidents.
- ❖ Posting safety notices and legislative information
- ❖ Education and training on health and safety precautionary measures

The workers also have the obligation of ensuring that reasonable care is taken to protect their own health and safety as well as that of their colleagues or co-workers.

Below are the specific duties that are requiring from employees;

- ❖ Using personal protective clothing and equipment
- ❖ Reporting any infringement of the law to the appropriate authority.

The following rights of workers named by (Downey, 1995) under the joint



responsibility model:

- ❖ The right to know the hazards that exists at worksite.
- ❖ The right to take part in the occupational health and safety procedures.
- ❖ The right to reject dangerous work if they have enough reason to suspect that the work possess threat to them.

## **2.26 SAFETY COMMITTEES**

According to (Armstrong, 2006), indicates that workers oftentimes partake in safety planning via safety committees that comprise of employees from diverse levels and departments. A safety committee more often than not meets at regular basis and has specific obligations for conducting safety reviews, and making recommendations for improvements or modifications that are requisite to the prevention of future accidents.

## **2.27 AIMS AND FUNCTION OF OCCUPATIONAL HEALTH SERVICE**

The basic interest of occupational health and safety policies remain in those stipulated by the International Labour Organization and World Health Organization in 1950 (Gillen *et al.*, 2003). Though, job related illnesses are now regarded as strictly occupational diseases as well. The real services that are been rendered by occupational health services are particularly preventative in nature and are stated below:

- ✓ Job placement- employees with certain pre-existent medical conditions may be at a defect in some jobs. A pre-employment health questionnaire or examine the employees medically can be vital in such circumstances by finding out job ineptness before training period. Job suitability may also need to be frequently watched in order to insure worker health and capability. Airline





pilots, for instance, go through regular medical examination because a pilot with poor sight or one who has an undetected heart condition can lead to a heart attack. Hence, putting the lives of his passengers at risk of accident. The medical team can also provide essential medical advice in respect of alternative employment when an employee is found to be unfit for a particular job.

- ✓ Safety training-An occupational health service has the obligation to keep all workers informed about occupational hazards in the work environment. The steps taken to protect workers' health should be vigorously discussed so that employees will understand the need for complying with such unpleasant limitations as the use of personal protective equipment and face masks. First aid equipment must be provided and employees taught about first aid processes in case of accidents and injuries or other exigencies.
- ✓ Supervision of high-risk groups- risk levels that are considered safe for male worker may be dangerous for pregnant woman (the fetus, particularly during the first trimester of growth, is sensitive to environmental toxic agents). Pregnant women, including other vulnerable categories such as the young, the elderly, and those with disability , needs the right medical surveillance and advice about particular precautionary steps that can be implemented.
- ✓ Control of identified hazards-A composite system of environmental and biological monitoring has been established for the control of recognized hazards at work. Occupational health and safety practice is concerned with observing the concentration of poisonous substances in the environment, ascertaining safe exposure levels, suggesting processes to minimize employee



vulnerability, and monitoring employees for symptoms of overexposure. Occupational health consultants can also promote the prevention of health dangers helping in the planning and design of new machines and equipment in organizations.

- ✓ Treatment-Quick, workplace intervention as a result of accidents, injuries and poisonings can stop complications and aid recovery. Such intervention can also be economically beneficial by saving traveling and waiting time. Additionally, physicians and nurses who are not familiar with their clients working conditions may keep employees with minor injuries away from work longer than is required. An occupational treatment service gives opportunities for specialized counseling and health education.
- ✓ General health education and Surveillance - Occupational health services may have to render general medical aid for employees and their relations in developing countries with poor community health services. Even when basic health care is rendered elsewhere, an occupational health service can give an efficient and oftentimes economically advantageous program of health education and counseling. By advising workers on such subjects as smoking, alcohol or drug abuse, exercise, and diet, the occupational health service can ameliorate employee health and effectiveness and minimize disease and absenteeism. The health service is also in a position to organize worker health surveillance programs for the early detection of disease (Britannica, 2009).



### **2.27.1 THE IMPORTANCE OF OCCUPATIONAL HEALTH AND SAFETY (OHS)**

The prayer of all workers and their representatives is to earn a living, and also to get to retirement age in healthy and safe conditions (WHO, 2010). Past studies have uncovered tremendous financial and human costs associated with unsafe organizations (Cooper, 1994), experts in human resource professionals have started to place healthy work environment programs and activities as a source of competitive advantage to limit the rising healthcare expenditure; help in the attraction, acquisition and retention of workers; better manage the employer-employee relationship; meet the needs of the rising workforce, and increase worker morale (Pfeffer, 1994; Fulmer *et al.*, 2003).

So, the costs of unsafe, stressful and unhealthy work settings are awful in personal, economic, and social terms (Kelloway and Day, 2005), it therefore need prompt attention of management. For example, a study conducted by Health and Safety Executive (Kelloway and Day, 2005) on work related diseases and injuries estimated 34 million lost work days; 28million as a result of job related illness and 6 million as a result of worksite injury (Cooper and Swanson, 2002). Moving this in financial terms implies eating away a lump sum of the profit margins of organizations. (Jones *et al.*, 1998) in a related study stated that 14% of the people in the United Kingdom who retired before their normal time did so due to ill-health and a component of these ill-health conditions were suspected to be the result of working conditions or at least made worse by working conditions (Hale *et al.*, 2010).

The “belief that manpower is expandable” Stout (1974) and that organization can allow to lose some of their staff only to be replaced in a short time seems to be in the



past. Organizations can no longer allow losing experienced and hardworking workers via ill-health associated with unhealthy working conditions as the price of recruiting, selecting, developing, motivating and retaining new employees who take over from experienced workers lost via work related ill health remains incalculable. OHS therefore remains an essential factor for all organizations. By pursuing good OHS practices, organizations confront smaller worksite illness or injuries and benefit from increased employee retention rates and heighten corporate image. This minimizes the costs of production delays, recruiting new staff and replacing equipment and prevents the uncertainty and workload pressure placed on co-workers (Geller and Robinson, 2015).

The average working person spend at least a quarter to a third of their working life at working and the fact that job satisfaction is estimated to account for a fifth to a quarter of the satisfaction in adults (Harter *et al.*, 2003), OHS concerns in institutions, that involve the emotional, physical, chemical and biological exposures of work must be of concern to all employers (Harter *et al.*, 2003)

A high standard of OHS is associated with high Gross National Product (GNP) per capita. whiles poor occupational health and safety minimizes working capacity of employees may cause economic loss up to 10-20% of the GNP of a country (Organization, 2006). Occupational mortality, morbidity, and illnesses account for an estimated loss of 4% of the Gross Domestic Product (Hämäläinen *et al.*, 2006). It has been established that nations investing most in OHS show increased productivity and strongest economy, while the nations with the lowest investment have the lowest productivity and the weakest economies (Takala, 2002). Hence, positive input in



OHS brings positive growth of the economy, while low investment in OHS is a disadvantage in the economic competitiveness.

OHS of HCWs is a public health concern. The advancing and enforcement of preventive health and safety activities in healthcare organizations is not only necessary to protecting HCWs from exposure to worksite hazards, it is also critical for preventing clients or patients but also bettering the conditions in which health care workers can provide quality health care (Henwood *et al.*, 2009).

## **2.28 THE BASIS FOR OCCUPATIONAL HEALTH AND SAFETY AT WORKPLACE**

Safety comprises vital human needs, as postulated by Abraham Maslow in theory of needs hierarchy. The feeling of safe work is the most essential factor in job satisfaction. To attain results, certain companies incorporate into their policy framework, guaranteeing workers' safe work performance under a condition capable of ameliorating the physical, mental, and emotional conditions. Institutional policy of this kind is often categorized under health and safety (Khraisat *et al.*, 2014).

Niu *et al.* (2010) stated that the employees' health is the absence of illness or disease resulting from the interaction of worker and the work environment. health means a state of complete physical, emotional, mental, and social ability of an individual to cope with his environment, and not merely the absence of disease or infirmity (Smitha *et al.*, 2001). Health is the art and science of preventing disease, control of infections and organization of health services (Kiss *et al.*, 2002).



Safety is process of on the freedom from the incidence or danger of illness or loss of life (Martins *et al.*, 2012). He depicted industrial or employee safety as the protection of the employees from the risks of industrial accidents. Kable *et al.* (2011), suggested that safety can be referred to absence of injuries resulting from the interaction of the worker and the work setting. Therefore, safety rules and regulations may include policies targeted at either minimizing or total elimination of hazardous conditions capable of inflicting bodily injuries (Hale *et al.*, 2010).

Harter *et al.* (2003), stressed that institutional safety policy must indicates the organization's safety purposes and designates the roles and authority in attaining those achievement. He continued that such policy statement should unquestionably state four fundamental points that includes; the safety of workers as well as their clients, ensuring safety precedence over expediency, making all effort to ensure that managers, supervisors and employees in establishing and implementing safety policies, laws and seeing its compliance (Hale *et al.*, 2010). Occupational health and safety in organizations have been described by (Mensah *et al.*, 2005) as part and parcel of human society and as a basic human right.

According to ILO Wilson *et al.* (2006) organizational health and safety should concentrate on the establishment of particular interventions and policies, targeted at protecting workers in the course of doing their responsibilities to increase productivity and better the overall organizational performance.



## **2.29 CHALLENGES OF GOOD OCCUPATIONAL HEALTH AND SAFETY PRACTICES**

The difficulties relating to Health and Safety practices have been categorized by Martins *et al.* (2012) into three main and overlapping aspects; people, process and technology. The ‘people’ challenges comprises of the danger of employees’ emotional or psychological stress, minimization of loyalty to loss of internal expertise and the fact that there is the absence of commitment among workers to provide and be each other’s keeper to reduced industrial injury and illness. Hale *et al.* (2010) accepted this by adding that the lack of cooperation; among employees themselves bestow among others to industrial accidents and diseases.

The ‘process’ meanwhile consists of two classifications; incompatibilities between the authority (government safety department in charge of health and safety in organizations) and the institution itself, and the failure of institutions to efficiently enforce their decision to comply with health and safety regulations. Authorities’ should among other things in industrial health and safety programs implement broad health and safety issues applicable to all organizations and companies but do not take into recognizance specific company need (Abdullah *et al.*, 2009).

At the same time, Khraisat *et al.* (2015) established that most institutions have commenced on health and safety practices without any laid down procedure or guidance. There is lack of progressive and innovative human resource management (HRM) policies, and procedures, (including a proactive and collaborative approach) thereby excising health and safety on ad hoc basis (Lindell, 1994).



A work carried out by Rosenstock *et al.* (2006) 'measures on safety performance' recognize that there is also a high cost of rendering health and safety equipment at work environment which discourage management from implementing detailed health and safety standards in companies thereby leaving workers at the mercy of hazardous worksite (Rosenstock *et al.*, 2006).

Furthermore, Kelloway and Day (2005), stated that unprofessional safety inspectors engaged to administer the health and safety concerns in most organizations have been the nemesis of industrial fatalities and accidents thereby resulting in gratuitous or needless industrial injuries, illness and mortality. There is also the absences of routine, frequent and seasonal training programs on safety management for workers to acknowledge the need for occupational health and safety precautions (Niu *et al.*, 2010).

Finally, there is the absence of government control and monitoring activities to visit institutions particularly mining companies to unravel whether these companies comply with certain minimum safety standard (Petersen, 1996).

### **2.30 EMPLOYEE ASSISTANCE PROGRAMME**

Most organizations until recently, tried to avoid workers' problems that were not related to their jobs (Yassi *et al.*, 2009). Though the managers are cognizant of the macrocosm of this problem, but are mostly reluctant to intervene because they consider such problems to be personal. Hence does not want to interfere with employees' personal lives. In the immediate past, organizations tend to dismiss turbulent employees (Yassi *et al.*, 2009). However, in the present time, cost considerations, unions and government legislation changed this approach (Hudson,





2003). The recognized standpoint today is that, workers personal problems are private unless they start touching the job performance of the employees. When that takes place, personal problems turn to be a matter of interest to the organization at large. As a result of this, most big organizations and a growing number of smaller ones are making effort to assist employees with personal problems (Marzo Navarro *et al.*, 2005). These problems are limited not only to alcoholism and substance abuse but also depression, anxiety, domestic trauma, financial difficulties, and other mental or psychiatric problems. This aid is not strictly selfless but it is mostly based on cost savings.

### **2.31 COST BENEFITS OF OCCUPATIONAL HEALTH AND SAFETY**

The world wide, costs of occupational health and safety illnesses and injuries have been on the rise. Globally, the financial losses as a result of workplace injuries and diseases transcend \$1,250 billion (ILO, 2010). A cautious estimates shows that employees suffer 270million occupational injuries or accidents and 160 million occupational illnesses annually (ILO, 2010).

Occupational injuries exclusively account for more than 10 million Disability-Adjusted Life Years (DALYs) lost, or healthy years of life lost as a result of disability or premature death, and 8% of unintentional accidents or injuries globally (Frank and Koss). Poor occupational health and minimal working ability of employees may result in economic loss up to 10-20% of the Gross National Product of a country (WHO, 2012). Worldwide, occupational deaths, diseases, and illnesses account for an estimated loss of 4% of the Gross Domestic Product (Takala, 2002).

According to a survey conducted by HSE (2007/2008) on work-related illness approximated 34 million lost work days; 28 million was as a result of work related



illness and 6 million was also due to work setting injury (HSE, 2007/2008). To interpret this in pecuniary terms means an erosion of a chunk of the profit margins of organizations. Jones *et al.* (1998), in a similar study reported that 14% of the people in the United Kingdom who retired early did so because of ill-health and part of these ill-health conditions were believed to be the result of working conditions or at least made worse by working conditions. A high standard of OHS correlates positively with high GNP per capita (WHO, 1995).

Indeed, countries investing most in occupational health and safety show the highest productivity and strongest economies, while the countries with the lowest investment have the lowest productivity and the weakest economies (WHO, 2012). Thus, active input in occupational health and safety is associated with positive development of the economy, while low investment in occupational health and safety is a disadvantage in the economic competition.

As pointed out earlier, Domestic statistics from Ghana shows that occupational health and safety related accidents, diseases and hazards cost Ghana about 7% of her GDP (Adei and Kunfaa, 2007). If these incidence of diseases and hazards are preventable or at least can be minimized; which in most instances are achievable, it can be assumed confidently that, globally or at national levels profitability is not being optimized. Thus prioritizing occupational health and safety issues are necessary to promote sustainability of businesses in themselves; where businesses here refers to either the global economy, National economies such as Ghana, and firms producing goods and services whether for profit or other business motives.

Conclusion, this chapter looks at the various literatures that were used in examining the occupational health hazards of healthcare workers in Central and Seventh Day



Adventist hospitals.



## CHAPTER THREE

### MATERIALS AND METHOD

#### 3.1 STUDY AREA

The study was conducted in the central business district of Tamale Metropolis which is also the capital town of the northern region. Tamale Metropolis is one of the 26 districts in the Northern Region. It is located in the central part of the Region and shares boundaries with the Sagnarigu District to the North-West, Mion District to the East, East Gonja to the South and Central Gonja to the South West.

Tamale is strategically located in the Northern Region. The Metropolis has a total estimated land size of 646.9sqkm (2010 PHC Report). Geographically, the Metropolis lies between latitude 9°16 and 9° 34 North and longitudes 0° 36 and 0° 57 west. There is a total of 116 communities in the Metropolis of which 41 (35%) are urban communities, 15 (13%) being peri-urban and 60 (52%) of them being rural in nature (Tamale metro Annual Report 2010).



### 3.2 STUDY SITE

The study area is the Tamale Central and Seventh Day Adventist Hospitals both located in the central business district of the Tamale metropolis. The Tamale Central Hospital (Old hospital) formally was established in July 1928 and served as the Regional Hospital of Northern Region also a referral points for the upper region until 1974 when it was closed down following the commissioning of the current Tamale Teaching Hospital. The structure then metamorphosed into offices for disease control activities, Guinea Worm eradication programs, places, of worship and schools. The hospital is located in the central business district of Tamale and shares boundaries with the Tamale police barracks. The hospital has eleven (11) departments and units performing various specific functions. This includes record staffs, Laboratory, Mortuary, X-ray, Maternity/Wards, Theater, Dispensary, Kitchen, Laundry and Environmental Health Unit. The wards at the hospital are surgical, maternity and medical. These are subdivided into male and female. It has a blood bank, a dental unit, pediatric unit, and ENT (Eye, nose, throat) unit.

The Seventh Day Adventist (SDA) Hospital started as a clinic in 1996 in a community called Jakalayili in Tamale metropolis, but later moved to its present location on the main road to Tamale Teaching Hospital adjacent the SDA cluster of schools on 2 February 2014. It assumed hospital status in February 2005.

### 3.3 STUDY DESIGN

This was a cross-sectional study designed to assess the occupational health and safety hazards at one specific point in time in two selected hospitals within the Tamale metropolis. The advantages of the cross-sectional study include;

- The measurements for a sample member are obtained at a single point in time, although recruitment may take place across a longer period of time.



- A cross sectional study is not longitudinal by design. In a longitudinal study, each participant is observed at multiple time points, thereby allowing trends in an outcome to be monitored over time. However, in this study respondents were observed only once.
- A cross sectional study is specifically suitable for approximating the prevalence of a behavior or disease in a population. Prevalence is the proportion of the population that has the behavior or disease.
- Cross sectional studies are generally quick, easy, and cheap to perform. They are often based on a questionnaire survey. There will be no loss to follow-up because participants are interviewed only once (Sedgwick, 2014).

However, a cross sectional study may be prone to non-response bias if participants who consent to take part in the study differ from those who do not, resulting in a sample that is not representative of the population. It is possible to record exposure to many risk factors and to assess more than one outcome in a cross-sectional study. However, because data on each participant are recorded only once it would be difficult to infer the temporal association between a risk factor and an outcome. Therefore, only an association, and not causation, can be inferred from a cross sectional study. In this study, it is not possible to infer that poor maintenance of hospital equipment, educational level, extreme pressure from work, verbal assault preceded the onset of occupational hazards and that they may be risk factors for the infection of chronic diseases and injuries (Sedgwick, 2014).

A cross-sectional study can be defined as a research that was carried out at one point in time or over a short period (Levin, 2006). According to Levin (2006) , cross-sectional studies are usually conducted to estimate the prevalence of the outcome of interest for a given population, commonly for the purposes of public health planning.



In a cross-sectional study, data can also be collected on individual characteristics, including exposure to risk factors, alongside information about the outcome (Levin, 2006). Cross-sectional studies can be thought of as a "snapshot" of the frequency and characteristics of a condition in a population at a particular point in time. Cross-sectional studies are carried out at one time or over a short period. As a result, the studies are usually conducted to estimate the prevalence of the outcome of interest for a given population.

A cross-sectional study is an observational study in which exposure and disease are determined at the same point in time in a given population (Kanchanaraksa, 2008).

The observational nature of the study also assisted in exposing the practice of the occupational health hazards that would have gone unnoticed at Central and Seventh Day Adventist Hospitals. It also enabled the researcher to collect data concerning the current status of occupational health and safety hazards at Central and Seventh Day Adventist Hospitals.

Quantitative analysis assisted in explaining the occupational health and safety hazards by collecting numerical data that were analyzed using mathematically based techniques (Aliaga and Gunderson, 2000).

Questionnaires were used in collecting information from respondents who consisted of clinical and non-clinical staffs. The division of the staffs into clinical and non-clinical was to enable the researcher to be able to analyse and describe the effectiveness of health and safety practices among healthcare workers in the selected hospitals in the tamale metropolis.



### 3.4 STUDY POPULATION

The population of the study consisted of 400 health workers in both Central and Seventh Day Adventist Hospitals, apportioned to different departments or units of the hospitals.

They include both permanent and non-permanent staffs working in Tamale Central and Seventh Day Adventist Hospitals. This working population stems from Hospital administrators, medical doctors, physician assistants, medical laboratory technicians, nurses and midwives, community health nurses, orderlies, record keepers and pharmacists.

### 3.5 SAMPLING

The term sample refers to a portion of the population that is representative of the population from which it was selected (Barlett *et al.*, 2001). The formula that was used to calculate the minimum sample size for this study was that of Krejcie and Morgan (Morgan, 2000).

$$n = \frac{Z^2 N P(1-P)}{d^2 (N-1) + Z^2 P(1-P)}$$

Where:

n= sample size

Z= Reliability Coefficient associated with a desired level of confidence

N = population size

P = population proportion (assumed to 0.50 since this would provide the maximum sample size)

D = desired margin of Error (expressed as a proportion .05)





The sample of healthcare workers was calculated as follows:

$$n = ?$$

$$Z = 1.96$$

$$N = 200$$

$$P = 0.50$$

$$D = 0.05$$

$$n = \frac{1.96^2 \cdot 200 \cdot 0.50(1-0.50)}{0.05^2 (200-1) + 1.96^2 \cdot 0.50(1-0.50)}$$

$$n = \frac{3.841 \times 200 \times 0.5 \times (1-0.5)}{(0.05 \times 0.05 \times (200-1)) + 3.841 \times 0.5 \times (1-0.5)}$$

$$n = \frac{3.841 \times 200 \times 0.5 \times 0.5}{(0.0025 \times 199) + 3.841 \times 0.5 \times 0.5}$$

$$n = \frac{3.841 \times 200 \times 0.5 \times 0.5}{0.4975 + 3.841 \times 0.5 \times 0.5}$$

$$n = 192.05 \approx 200$$

The present study was limited to healthcare workers who were stratified into clinical and non-clinical staffs. The clinical staff answered at least 89% of the questionnaire, while the remaining 11% was answered by the non-clinical staffs. The sample size which was 192.05 was approximately made 200 to evaluate any possible loss of



precision. Using the above formula, the calculated sample size was approximately 200. Two hundred subjects were therefore recruited for the study.

### **3.6 SAMPLING TECHNIQUE**

Purposive and simple random sampling methods were used in the selection of healthcare workers. Purposive sampling was used because the target group was those working in the hospitals and simple random sampling where each study participants within the defined criteria had equal chance of being selected until the sample size was exhausted.

### **3.7 INCLUSION CRITERIA**

The research included nurses, administrators, laboratory technicians, pharmacists, midwives, and community health nurses, nursing practitioners, doctors, orderlies, record keepers, health insurance staffs and all those working in the hospitals permanently and non-permanent staffs working in hospitals.

### **3.8 EXCLUSION CRITERIA**

The study excluded healthcare workers who were not generally interested in answering the questionnaires and those whose consent was not sought before the commencement of the study. Also, retired nurses, retired doctors, retired auxiliary staff or support staff at the hospital, laboratory staff and nurses on leave and those who were off-duty during data collection was excluded.

### **3.9 DATA COLLECTION**

#### **3.9.1 Training of Research Assistants**

The training of the Research Assistant was done a day before the pre-testing. They were oriented on the questionnaire to enable them give the same interpretations to the questions; ensure questions were posed in similar manner to avoid inter-interview bias. They also practiced how to administer the questionnaire, how to collect



information and examine completed questionnaires for inconsistency and completeness.

### **3.9.2 Pretesting of Questionnaire/Procedures**

Questionnaires were pre-tested among 10 health workers at Tamale Central Hospital to eliminate ambiguity and difficulty in answering questions. Some of the questions were dropped and revised after pre-testing.

The pre-testing of the questionnaire helped in the recognition and identification of defects that would compromise the integrity of the research. The pre-test permitted the researcher to appraise or evaluate the feasibility of the research, to ascertain if the sample size and sampling technique were tolerable and adequate, and to test the adequateness of the study instruments. The pre-test uncovered that some questions were obscure, undefined and vague; as a result, those questions were defined. Other questions were revised to shorten the time-frame for answering the questionnaire below 30 minutes. The pre-test also made it possible to polish the questionnaire by removing equivocal questions and shortening the completion time from 40 to 30 minutes. The questionnaire was finalized and administered to healthcare workers at Tamale Central Hospital after the pre-test.

### **3.9.3 Questionnaires administration**

Data was collected using structured questionnaires with closed-ended questions. The respondents used 25-30 minutes to complete each questionnaire which contained pre-determined answers from which the participants selected the answers that best expressed their views with regards to occupational health and safety hazards in the hospital. The questionnaire consisted of two sections. Section A consisted of eight (8) questions on demographic characteristics such as age, gender, marital status,



educational level, place of work, duration of work or years of experience, department at work and occupation

Section B consisted of twenty-nine (29) questions on knowledge of occupational health and safety hazard the person responsible for ultimate responsibility of occupational health and safety hazards, the rights, responsibilities of employers and employees in occupational health and safety, the description of maintenance culture, the benefits of occupational health and safety to the hospital. The questionnaire also, captured questions on the health hazards encountered by the health workers while at their workplace. All these took the form of a list of questions given to respondents to answer with the rationale of getting data on the topic under study.

### **3.10 DEFINITION OF VARIABLES**

A variable is a property that can assume different values. The variables considered in this study included; Age group of respondents, sex, level of formal education, marital status, duration of work, occupation, knowledge level, hazards, perception of exposure to hazards, biological and non-biological hazards, Departments or units



**Table 0.1: Variables used and definition**

VARIABLES	DEFINITION	INDEPENDENT/DEPENDENT
Age group	The age group a respondent falls within with reference to his/her date of birth.	Independent
Sex	Biological in terms of male female	Independent
Level of formal education	Educational attainment of respondents in terms of primary, shs, vocational/technical, tertiary.	Independent
Marital status	The marital status of respondent indicates whether they are married or not	Independent
Duration of work	This refers to the number of years the respondent was engaged at the hospital	Independent
Hazard	A source of danger, a possibility of incurring loss or danger to the respondent	Independent
Biological hazard	Includes; sharp related injuries, cuts and wounds, needle prick injuries, contagious pathogens/agents or micro-organisms	Independent
Non- biological hazard	Includes; radiation, chemical spill, slips, trips and falls, verbal abuse, sexual abuse, assault, noise and vibration, electric shock, toxic fumes, lower back pain, etc.	Independent
Department or unit	A particular section in the hospital where the respondents work	Independent

### 3.11 ETHICAL CONSIDERATION

Ethical permission to conduct the study was requested from the ethical and review committee of the Tamale Central Hospital and SDA hospital. In addition, at any point during the interview, I introduced myself and explained the objectives of the study to the respondents before data was collected. Verbal and written consent was sorted from each participant. Information collected was treated with strict confidentiality.



### **3.12 LIMITATION OF THE STUDY**

This study was carried out in only two main hospitals in the Tamale Metropolis which limit generalizability to all other health facilities in the northern region. The findings could have been affected by recall bias as respondents were required to recall some past experience.

Also, being a cross sectional study, the causation of occupational health and safety hazards could not be established. Nonetheless, this study established crucial information on occupational health and safety hazards in the Tamale metropolis.

There was response fatigue in both hospitals as the respondents were complaining of answering too many questions from other researchers. Others were not ready to open up with answers due to fear of victimization by managements of both Tamale Central and SDA Hospitals despite the assurance given them that the study was for academic purposes and any information given shall remain confidential.

The most challenging issue that confronted the study was inadequate financial resources to buy stationeries, logistics and paying the allowances of research assistants.

### **3.13 INFORMED CONSENT**

The participants were asked to sign consent forms before answering questions from the questionnaire. The respondents were also told in the consent form, that the research was a voluntary exercise, and that they could decide not to answer if they felt that the questions were intimidating and uncomfortable. During the answering process, they could decide to answer if they choose to participate. They were also informed that they would not be punished in any way for not taking part or dropping out from the study.



### **3.14 CONFIDENTIALITY AND ANONYMITY**

The confidentiality and anonymity of the participants were assured and that the study maintains a high level of confidentiality. There was no place for personal records of participants such as their names. Instead, each questionnaire was serially numbered to avoid missing and not for identifying the respondents. Participants were also notified that the research was for academic purposes and that the information given shall remain confidential and would not be revealed to any senior staff of both the Central and the Seventh Day Adventist Hospitals.

### **3.15 PROTECTION FROM DISCOMFORT AND HARM**

The research did not pose a threat or have any risk relating to causing physical harm to participants. The questionnaire was designed to be completed between 25-30 minutes to prevent response tiredness or fatigue, headache, and muscle pains.

The respondents completed the questionnaires in a confidential and safe place to protect them from discomfort and harm. A safe room was identified in the hospital where appointments were made so that workers came at their convenient time.

### **3.16 STATISTICAL ANALYSIS**

Data was entered into Microsoft Excel 2010 and exported to Scientific Package for Social Sciences (SPSS) version 22.0 for analysis. Data was presented as frequency, percentages and graphs. Mean and standard deviation were used to describe the data. Categorical variables were compared using chi-square. Univariate and multivariate logistic regression analysis was used to assess the risk factors associated with exposure to biological and non-biological hazards among health workers in the Metropolis and  $p\text{-value} < 0.05$  was considered statistically significant.



### **3.17 VALIDITY**

To solve the validity and reliability of the instrument that was used, the questionnaire was pre-tested. To attain content validity, the questionnaire included a variety of questions on occupational health and safety hazards being experienced by the healthcare workers at their workplaces. Such hazards included biological and non-biological hazards, the compliance level of healthcare workers towards written safety protocols meant to address occupational health and safety hazards, and the actions employed by the health workers to grapple with occupational health and safety hazards. The questionnaire was put forward to experts in quantitative study and occupational health and safety hazards to guarantee content validity.

### **3.18 RELIABILITY**

Reliability refers to the consistency and dependability of a research instrument to measure a variable (Brink *et al.*, 2006). A scale or test is reliable if it is able to produce the same result at a repeat measurement made under constant conditions. Reliability was attained by ensuring that the questions used in the questionnaire were consistent among all the participants.

### **3.19 BIAS**

Data collection bias was reduced by the researcher by training the research assistants vigorously on how to administer the questionnaire. Sampling bias may occur due to the differences between the population under study by the researcher and the actual population being studied through the sampling method (Pannucci and Wilkins, 2010). Bias in the sampling methodology was reduced by seeing to it that the simple random technique was used to give all respondents equal chance of being selected into the





study and also questionnaires were piloted, corrected, simplified for the participants to be able to participate. In addition, follow-ups on participants were done by the researcher to ascertain if they are different from the actual population; whether participants were absent and were immediately substituted with other qualified respondents. Where the non-response rate was high, attempts were made to find out how the non-response might have influenced the results.

Data analysis bias is the type of bias that is established when raw data are transmuted into erroneous research findings. This data analysis bias was drastically kept at minimal level because the data was inputted into Microsoft Excel and exported to SPSS for analysis. This bias can occur as a result of inappropriate uses of statistical techniques, leading to the incorrect interpretation of the survey results (Pannucci and Wilkins, 2010). Data analysis bias was reduced by understanding all the statistical techniques that the researcher used on the raw research data in details before setting the questions in the questionnaire.



## CHAPTER FOUR

### RESULTS

#### 4.1 SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE HEALTH WORKERS FROM THE SELECTED HOSPITALS

A total of 200 respondents participated in the study in two hospitals comprising 141 (70.5%) females and 59 (29.5%) males. When stratified by hospitals, the SDA hospital recorded a total of 84 (42.0%) while Tamale Central Hospital recorded 116 (58.0%).

Majority of the working force were between the ages 20-34 years while the least 2 (1.0%) were <20 years old. Considering the hospital stratification, majority of the respondents in both SDA and Central hospitals were between the ages of 20-29 years of age.

A total of 101 (50.5%) were married while 97 (48.5%) were single. When stratified by hospital, 37 (44%) of SDA hospital and 64 (55.2%) of Tamale Central Hospital were married while 45 (53.6%) of SDA hospital and 52 (44.8%) of Tamale Central Hospital were single. However, a few 2 (1.0%) of the participants were divorced.

Majority 178 (89.0%) of the respondents had attained tertiary education in both hospitals with most 173 (86.5%) being nurses and midwives. The least 2 (1.0%) were medical officers which were from Tamale Central Hospital. When stratified on hospital basis 64 (76.2) respondents had attained tertiary education and 20 (23.8) had secondary/technical and vocational education in SDA hospital while 114 (98.3) and 2 (1.7) of respondents had attained tertiary and secondary/technical vocational education respectively in TCH. Majority 83 (41.5%) were in the wards, with 73 (36.5%), 20 (10.0%), 12 (6.0%), 8 (4.0%) and 4 (2.0%) for OPD, Records,



Laboratory, Administration and Pharmacy, respectively. On work duration, 53 (26.5%) were less than one year in both hospitals. A total of 77 (38.5%) were between 2-4 years, 50 (25.0%) between 5-7 years, 12 (6.0%) between 8-10 years and 4 (4.0%) were between 10 years (Table 4.1).



**Table 0.1: Distribution of socio-demographic characteristics of health worker in tamale central and sda hospitals**

Variable	Total (n=200)	SDA Hospital (n=84)	Tamale Central Hospital (n=116)
<b>Gender</b>			
Male	59(29.5%)	27(32.1%)	32(27.6%)
Female	141(70.5%)	57(67.9%)	84(72.4%)
<b>Age (years)</b>			
<20	2(1.0%)	1(1.2%)	1(0.9%)
20-24	72(36.0%)	26(31.0%)	46(39.7%)
25-29	64(32.0%)	31(36.9%)	33(28.4%)
30-34	44(22.0%)	17(20.2%)	27(23.3%)
35-39	12(6.0%)	7(8.3%)	5(4.3%)
40 above	6(3.0%)	2(2.4%)	4(3.4%)
<b>Marital Status</b>			
Single	97(48.5%)	45(53.6%)	52(44.8%)
Married	101(50.5%)	37(44.0%)	64(55.2%)
Divorced	2(1.0%)	2(2.4%)	0(0.0%)
<b>Education Status</b>			
Sec. Tech. Voc.	22(11.0%)	20(23.8%)	2(1.7%)
Tertiary	178(89.0%)	64(76.2%)	114(98.3%)
<b>Occupation</b>			
Nurse and midwifery	173(86.5%)	67(79.8%)	106(91.4%)
Medical Officer	2(1.0%)	0(0.0%)	2(1.7%)
Lab. Technician	11(5.5%)	7(8.3%)	4(3.4%)
Pharmacist	4(2.0%)	4(4.8%)	0(0.0%)
Administration Officer	10(5.0%)	6(7.1%)	4(3.4%)
<b>Department</b>			
Administration	8(4.0%)	6(7.1%)	2(1.7%)
Wards	83(41.5%)	23(27.4%)	60(51.7%)
Laboratory	12(6.0%)	7(8.3%)	5(4.3%)
Pharmacy	4(2.0%)	4(4.8%)	0(0.0%)
Records	20(10.0%)	14(16.7%)	6(5.2%)
OPD	35(17.5%)	16(19.0%)	19(16.4%)
Antenatal Care (ANC)	38(19.0%)	14(16.7%)	24(20.7%)
<b>Duration of work</b>			
< 1 year	53(26.5%)	17(20.2%)	36(31.0%)
2-4 years	77(38.5%)	37(44.0%)	40(34.5%)
5-7 years	50(25.0%)	23(27.4%)	27(23.3%)
8-10 years	12(6.0%)	5(6.0%)	7(6.0%)
> 10 years	8(4.0%)	2(2.4%)	6(5.2%)

*Data presented as number and expressed in percentage*



#### **4.1.1 SOCIO-DEMOGRAPHIC CHARACTERISTICS STRATIFIED BY OCCUPATION**

The socio-demographic characteristics of respondents stratified by occupation is shown in Table 4.2 below: The table shows the stratification by clinical [169 (84.5%)] and non-clinical [31 (15.5%)] staff in the hospital. Females were the majority for both clinical [119 (70.4%)] and non-clinical staffs [22 (71.0%)]. A total of 115 (68.0%) of the clinical staff and 21 (67.7%) non-clinical staff were between the ages of 20-29 years.

Clinical staff who were single were 77 (45.6%) while 91 (53.8%) were married and 1 (0.6%) was divorced. However Non-clinical staffs who were singles were 20 (64.5%) and 1 (0.6%) was divorced.

Majority 154 (91.1%) of the clinical staffs had attained tertiary education while 15 (8.9%) attained secondary/technical/vocational education. On the other hand, 25 (80.6%) of the non-clinical staff attained tertiary education while 6 (19.4%) attained secondary/technical/ vocational education.

A total of 83 (49.1%) of the clinical staff worked in the wards while the least 12 (7.1%) were in the laboratory. Furthermore, majority 20 (64.5%) of the non-clinical staff worked in the Records while 8 (25.8%) were in Administration.

On the length of working within the facility, 46 (26.6%) of the Clinical staff were less than 1 year, 64 (37.9%) between 2-4 years, 43 (24.0%) between 5-7 years, 12 (6.0%) between 8-10 years and 8 (4.0%) were 10 years and above. However, majority of the Non-clinical staff had <10 years of working experience.



**Table 0.2: Socio-demographic characteristics stratified by occupation**

<b>Variable</b>	<b>Clinical staff (n=169)</b>	<b>Non-clinical staff (n=31)</b>
<b>Gender</b>		
Male	50(29.6%)	9(29.0%)
Female	119(70.4%)	22(71.0%)
<b>Age (years)</b>		
<20	2(1.2%)	0(0.0%)
20-24	59(34.9%)	12(38.7%)
25-29	56(33.1%)	9(29.0%)
30-34	38(22.5%)	6(19.4%)
35-39	8(4.7%)	4(12.9%)
40 above	6(3.6%)	0(0.0%)
<b>Marital Status</b>		
Single	77(45.6%)	20(64.5%)
Married	91(53.8%)	10(32.3%)
Divorced	1(0.6%)	1(3.2%)
<b>Education Status</b>		
Sec. Tech. Voc.	15(8.9%)	6(19.4%)
Tertiary	154(91.1%)	25(80.6%)
<b>Department</b>		
Administration	0(0.0%)	8(25.8%)
Wards	83(49.1%)	0(0.0%)
Laboratory	12(7.1%)	0(0.0%)
Pharmacy	0(0.0%)	4(12.9%)
Records	0(0.0%)	20(64.5%)
OPD	35(20.7%)	0(0.0%)
Antenatal Care (ANC)	38(22.5%)	0(0.0%)
<b>Duration of work</b>		
< 1 year	45(26.6%)	8(25.8%)
2-4 years	64(37.9%)	12(38.7%)
5-7 years	43(25.4%)	7(22.6%)
8-10 years	8(4.7%)	4(12.9%)
> 10 years	9(5.3%)	0(0.0%)

*Data presented as number and percentages*



#### **4.2 BIOLOGICAL AND NON-BIOLOGICAL HAZARDS EXPERIENCED BY HEALTH WORKERS IN MAJOR HOSPITALS, TAMALE**

The biological and non-biological hazards being experienced by the healthcare workers are shown in Table 4.3 below: Biological hazards were mainly cuts and wounds 141 (70.5%), toxic fumes 22 (11.0%), irritation from disinfectant 52 (26.0%), contagious pathogens/Agents 66 (33.0%), and anesthetic gas or agents 8 (4.0%). On the other hand, the non-biological hazards experienced were slips, trips and falls 54 (27.0%), muscles aches, strains and sprains 44 (22.0%), chemical spill 32 (16.0%), noise and vibration 30 (15.0%), electric shock 16 (8.0%), lower back pain 99 (49.5%), extreme pressure from work 86 (43.0%), heat 34 (17.0%), assault (verbal abuse) 81 (40.5%), sexual abuse 2 (1.0%) and Burns 11 (5.5%).

However, stratified by the hospital, respondents who experienced biological hazards in SDA hospital were; cuts and wounds 61 (72.6%), irritation from disinfectants 24 (28.6%), contagious pathogens/agents 28 (24.1%) with the least 5 (6.0%) being anesthetics gas/agents. While in Central hospital, cuts and wounds were 80 (69.0%), irritation from disinfectant 28 (24.1%), Contagious pathogens/agents 38 (32.8%), with the least 3 (2.6%) being anesthetic gas/agents.

The Non-biological hazards that were experienced by respondents in SDA hospital were; Slips, trips and falls 19 (22.6%), muscle aches, strains, sprains 18 (21.4%), chemical spill 13 (15.5%), assault (verbal abuse) 35 (41.7%), and burns 5 (6.0%), and when compared with Tamale Central hospital; slips, trips and falls 35(30.2%), muscle aches, strains and sprains 26 (22.4%), chemical spill 19 (16.4%), assault (verbal abuse) 46 (39.7%), Sexual abuse 2 (1.7%) and Burns 6 (5.2%).



**Table 0.3: Biological and non-biological hazards experienced by health workers in tamale central and sda hospitals in tamale**

Hazards	Total (n=200)	SDA Hospital (n=84)	Tamale Central Hospital (n=116)	p-value
<b>Biological Hazards</b>				
Cuts and wounds	141(70.5%)	61(72.6%)	80(69.0%)	0.5760
Toxic fumes	22(11.0%)	9(10.7%)	13(11.2%)	0.9125
Irritation from disinfectants	52(26.0%)	24(28.6%)	28(24.1%)	0.4805
Contagious pathogens/agents	66(33.0%)	28(33.3%)	38(32.8%)	0.9320
Anesthetics gas/agents	8(4.0%)	5(6.0%)	3(2.6%)	-
Chemical inhalation	16(8.0%)	6(7.1%)	10(8.6%)	0.9320
<b>Non-biological Hazards</b>				
Slips, trips and falls	54(27.0%)	19(22.6%)	35(30.2%)	0.2350
Muscle aches, strains, sprains	44(22.0%)	18(21.4%)	26(22.4%)	0.9385
Chemical spill	32(16.0%)	13(15.5%)	19(16.4%)	0.8635
Noise and vibration	30(15.0%)	13(15.5%)	17(14.7%)	0.8725
Electric shock	16(8.0%)	5(6.0%)	11(9.5%)	0.3637
Lower back pain	99(49.5%)	41(48.8%)	58(50.0%)	0.8680
Extreme pressure from work	86(43.0%)	35(41.7%)	51(44.0%)	0.7459
Heat	34(17.0%)	14(16.7%)	20(17.2%)	0.9150
Assault (Verbal abuse)	81(40.5%)	35(41.7%)	46(39.7%)	0.7749
Sexual abuse	2(1.0%)	0(0.0%)	2(1.7%)	-
Radiation	5(2.5%)	3(3.6%)	2(1.7%)	-
Burns	11(5.5%)	5(6.0%)	6(5.2%)	0.8113

*Data presented as number and percentages p <0.05 is considered statistically significant*

#### **4.3 HAZARDS EXPERIENCED BY HEALTH WORKERS STRATIFIED BY OCCUPATION**

The hazards being experienced by the respondents stratified by occupation are shown in Table 4.4 below. The Clinical staffs who experienced biological hazards were, 125





(74.0%) cuts and wounds, irritation from disinfectants were 40 (23.7%), contagious pathogens/agents 57 (33.7%), with the least being anesthetic gas/agents 7 (4.1%). While the Non-clinical staff who also experienced biological hazards were; 16 (51.6%) cuts and wound, 12 (38.7%) irritation and disinfectants and the least 2 (6.5%) being chemical inhalation.

Non-biological hazards that were experienced by the Clinical staffs were, slips, trips and falls 48 (28.4%), lower back pain 85 (50.3%), extreme pressure from work 75 (44.4%), assault (verbal abuse) 72 (42.0%), and sexual abuse 1 (0.6%). On the other hand, the Non-clinical staffs who experienced non-biological hazards were; slips, trips and falls 6 (19.5%), electric shock 3 (9.7%), lower back pain 14 (44.5%), extreme pressure from work 11 (35.5%), Heat 9 (29.0%), assault (verbal abuse) 10 (32.3%), and sexual abuse 1 (3.2%).



**Table 0.4: Hazards experienced by health workers stratified by occupation**

Variable	Total (n=200)	Clinical staff (n=169)	Non-clinical staff (n=31)	p-value
<b>Biological Hazards</b>				
Cuts and wounds	141(70.5%)	125(74.0%)	16(51.6%)	0.0121
Toxic fumes	22(11.0%)	20(11.8%)	2(6.5%)	-
Irritation from disinfectants	52(26.0%)	40(23.7%)	12(38.7%)	0.0793
Contagious pathogens/agents	57(28.0%)	57(33.7%)	0(0.0%)	-
Anesthetics gas/agents	7(3.5%)	7(4.1%)	0(0.0%)	-
Chemical inhalation	16(8.0%)	14(8.3%)	2(6.5%)	-
<b>Non-biological Hazards</b>				
Slips, trips and falls	54(27.0%)	48(28.4%)	6(19.4%)	0.2969
Muscle aches, strains, sprains	44(22.0%)	37(21.9%)	7(22.6%)	0.9323
Chemical spill	32(16.0%)	28(16.6%)	4(12.9%)	-
Noise and vibration	30(15.0%)	24(14.2%)	6(19.4%)	0.4601
Electric shock	16(8.0%)	13(7.7%)	3(9.7%)	-
Lower back pain	99(49.5%)	85(50.3%)	14(45.2%)	0.5992
Extreme pressure from work	86(43.0%)	75(44.4%)	11(35.5%)	0.3578
Heat	34(17.0%)	25(14.8%)	9(29.0%)	0.0524
Assault (Verbal abuse)	81(40.5%)	71(42.0%)	10(32.3%)	0.3092
Sexual abuse	2(1.0%)	1(0.6%)	1(3.2%)	-
Radiation	5(2.5%)	5(3.0%)	0(0.0%)	-
Burns	11(5.5%)	9(5.3%)	2(6.5%)	-

*Data presented as number and percentages.  $P < 0.05$  is statistically significant*



#### **4.4 FACTORS ASSOCIATED WITH EXPOSURE TO BIOLOGICAL HAZARDS**

The factors associated with the exposure of respondents to biological hazards are shown in Table 4.5 below: The table shows the odd ratio for association between respondent's characteristics and work-related exposures. Biological hazards were associated with respondents who attained secondary/vocational/technical education [OR = 0.369 (0.150-0.907),  $p=0.030$ ], Clinical staffs [OR= 2.487 (1.146-5.397),  $p=0.021$ ], poor maintenance of hospital items [OR=0.446 (0.240-0.831),  $p=0.011$ ], assault (verbal) abuse [OR=2.581(1.317-5.059),  $p=0.006$ ] and extreme pressure from work [OR=2.975 (1.519-5.829),  $p=0.001$ ].

At multivariate analysis, the independent predictors for experiencing a biological hazard were clinical staff [aOR=2.252 (1.021-4.967)  $p=0.044$ ], poor maintenance of hospital items [aOR=0.463 (0.247-0.869),  $p=0.016$ ], assault (verbal) abuse [aOR=2.486 (1.260-4.908),  $p=0.009$ ] and extreme pressure from work [aOR=2.890 (1.465-5.701),  $p=0.002$ ].



**Table 0.5: Factors Associated with Exposure to Biological Hazards**

Variable	OR	95% CI	p-value	aOR	95% CI	p-value
<b>Gender</b>						
Male	1					
Female	0.752	0.379-1.492	0.414	0.754	0.376-1.510	0.425
<b>Age</b>						
30 below	1.083	0.563-2.080	0.812	1.083	0.558-2.101	0.814
>30	1					
<b>Facility</b>						
SDA Hospital	1					
Tamale Central Hosp.	1.193	0.642-2.219	0.576	1.580	0.801-3.117	0.187
<b>Marital Status</b>						
Married	1					
Single	0.764	0.415-1.405	0.387	0.840	0.450-1.566	0.583
<b>Education Status</b>						
Sec. Tech. Voc.	0.369	0.150-0.907	0.030*	0.418	0.167-1.049	0.063
Tertiary	1					
<b>Occupation</b>						
Clinical staff	2.487	1.146-5.397	0.021*	2.252	1.021-4.967	0.044*
Non-clinical staff	1					
<b>Duration of work</b>						
<5	1.416	0.756-2.652	0.277	1.437	0.760-2.717	0.265
5 above	1					
<b>Knowledge occupational hazards</b>						
Yes	1					
No	0.924	0.481-1.775	0.812	0.880	0.453-1.709	0.706
<b>Safety training on 1<sup>st</sup> appointment</b>						
Yes	1					
No	0.824	0.400-1.698	0.600	0.839	0.404-1.745	0.639
<b>Wearing all necessary PPE</b>						
Yes	1					
No	0.981	0.512-1.879	0.954	1.062	0.548-2.059	0.858
<b>Hospital items of maintenance</b>						
Good	1					
Poor	0.446	0.240-0.831	0.011*	0.463	0.247-0.869	0.016*
<b>Assault (verbal abuse)</b>						
No	1					
Yes	2.581	1.317-5.059	0.006*	2.486	1.260-4.908	0.009*
<b>Extreme pressure from work</b>						
No	1					
Yes	2.975	1.519-5.829	0.001*	2.890	1.465-5.701	0.002*
<b>Proper disposal</b>						
Yes	1					
No	0.511	0.248-1.053	0.069	0.533	0.256-1.108	0.092

*OR-odd ratio; aOR-adjusted odd ratio; 95% Confidence Interval; p<0.05 is*

*significant*



#### **4.5 FACTORS ASSOCIATED WITH EXPOSURE TO NON-BIOLOGICAL HAZARDS**

The factors associated with exposure to non-biological hazards are shown in Table 4.6 below: The table shows the odd ratio for association between respondent's characteristics and work-related exposures. Non-biological hazards were associated with those who were single [OR=0.499 (0.263-0.947),  $p=0.034$ ] and those who said they were verbally assaulted [OR=3.581 (1.865-6.876),  $p<0.0001$ ].

At multivariate analysis after adjusting for the independent predictors for experiencing non-biological hazard, being single [aOR=0.471 (0.241-0.920),  $p=0.028$ ] and those who were assaulted (verbal abuse) [aOR = 3.921 (1.974- 7.789),  $p=0.0001$ ] (table 4.6)



Table 0.6: Factors Associated with Exposure to Non-Biological Hazards

Variable	OR	95% CI	p-value	aOR	95% CI	p-value
<b>Gender</b>						
Male	1					
Female	0.879	0.447-1.730	0.709	0.932	0.460-1.887	0.845
<b>Age</b>						
30 below	0.614	0.319-1.182	0.144	0.645	0.326-1.278	0.209
>30	1					
<b>Facility</b>						
SDA Hospital	1					
Tamale Central Hosp.	0.676	0.354-1.292	0.236	0.636	0.324-1.249	0.189
<b>Marital Status</b>						
Married	1					
Single	0.499	0.263-0.947	0.034*	0.471	0.241-0.920	0.028*
<b>Education Status</b>						
Sec. Tech. Voc.	0.774	0.271-2.213	0.633	0.754	0.254-2.240	0.611
Tertiary	1					
<b>Occupation</b>						
Clinical staff	1.733	0.671-4.476	0.256	1.549	0.581-4.131	0.382
Non-clinical staff	1					
<b>Duration of work (years)</b>						
<5	0.989	0.514-1.902	0.973	0.891	0.450-1.766	0.741
5 above	1					
<b>Knowledge of occupational hazards</b>						
Yes	1					
No	1.031	0.526-2.022	0.929	1.005	0.498-2.025	0.990
<b>Safety training on 1st appointment</b>						
Yes	1					
No	1.887	0.845-4.211	0.121	2.159	0.936-4.985	0.071
<b>Wearing all necessary PPE</b>						
Yes	1					
No	0.949	0.489-1.844	0.878	0.878	0.439-1.756	0.712
<b>Hospital items of maintenance</b>						
Good	1					
Poor	1.065	0.570-1.990	0.843	0.729	0.368-1.445	0.365
<b>Assault (verbal abuse)</b>						
No	1					
Yes	3.581	1.865-6.876	<0.0001*	3.921	1.974-7.789	<0.0001*
<b>Extreme pressure from work</b>						
No	1					
Yes	0.977	0.520-1.837	0.944	0.866	0.447-1.678	0.671
<b>Proper disposal</b>						
Yes	1					
No	1.662	0.801-3.446	0.172	1.738	0.814-3.707	0.153

OR-odd ratio; aOR-adjusted odd ratio; 95% Confidence Interval; p<0.05 is significant



#### **4.6 HOSPITAL EMPLOYEE TRAINING PROGRAMS ON HEALTH AND SAFETY**

A question on employee assistance program was asked with the aim of establishing from the employees what extend should the hospitals establish employee's assistance program as a means of protecting workers from occupational health and safety hazards. It is an employee benefit program that helps employees with personal problems and or work-related problems that may impact their job performance, health, mental and emotional well- being. Figure 4.1 A below indicates that 35% of the total respondents strongly agree with the implementation of employee assistance program in Central and Seventh Day Adventist Hospitals. When stratified on hospital basis 38.0% and 31.0% of the respondents in both SDA and Central hospital respectively, strongly agree with the implementation of employee assistance program in the hospitals. A total of 59.0% of respondents in both SDA and Central hospitals agree with the implementation of employee assistance program. However, when stratified on the basis of hospitals, 60.0% and 57.0% of respondents in Central hospital and Seventh Day Adventist hospital both agree with employee assistance program respectively. But 8.6% and 7.0% of respondents in both Central and Seventh Day Adventist respectively, disagree with the implementation of employee assistance program in the hospital. The responses indicated that majority of the health workers have the belief that employee assistance program is a good approach in improving the occupational health status of healthcare workers.

#### **4.7 MONITORING INSPECTION AND EVALUATION OF SAFETY PRACTICES PREREQUISITE**

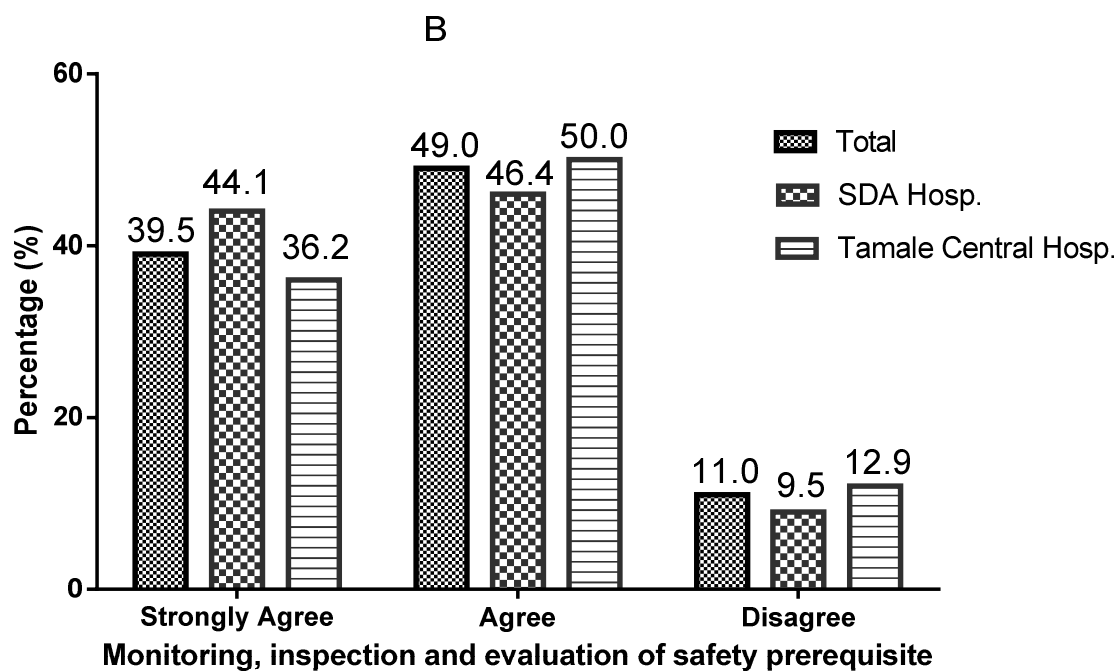
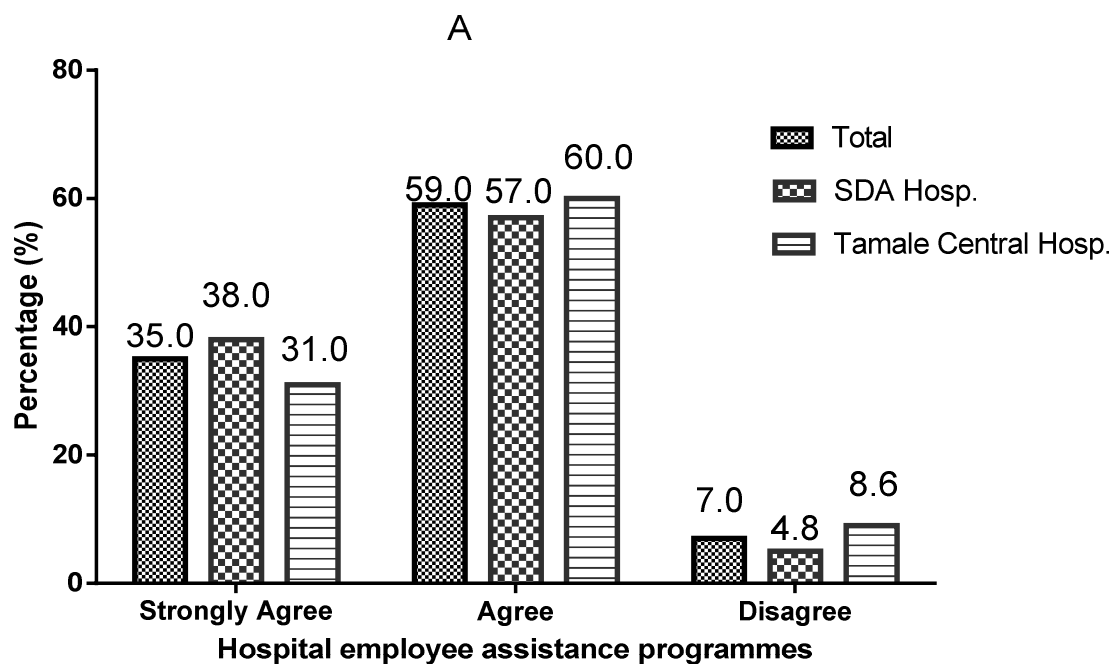
The below Figure 4.1 B indicates that a total of 39.5% of respondents in both hospitals strongly agree with the issue of monitoring inspection and evaluation of



safety practices prerequisite. When stratified on hospital basis; 44.1% and 36.2% of respondents in Seventh Day Adventist hospital and Central hospital respectively, strongly agree with the implementation of monitory inspection and evaluation of safety practices prerequisite. A total of 49.0% respondents in both Seventh Day Adventist and Central hospital agree with the issue of monitoring inspection and evaluation prerequisite to the safety of occupational health and safety in hospitals. However, when stratified on hospital basis 50.0% and 46.4% of respondents in both Central and Seventh Day Adventist hospitals respectively agree with the issue of monitoring inspection and evaluation prerequisite to the safety of healthcare workers in hospitals. But 12.9% and 11.0% of respondents in both Central and Seventh Day Adventist Hospitals respectively disagree with the issue of monitoring, inspection and evaluation on safety prerequisite to occupational health and safety in hospitals.







**Figure 0.1: (A) hospital employee assistance health safety programs and (B) Regular monitoring, inspection and evaluation of safety prerequisite stratified by hospital.**



## CHAPTER FIVE

### DISCUSSION

#### 5.1 SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE HEALTHCARE WORKERS IN TAMALE CENTRAL AND SDA HOSPITALS

The study sought to assess the occupational hazards among health workers and their associated risk in two hospitals in the Tamale Metropolis, Ghana. The findings of this study show that, more than half of the study participants had experienced an occupational health hazard, mostly sharp related injuries, lower back pain and extreme pressure at work. These findings are consistent with previous studies by Ndejjo *et al.* (2015) in Uganda, Nsubuga Fredrich (2005) in Uganda and Orji *et al.* (2002) in Nigeria, who reported that sharp related injuries, stress and extreme pressure at work were the major health related hazards experienced by health workers.

Majority of the healthcare workers were females and this is typical of most healthcare institutions. This is consistent with other study conducted by (Manuel *et al.*, 2015; Osungbemi *et al.*, 2016) and who both reported that females were the majority in all the hospitals that they studied.

Also, majority of the participants were below 40 years of age and this is comparable to the findings of (Amosu *et al.*, 2011; Osungbemi *et al.*, 2016) who both reported that most of the respondents were 40 years and below. This may be due to the fact that one of the two hospitals selected in this study was newly established (SDA Hospital) and had relatively young work force in terms of age and year of practice experience.

Majority of the respondents have attained tertiary education and this comparable to the study conducted Manyele *et al.* (2008) who said majority of their respondents had tertiary education and that them to be abreast with occupational hazards in hospitals.



Years of experience (duration of work) had no significant association with the level of risk of health workers. This is consistent with studies by (Iliyasu *et al.*, 2016; Osungbemi *et al.*, 2016) who reported no significant association between levels of risk of health workers and year of practice. The reason may be due to fact that, all health workers irrespective of their years of experience are exposed to similar grade of risk in the course of performing their professional duties. This could be because health workers in hospitals use similar safety personal protective equipment (PPE) irrespective of their years of experience.

## **5.2 SOCIO-DEMOGRAPHIC CHARACTERISTICS STRATIFIED BY OCCUPATION**

Clinical staffs were the majority in this study and this is consistent with the studies conducted by Osungbemi *et al.* (2016) in Nigeria and Ndejjo *et al.* (2015) who both established in their study that clinical staff were majority than non-clinical staff. Nurses among the study formed the vast majority, this is normal in many health settings particularly in hospitals. This was expected because they are the largest workforce in hospitals.

Majority of the respondents years of practice was less than 10 years. This is consistent with a study conducted by Iliyasu *et al.* (2016) who reported less than 10 years of working experience for most of his respondents.

The study established that majority of the clinical staff were females and married this consistent with study conducted by Ndejjo *et al.* (2015) who reported that females were the majority in their study of which many were married.



### **5.3 BIOLOGICAL AND NON-BIOLOGICAL HAZARDS BEING EXPERIENCED BY HEALTHCARE WORKERS IN MAJOR HOSPITALS IN TAMALE**

Sharp related injuries, infections from patients, cuts, wound, chemical inhalation, lower back pain and verbal abuse were common biological and non-biological hazards encountered by health workers in the study. This is largely corroborated by previous studies Orji *et al.* (2002) and Waqar *et al.* (2011) who established that lacerations, contagious pathogens/agents, chemical inhalation lower back pains and assault (verbal abuse) were the common biological and non-biological hazards being experienced by healthcare workers.

Cuts and wounds, contagious pathogens/agents, and irritation from disinfectants were the common biological hazards been experienced by the respondents in both SDA and Tamale Central hospitals in the Tamale metropolis. The likely predictors for these biological hazards were being a clinical staff, health workers who attained Secondary/Vocational/Technical school, poor maintenance of hospital items, verbal abuse (assault) and extreme pressure at work. After adjusting for more confounding factoring, being a clinical staff, poor maintenance of hospital items, verbal abuse (assault) and extreme pressure at work were the risk factors for the high biological hazards among health workers. This is consistent with the studies conducted by Manuel *et al.* (2015) and Ndejjo *et al.* (2015) who reported that verbal abuse, extreme pressure from work and being a clinical staff were risk factors associated with the exposure to biological hazards among healthcare workers.

The study also established that lower back pain, slips, trips and falls, muscle aches, strains and sprains were the common non-biological hazards been experienced by the healthcare workers in Tamale Central and SDA hospitals. Lower back pain was the



highest non-biological hazards that were found in this study and is largely collaborated by the study conducted by Fasunloro and Owotade (2004), established in their study that lower back pains was the most common occupational health hazards among clinical dentist in Nigeria. This is also in line with previous studies by Emslie (1982) and Ogunbodede (1996) who both stated in their work that musculoskeletal health problems were the most common occupational hazards reported by health workers. It is similar to the findings of other researches which reported lower back pain as the most common place followed by the neck (Adegoke *et al.*, 2008). The occupationally acquired backache could be due to fixed posture with repetitive movements during patient handling and treatment in the hospital. Other factors that contribute to the acquisition of this occupationally acquired backache were frequent lifting or transferring of dependent patients, bending, treating large number of people; working in the same position for long hours; prolonged standing posture, performing manual therapy and psychological stress (Tezel, 2007, (Muralidhar *et al.*, 2010).

This study also established that verbal abuse was significantly associated with the exposure of respondents to non-biological hazard at the univariate and multivariate analysis. Verbal abuse (assault) on a respondent by a colleague, superior or patients will affect the health worker physically and psychologically and will likely lead to the health worker not taking the necessary precautions and thus exposing him/her to hazards at work. This finding is comparable to other studies such as Gerberich *et al.* (2011), who reported physical and non-physical assault on nurses. His study also established that the most commonly reported effects of assault (verbal abuse) were frustration, anger, fear, anxiety, stress, and irritability, in greater quantity. Levin *et al.* (1998), also reported that verbal abuse (assault) at workplace resulted in short and long term physical, personal, emotional, and professional effects. Workers who are



assaulted or verbally abused may be depressed psychologically and may lack concentration in performing his/ her lawful duties and can lead or result to physical injuries such as cuts and wounds. Studies have indicated that violence and verbal assaults in the work environment are significant challenge among Healthcare Workers in developing countries (Şenuzun Ergün and Karadakovan, 2005; Khademloo *et al.*, 2013). The most common type of violence faced by healthcare workers are verbal and physical abuse as reported by Çelik *et al.* (2007) who reported 91.1% of Health workers had suffered abuse either verbally or physically whilst 32.8% were abused both physically and verbally. This is similar to the study conducted by Simonowitz (1995) who established that the most obvious consequences of work related assault includes; physical injury, disability, and other physical outcomes. Brewin *et al.* (1999) established in a study that health workers who experience verbal abuse, and bear feelings/symptoms for a longer period, may be at risk of untoward mental health effects such as acute stress disorder or post-traumatic stress syndrome. Findorff-Dennis *et al.* (1999), found that the outcomes of verbal assault appeared to continue long after the event occurred and lead to chronic pain, and depression four years after the assault. Gerberich *et al.* (2011), also reported that verbal assault may lead to cuts/lacerations/scratches, or abrasions which constitutes biological hazards.

#### **5.4 FACTORS ASSOCIATED WITH EXPOSURE TO BIOLOGICAL HAZARDS**

The factors associated with the exposure of respondents to biological hazards were associated with respondent's characteristics and work related exposures. Biological hazards were associated with respondents who attained



secondary/vocational/technical education, poor maintenance of hospital items and extreme pressure from work.

The likely predictors for these biological hazards were being a clinical staff, health workers who attained Secondary/Vocational/Technical school, poor maintenance of hospital items, verbal abuse (assault) and extreme pressure at work. After adjusting for more confounding factoring, being a clinical staff, poor maintenance of hospital items, verbal abuse (assault) and extreme pressure at work were the risk factors for the high biological hazards among health workers.

Extreme pressure from work was a predictor for exposing healthcare workers to biological hazards in the study. This is corroborated with the study conducted by (Berland *et al.*, 2008; Ndejjo *et al.*, 2015) who also found that healthcare workers who experienced work related pressures were more likely to report occupational health and safety hazards. Work related pressures have been reported to have negative effects and can compromise on care of clients hence resulting in a diminished quality of life for both healthcare workers and their clients.

The study established that those who attained secondary/technical and vocational education were of high risk of getting biological hazards. This is because most of them lack adequate knowledge of occupational health and safety issues in the hospitals. This finding is comparable to the study conducted by Manyele *et al.* (2008) of Tanzania who reported health workers who attained tertiary education were more abreast with occupational health and safety issues at the workplace.

Clinical staffs were associated with the exposure to biological hazards. This is consistent with the studies conducted by Osungbemi *et al.* (2016) in Nigeria and Ndejjo *et al.* (2015) who both established in their study that clinical staff were associated with the exposure to biological hazards than the non-clinical staff. Nurses



among the study formed the vast majority, this is normal in many health settings particularly in hospitals. This was expected because they are the largest workforce in hospitals. Also, clinical staff had a significant association with biological hazards because of the type of occupation (direct contact with patients), possibly be the reason for the high risk of biological hazards being experienced by them.

The study established that those who attained secondary/technical and vocational education were of high risk of getting biological hazards. This is because most of them lack adequate knowledge of occupational health and safety issues in the hospitals. This finding is comparable to the study conducted by Manyele *et al.* (2008) of Tanzania who reported that healthcare workers who attained tertiary education were more abreast with occupational health and safety issues at the workplace.

Osungbemi *et al.* (2016), argued that doctors and nurses render selfless service to their clients at the expense of their safety and health. Also, well-equipped and experienced clinical staffs have consciousness of safety and do not give necessary attention to safety precautions making them vulnerable to hazards.

Furthermore, Lipscomb *et al.* (2002) and Kirkcaldy *et al.* (1997) have demonstrated that, working for long hours increases the risk of hazards among health workers which is commoner with clinical health workers and this may have accounted for them being at high risk. Another reason may be that, clinical health workers experience extreme pressure at work than non-clinical health workers and studies by Conway *et al.* (2008) and Berland *et al.* (2008) have shown that work related pressures have negative impacts including the compromise of patient care thus resulting to a reduced quality of life for both health workers and patients. Extreme pressure at work was a risk factor for experiencing a biological hazard and thus agrees with studies by Conway *et al.* (2008) and Berland *et al.* (2008) who argued that clinical health workers





experience work related pressure than non- clinical workers and this impacts negatively on their health.

Poor maintenance of hospital items was found to be one of the independent predictors of risk that contributed to biological hazards at the univariate and multivariate regression analysis in this study. This is because hospital equipment and buildings that are not properly maintained may result in injuries and wounds to both health workers and their clients respectively. This finding is comparable to the study conducted by Houle and Association (2001) in Philippines and United State of America who both reported that poor maintenance of hospitals could make the working environment unsafe for nurses.

### **5.5 FACTORS ASSOCIATED WITH EXPOSURE TO NON-BIOLOGICAL HAZARDS**

The factors associated with exposure to non-biological hazards are associated between respondent's characteristics and work-related exposures. Non-biological hazards were associated with being single and verbal assault. After adjusting for the independent predictors for experiencing non-biological hazard at the multivariate analysis, being single and assault (verbal abuse) were found to be associated with the responders' exposure to non-biological hazards at the hospital. This is because the married workers were always cautious and followed the universal safety precautions in performing their duties at the hospital. This finding is comparable to other studies such as (Nsubuga Fredrich, 2005) who reported that majority of the healthcare workers were married. However, it was inconsistent with the finding that, being single was a factor that contributed to exposure of healthcare workers to non-biological hazards in the hospitals.



## CONCLUSION

The findings of this study show that, more than half of the study participants had experienced an occupational health and safety hazards mostly sharp related injuries, toxic fumes, contagious pathogens/agents, cuts and wounds, contagious pathogens/agents, and irritation from disinfectants were the common biological hazards been experienced by the respondents in both hospitals. While the non-biological hazards such as lower back pain, extreme pressure at work, assault (verbal abuse), slips, trips, falls, muscle aches, sprains strains, chemical spill, radiation and sexual assault were being experienced by the respondents.

The socio-demographic characteristic shows that majority of the healthcare workers were females and majority of the respondents were also married in both Central and SDA Hospitals in the Tamale Metropolis. The findings also show that majority of the respondents had tertiary education certificates for working in the hospitals. Majority of the respondents were from the Wards of the hospitals while the least were from the pharmacy.

Clinical healthcare was the majority in this study and were more vulnerable to occupational health and safety hazard compared with non-clinical health workers. Poor maintenance of hospital items, verbal (assault) abuse and extreme pressure at work being risk factors associated with exposure of the healthcare workers to biological hazards. Being single and verbal (assault) abuse were risk factors associated with non-biological exposure of the healthcare workers to occupational hazards in Tamale Central and SDA Hospitals. Occupational safety policy and frequent (three times yearly) training on safety in hospitals will go a long way to help curb this menace.



## **RECOMMENDATIONS**

### **TO DETERMINE THE SOCIO-DEMOGRAPHIC CHARACTERISTICS OF HEALTHCARE WORKERS IN TAMALE CENTRAL AND SDA HOSPITALS**

- Female healthcare workers should be paired with male counterparts to prevent assault (verbal abuse) particularly in emergency and psychiatric units in both hospitals
- Those with tertiary certificates should be made to lead other workers who have low level of education to guide them on occupational health and safety hazards and how to be cautious.

### **TO DETERMINE BIOLOGICAL AND NON-BIOLOGICAL HAZARDS BEING EXPERIENCED BY HEALTHCARE WORKERS IN TAMALE CENTRAL AND SDA HOSPITALS**

- Tamale Central and SDA Hospitals should have proper medical waste disposal systems to dispose waste generated by the health facilities to prevent the incidents of cuts and wounds and other biological hazards among healthcare workers.
- Personal Protective Equipment (PPE) should be made available to healthcare workers (HCWs) with a written strategy on how and when to use it in Tamale Central and SDA Hospitals.
- Healthcare workers should be immunized against highly infectious diseases that are likely to expose them to occupational health and safety hazards in Tamale Central and SDA Hospitals.



- Automated devices for carrying loads should be made available at Tamale Central and SDA hospitals. This will prevent manual handling of loads and reduce the incidents of lower back pain among healthcare workers.
- There should be frequent in-service training for healthcare staff on OHS in Tamale Central and SDA Hospitals. They should also establish workable and active occupational health and safety policy guidelines that will be managed by OHS managers. These will increase or boost productivity and overall well-being of healthcare workers in Tamale and Ghana at large.

**TO ASSESS THE RISK FACTORS ASSOCIATED WITH THE EXPOSURE  
OF BIOLOGICAL AND NON-BIOLOGICAL AMONG HEALTHCARE  
WORKERS IN TAMALE CENTRAL AND SDA HOSPITALS**

- Tamale Central and SDA Hospitals should have proper medical waste disposal systems to dispose waste generated by the health facilities to prevent the incidents of cuts and wounds and other biological hazards among healthcare workers.
- Personal Protective Equipment (PPE) should be made available to healthcare workers (HCWs) with a written strategy on how and when to use it in Tamale Central and SDA Hospitals.
- The management of Central and SDA hospitals should make posters visible in all their facilities to remind workers of universal safety precautions.
- The hospitals or health facilities should establish surveillance systems for checking occupational health and safety hazards among Healthcare Workers (HCWs) to respond appropriately to any risk.
- Furthermore, Ghana as a lower middle-income country should abide by International Labor Organization (ILO) criterion on occupational safety and



health as it provides important materials for countries or governments, employers and employees to establish measures that provide maximum security and safety at health facilities.

- Further research should be conducted in other hospitals or healthcare facilities in Ghana regarding occupational health hazards been experienced by health workers to establish the correlation between the exposure periods to work-related illnesses of healthcare workers at the Central and SDA hospitals
- Automated machines should be made available to Tamale Central and SDA Hospitals to assist healthcare workers from carrying loads.
- Security in important departments such as OPD, Wards, Records, and Pharmacy should be beefed up to minimize or prevent assault or verbal abuse on healthcare workers by patients, caregivers and visitors. Such a measure would take away the additional burden of healthcare workers controlling visitors, would-be criminals and absconding patients. This would also boost their level of concentration at work.
- Healthcare workers should be given specific briefings on occupational health and safety hazards they are likely to encounter before being assigned to specific units. Orderlies and other healthcare workers, who do most of the housekeeping jobs in the various units, may endanger health workers by their actions since they usually do not have any formal training and thus expose workers to risky situations. Thus, they should be trained on safe housekeeping to avoid putting health workers at risk of injuries at Tamale Central and SDA Hospitals.



- Healthcare workers should be immunized against highly infectious diseases that are likely to expose them to occupational health and safety hazards in Tamale Central and SDA Hospitals.
- Automated devices for carrying loads should be made available at Tamale Central and SDA hospitals. This will prevent manual handling of loads and reduce the incidents of lower back pain among healthcare workers.
- There should be frequent in-service training for healthcare staff on OHS in Tamale Central and SDA Hospitals. They should also establish workable and active occupational health and safety policy guidelines that will be managed by OHS managers. These will increase or boost productivity and overall well-being of healthcare workers in Tamale and Ghana at large.



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**APPENDIX**

**UNIVERSITY FOR DEVELOPMENT STUDIES**

**SCHOOL OF ALLIED HEALTH SCIENCES**

**DEPARTMENT OF PUBLIC HEALTH**

**QUESTIONNAIRE**

This project is being conducted by Department of Public Health with the aim of Assessing the occupational health and safety practices among healthcare workers in some selected hospitals in the Tamale metropolis. The information that you provide will contribute to our knowledge in this area of study.

**A. SOCIODEMOGRAPHIC**

1. Age (years): \_\_\_\_\_
2. Gender: [Male] [Female]
3. Marital Status: [Single] [Married] [Divorced]
4. Educational Level: [Primary] [Secondary/Technical/Vocational] [Tertiary]  
[None] Others.....
5. Place of work: \_\_\_\_\_
6. Duration of work: \_\_\_\_\_
7. Department at the hospital: \_\_\_\_\_
8. Occupation: \_\_\_\_\_

**B. KNOWLEDGE ON OCCUPATIONAL HEALTH AND SAFETY**

1. What is your understanding of occupational health and safety?
  - a) Employees' welfare ( )
  - b) Employers' welfare ( )



- c) Both employers and employees welfare ( )
- d) Employers, employees and third party welfare ( )
- e) Others, please.....
2. What are some of the safety measures put in place in your department?
- a) Safety training as part of orientation on first employment ( )
- b) Proper disposal of waste ( )
- c) Regular monitoring on safety and health standards to ensure if they are complied with ( )
- d) Using protective clothing ( )
- e) Prompt reporting of accidents/injuries ( )
- f) Re-training on safety and health practices ( )
- g) All of the above ( )
- h) Others, please state.....
- .....
3. How satisfied are you with the current occupational health and safety measures put in place in your department or unit?
- a) Very satisfied ( )
- b) Satisfied ( )
- c) Dissatisfied ( )
- d) Very Dissatisfied ( )
4. Which person is ultimately responsible for your health and safety and in the performance of your duties at the hospital?



- a) The head of the hospital ( )
- b) Yourself ( )
- c) Your supervisor ( )
- d) Environmental Health Unit ( )
- e) Not Sure ( )

5. Workplaces may require adequate lighting but ventilation is a secondary concern

- a) True ( ) b) False ( ) c) Not sure ( )

6. Are you required to put on protective clothing in the performance of your duties?

- a) True ( ) b) False ( ) c) Not Sure ( )

7. Do you agree that occupational health and safety is the responsibility of both employers and employees in order to ensure their rights? A) Yes ( ) b) No ( )  
c) Not sure

8. If yes, what are some of the responsibilities and rights of employees?

- a) Using protective clothing and equipment ( )
- b) Reporting any contravention of the law to management ( )
- c) The right to refuse unsafe work ( )
- d) All of the above ( )
- e) Others,

please

state.....

9. What do you think are some of the responsibilities and rights of employers?



- a) Filing government accident reports ( )
- b) Maintaining records on health and safety issues ( )
- c) Posting safety notices and legislative information ( )
- d) Providing education and training on health and safety ( )
- e) All of the above ( )
- f) Others, please state.....

10. Have you ever suffered any accident or injury in the hospital since your engagement?

- a) Yes ( ) b) No ( )

11. If yes, what were the causes of the accident? And if no, jump to question 15.

- a) Lack adequate of training on health and safety ( )
- b) Non-provision of adequate protective clothing and equipment
- c) Ignorance on health and safety matters ( )
- d) Not sure ( )

12. Did you report the accident to the appropriate authority? a) Yes ( ) b)No ( )

13. What measures were taken to curtail or foretell the occurrence of the same accident or injury in the future?

- a) The incident was referred to a committee ( )
- b) Investigation was conducted and I was invited ( )
- c) Report was issued, causes identified and report became part of the hospital's subsequent safety meeting ( )
- d) Others, please state.....

14. What were some of the findings from the investigation?



- a) Inadequate protective clothing and equipment ( )
- b) Lack of personal knowledge on occupational health and safety regulations ( )
- c) Lack of training on occupational health and safety ( )
- d) All of the above ( )
- e) Others, please state.....

15. Do you have a health and safety committee in the hospital?

- a) Yes ( )   b) No ( )   c) Not sure ( )

16. How often is occupational health and safety training organized for staff in the hospital?

- b) Quarterly ( )   b) Biannually ( )   c) Annually ( )   d) No definite time fixed for training ( )

17. What specific issues relating to health and safety are discussed during such training sessions?

- c) Reports from adhoc committees for previous periods ( )
- d) Suggestions are received from staff on occupational health and safety ( )
- e) Staff who are identified as having safety consciousness are awarded ( )
- f) Others, please state.....

18. To what extent do you think that monitoring, inspection and evaluation of safety practices are prerequisite for effective occupational health and safety?

- g) Strongly agree ( )   b) Agree ( )   c) Disagree ( )

19. How regular are monitoring, inspection and evaluation done?



- h) Monthly ( ) b) Quarterly ( ) c) Biannually ( ) d) No definite time fixed ( )

20. Are you satisfied with what management is doing currently to improve upon occupational health and safety of the hospital? a) Yes ( ) b) No ( )

21. What are some of the things in your opinion management can do to improve upon occupational health and safety of the hospital?

- a) Engagement of safety expert to re-design occupational health and safety policies for the hospital ( )
- b) Constantly reviewing health and safety practices ( )
- c) Improve on good housekeeping and sanitation ( )
- d) Creating the environment for staff to freely report on occupational health and safety ( )
- e) Supervision and safety management ( )
- f) None of the above ( )
- g) Others, please state.....

22. Do you think the hospital should have employee assistance programmes that are crucial in preventing occupational hazards to some extent? a) Strongly agree( ) b) Agree( ) c) Disagree ( )

23. Do you think effective occupational health and safety policies have any impact on job performance in the hospital? a) Yes ( ) b) No ( ) c) Not Sure ( )

24. What benefits will the hospital and employees obtain from effective implementation of occupational health and safety practices?

- a) Reduction in accidents cases ( )



- b) Reduction in cost of compensation to injured employees ( )
- c) Lost or death of staff ( )
- d) labour turnover is reduced ( )
- e) Corporate image of the hospital is enhanced ( )
- f) All the above ( )
- g) Others, please state.....

25. Do you think your department or unit have a written copy of occupational health and safety policy of the hospital? a) Yes ( ) b) No ( )

26. How will you describe your hospital in terms of health and safety?

- a) Very safe
- b) Safe
- c) Fair
- d) Unsafe

27) How will you describe your hospital in terms of maintenance?

- a) Good
- b) Fair
- c) Poor
- d) Very poor

28) Which of the following hazards in the table below are you regularly exposed to in your routine work at the hospital?



You can tick more than one hazard.

No	Hazards	✓
1	Slips, trips and falls	( )
2	Cuts, wounds, needle prick and injuries from sharp objects	( )
3	Muscle aches, strains, sprains	( )
4	Radiation	( )
5	Burns	( )
6	Chemical spill	( )
7	Noise and vibration	( )
8	Electric shock	( )
9	Toxic fumes	( )
10	Lower back pain	( )
11	Irritation from disinfectants	( )
12	Unclean working environment	( )
13	Extreme pressure from work	( )
14	Contagious pathogens/agents or micro-organisms	( )
15	Heat	( )
16	Anesthetics gas/agents	( )
17	Chemical inhalation	( )
18	Assault (verbal abuse)	( )
19	Sexual abuse	( )





(29) How will you describe your knowledge and awareness of occupational hazards?


- a) Excellent
- b) Very good
- c) Fair
- d) Good
- e) Poor



## Introductory letter

**GHANA HEALTH SERVICE**

OUR CORE VALUES:  
1. People-Centered  
2. Professionalism  
3. Team work  
4. Innovation  
5. Discipline  
6. Integrity

  
Your Health - Our Concern

Regional Health Directorate  
Ghana Health Service  
P.O. BOX 99  
Tamale

Wednesday, 07 June 2017

My Ref No: GHS/NR/18-0/89

Your Ref No: .....


Tel: (233) (03720) 22912, 22710, 22146  
Fax: (233) (03720) 22941  
Email: rdhs.nr@ghsmail.org

**PERMISSION TO COLLECT DATA FOR RESEARCH PURPOSE**

I would be very grateful if Mr Luqman Awudu, an MPhil student of the School of Allied Health Sciences of the University for Development Studies in the Department of Community Health, is granted permission to collect data from your facility to address his research topic "*Assessing the occupational health and safety practices among health care workers in some selected hospitals in the Tamale Metropolis*".

The data so collected will be treated as confidential and it is only for research purpose.

Thank you.



Dr. Braimah Baba Abubakari  
Dep. Director – Clinical Care  
For: Reg. Director of Health Services  
Northern Region

**Distribution**

The Medical Director  
✓ Tamale Central Hospital