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**SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA**



**OCCUPATIONAL HEALTH HAZARDS AND SAFETY PRACTICES AMONG
HEALTH WORKERS AT THE EAST AKIM MUNICIPALITY OF GHANA**

BY

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INTEGRI PROCEDAMUS

JULY, 2022

DECLARATION

I, **FRANCIS KWEKU SABLAH** , hereby declare that apart from references to other people's works duly acknowledged, this research is a result of my own independent work and has not been submitted to any other institution.



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DEDICATION

This dissertation is dedicated to my family.



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I thank god almighty for his blessings and strength, throughout this study. I also appreciate the immense support of my supervisor, Dr. Paul Kingsley Botwe, and the entire faculty of the School of Public Health for their diverse contribution to this project.



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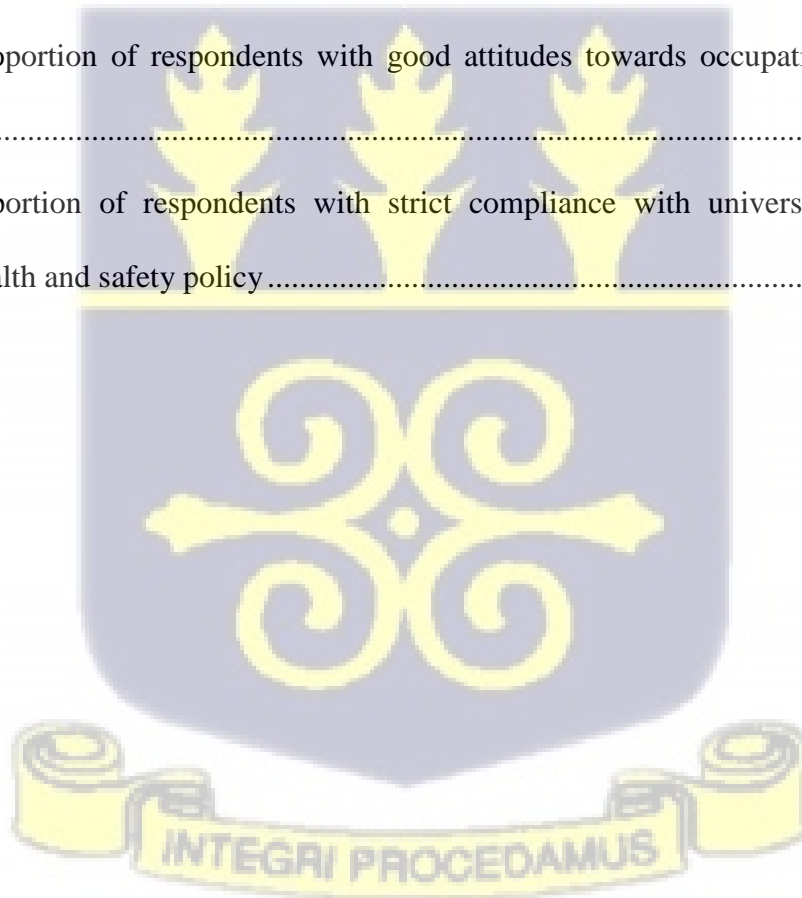
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LIST OF ACRONYMS

- ICD – Institutional Care Division
GHS – Ghana Health Service
IPC – Infection Prevention & Control
MOH – Ministry of Health
GDP – Gross Domestic Product
OHS – Occupational Health and Safety
HCFs – Health Care Facilities
IAPA – The International Au Pair Association
HCV – Hepatitis C Virus
HBV – Hepatitis B Virus
HCWs – Health Care Workers
PEP – Post Exposure Prophylaxis
WHO – World Health Organization
HBM – Health Belief Model
TPA – Theory of Planned Action
LMICs – Lower middle-income countries



ABSTRACT

Background: Occupational health and safety at the workplace are typical issues confronting workers and employers at the workplace. The International Labour Organization (ILO) announced that approximately 6,400 people die daily from work accidents and over eight hundred thousand are injured on the job. Occupational health is a neglected public health issue among health care workers, particularly in low resource nations. This has exposed healthcare workers in these areas to various forms of hazard that impact negatively on their wellbeing and performance at work. Studies show that about 90% of accidents occur because of unsafe behavior and human errors. Even if workers do not have the right knowledge, attitude, and behavior toward safety measures in a safe workplace, all efforts for an accident-free workplace will be in vain. People's behaviors and intentions about healthy behaviors depend on their beliefs, values, and knowledge about the issue. Various models of health education are used in determining predictors of different healthy behaviors but their efficacy in safety behaviors, such as occupational health and safety is limited.

Aim: The purpose of the study is to identify existing gaps in workplace safety and health management among health care workers in the East Akim municipality based on the occupational health and safety policy and guidelines for the health sector, Health Belief Model, and Reasoned Action Theory.

Methods: A descriptive cross-sectional study will be carried out on health workers in Kibi and Tafo government hospitals within the East Akim municipality. A sample size of 243 will be randomly selected. The data collection tool will be a researcher-made questionnaire. The questionnaire's validity will be gained by content-validity and its reliability will be validated by Cronbach's alpha. The questionnaire will use dichotomous and Likert-scale responses to assess knowledge, attitude, and behavior and will be developed using the Ghana health service occupational health and safety policy and guidelines for the health sector, and the health belief model, which is based on the theory that self-protective behavior is driven by the anticipation of a negative health outcome and the desire to avoid such an outcome or reduce its impact. Within this model, the perceived susceptibility to the event or likelihood of its occurrence further influences the motivation to take protective action. All categories of health workers within the facilities who met the criteria for selection were recruited. The quota sampling and simple random sampling method were used in sampling participants for the study. Data were analyzed using Stata 15 and

involved a descriptive test of association and binary logistics regression. A p-value of less than 0.05 was considered for statistical significance at a 95% confidence interval.

Results: Out of the 270 respondents, 62.2% were adequately knowledgeable, 7.8% of the workers had good behavior towards occupational hazards and safety practices. The majority of respondents (96%) had a good attitude towards occupational hazards and safety practices. Being female (aOR = 1.99; 95% CI = 1.13 – 3.50; p = 0.017) or non-clinicians (aOR = 3.48; 95% CI = 1.39 - 8.67; p = 0.008) increased the odds of adequate knowledge of occupational hazards and safety practices. The odds of a good attitude towards occupational hazards and safety practices were significantly reduced by 98% among Muslims as compared to Christians (aOR = 0.02; 95% CI = 0.002 – 0.19; p = 0.001). 17.4% of the 270 respondents indicated strict compliance with universal precautions with a one year increase in age (aOR = 0.87; 95% CI = 0.77 – 0.98; p = 0.028), good behaviour (aOR = 3.59; 95% CI = 1.25 – 10.37; p = 0.018) and a one year increase in work experience (aOR = 1.17; 95% CI = 1.01 - 1.34; p = 0.032) of a health worker influenced strict compliance with universal precautions. 30.4% of the health workers reported exposure to hazard in the last six months with 29.3%, 25.6%, and 14.6% representing splashes, direct contacts and needle sticks respectively. Only 29.3% of these hazard exposure incidents were reported while action was taken for 36.6% of the hazard exposure incidents. Adequate knowledge (aOR = 2.23; 95% CI = 1.14 – 4.36; p = 0.019) of occupational hazards and safety practices increased hazard exposure among health workers in Kibi and Tafo government hospitals within the East Akim municipality.

Conclusion: Even though a majority (96%) of the respondents exhibited a good attitude towards occupational hazards and safety practices, only 7.8% of the workers had good behavior with 62.2% exhibiting adequate knowledge. Authorities at the Kibi and Tafo government hospitals should organize regular training for health workers on occupational safety to enable staff to identify and report possible hazards.



CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Health care facilities (HCFs) are an institution that is principal and critical in improving access and delivery of quality health care to the population. With the primary health concept, HCFs gives vital services that prevent diseases, promote health, and provide health care services to individuals, families, and society (Koh & NAING, 2014).

There exist in HCFs a substantial degree of exposure to hazardous substances, which considerably threatens the well-being of health care workers (HCWs) just like any other workplace. (Aluko, Adebayo, Adebisi, & Ewegbemi, 2016).

The International Labour Organization (ILO) estimates that about 6,400 fatalities result from occupational accidents or disease and that 860,000 people are injured on the job. According to Aluko, Adebayo, Adebisi, & Ewegbemi, (2016) fatalities at work is as a result of work-related diseases, causing nearly 6 times more death of people than accidents at the workplace. One cannot fully estimate the devastating effects of occupational hazards on workers and their dependents, and as stated by the ILO, there is a great cost of not investing in OHS to prevent hazards at the workplace (Annan et al., 2015). Again, the ILO has estimated a total amount of about 4% of the world's GDP annually as an expenditure associated with occupational injuries or illness (ILO, 2015). Apart from the economic constraints, the human costs are unacceptable.

According to Osaretin Owie & Apanga, (2016) occupational health has not been given the needed attention it deserves in developing countries like Ghana, especially in the health sector leading to exposure to all forms of hazards that had a bad consequence on the well-being and productivity of workers in low resource nations.

Aluko, Adebayo, Adebisi, Ewegbemi, et al., (2016) identified elements that affect occupational injuries and illness in the HCFs as a dereliction of duty on the part of HCWs, want of personal protective equipment, shortage of staff, and the huge volume of workload. Others also include non-fulfillment of basic safety principles and precautionary guidelines, and lack of operational knowledge of new equipment and technology (Aluko, Adebayo, Adebisi, & Ewegbemi, 2016). A study by Aluko, Adebayo, Adebisi, Ewegbemi, et al., (2016), confirms that adherence to the standard precaution guidelines shows to be effective in reducing occupational illnesses and injuries among health workers.

The ILO state that, “occupational health is aimed at promoting and maintaining the highest degree of physical, mental, and social well-being of employees in all occupations”. This covers as well as the early detection and prevention of health risks at the workplace to forestall any potential injury or ill health (ILO, 2015).

Health workers need a comprehensive framework to protect them from occupational hazards as it happens in the mining/construction sectors of the country, but because of the perception of being “immune” to injury/illness, they are largely left to take care of themselves (Aluko, Adebayo, Adebisi, Ewegbemi, et al., 2016). Most people expect that HCWs compromise their safety for their clients/patients (Alhassan & Poku, 2018).

In Ghana, HCWs are perceived to be immune to injuries/illness, and perhaps have tendencies that also suggest they are “immune” to injury or illness thereby not forceful enough in demands concerning OHS. For these and previous reasons, therefore, there is a need for the country to develop guidelines/standards that address the current and future issues related to OHS through legislation and to tackle OHS among HCWs as a basic human right in maintaining the health and safety of staff.

Working in a safe environment is a basic right of all employees which is enshrined in the 1992 constitution of Ghana. They embedded in the law the principle that employers had a responsibility to protect their employees (Rosner& Markowitz, 2016). It is thus instructive to assess the knowledge, attitude, and behavior of health care workers concerning occupational hazards and the extent to which OHS policy guidelines are applied in one's discharge of duties.

1.2 Statement of the Problem

The healthcare working environment is complex and challenging and can present a remarkable risks to staff safety. The impact of poor OHS is felt not only by the affected health staff but also by the patients receiving care. Hospital staff are being put at unnecessary risk. There are notable shortcomings in the daily management of OHS in HCFs.

OHS issues in HCFs are very vital because of the presence of considerable hazardous agents like contacts to infectious materials through the handling of patient care items and chemical substances, poor lightening system, falls, lifting of patients, workplace violence, etc. (Doyle, 2013). These hazardous agents can cause injuries, occupational infections/diseases, and fatalities at some points. The results of bad OHS practices are not only experienced by workers and their families, but also by patients/clients receiving care from these same health staff (Doyle, 2013).

There is a significant increase in occupational accidents and injuries among workers especially health facility workers in developing countries (Aluko, Adebayo, Adebisi, & Ewegbemi, 2016). According to the ILO, 160 million cases of non-fatal work-related diseases occur annually. These indicate that 6400 fatalities result from occupational accidents and diseases daily and 860,000 workers are injured on the job (International Labour Organization, 2015).

According to Aluko, Adebayo, Adebisi, Ewegbemi, et al., (2016) in Ghana, and most Health care facilities, studies have found that workers such as nurses, physicians, laboratory staff are ill-

prepared to manage occupational hazards, thus encounter accidents while discharging their duties (Danso, 2005), and only 4% of these hazards that occur in low resourced countries are reported (Demba et al., 2013). Several studies have been done on occupational health hazard and safety practices among HCWs, but most of the studies focused on just a specific profession within the health service (Aluko, Adebayo, Adebisi, Ewegbemi, et al., 2016).

Key issues include non-availability of OHS professionals/units, inadequate incident reporting systems, inconsistent follow-up and investigation of OHS incidents, and poor/deficient analysis of the root causes. A more systematic approach which integrates all aspects of safety management is imperative.

Sustained improvement in the safety culture is not likely to occur without a renewed focus from senior hospital management and clear accountability by managers for OHS performance of areas under their control.

Therefore it was important to gauge the knowledge and attitude of OHS practices among all the categories of healthcare personnel having direct and indirect contact with patients and determine whether the hospitals in the municipality are effectively managing OHS risk.

1.3 Justification of the Study

According to Sass, (1977) workplace hazards can result in occupational disease/injury, become a factor in the causation of health conditions, or can exacerbate an already present health condition unrelated to the occupation. In lower-middle-income countries (LMICs) work operations have been evolved which use “workers as tools in production putting their lives at risk” (Sass, 1977). Besides, workplaces that use and ensure good OHS standards increase productivity and are most profitable (Sass, 1977).

One's behavior is influenced by knowledge, attitudes, and perception of risk. Due to this, behavior may be an important predictor of occupational exposures. Therefore assessment of behavior gives a basis for scrutinizing exposure and crafting interventions that drive preventive/protective behavior among staff.

The findings of this study would also serve as a guideline for major changes in safety standards in the municipality.

1.4 General Objective

1. To assess knowledge, behavior, and attitude on OHS standard precautions/practices among health staff in the municipality and their associated factors.

1.4.1 Specific Objectives

2. To assess knowledge, behavior, and attitude on standard precautions/practices among health staff in the municipality.
3. To identify factors that influence knowledge, attitude, and behavior on OHS standard practices among health workers in the municipality.
4. To examine the association between the factors that influence behavior and attitude on OHS standard practices and compliance with workplace health and safety guidelines.
5. To ascertain the extent of compliance with OHS policy in the municipality.

1.5 Research Questions

1. What is the degree of knowledge/awareness on OHS standard practices among health staff within the East Akim municipality?
2. What are the OHS practices among hospital staff within the municipality?

3. What is the correlation between factors that influences safety behavior and adherence to health and safety practices?
4. What is the perception of workers about the health implications of occupational hazards in both facilities?

1.6 Conceptual Framework

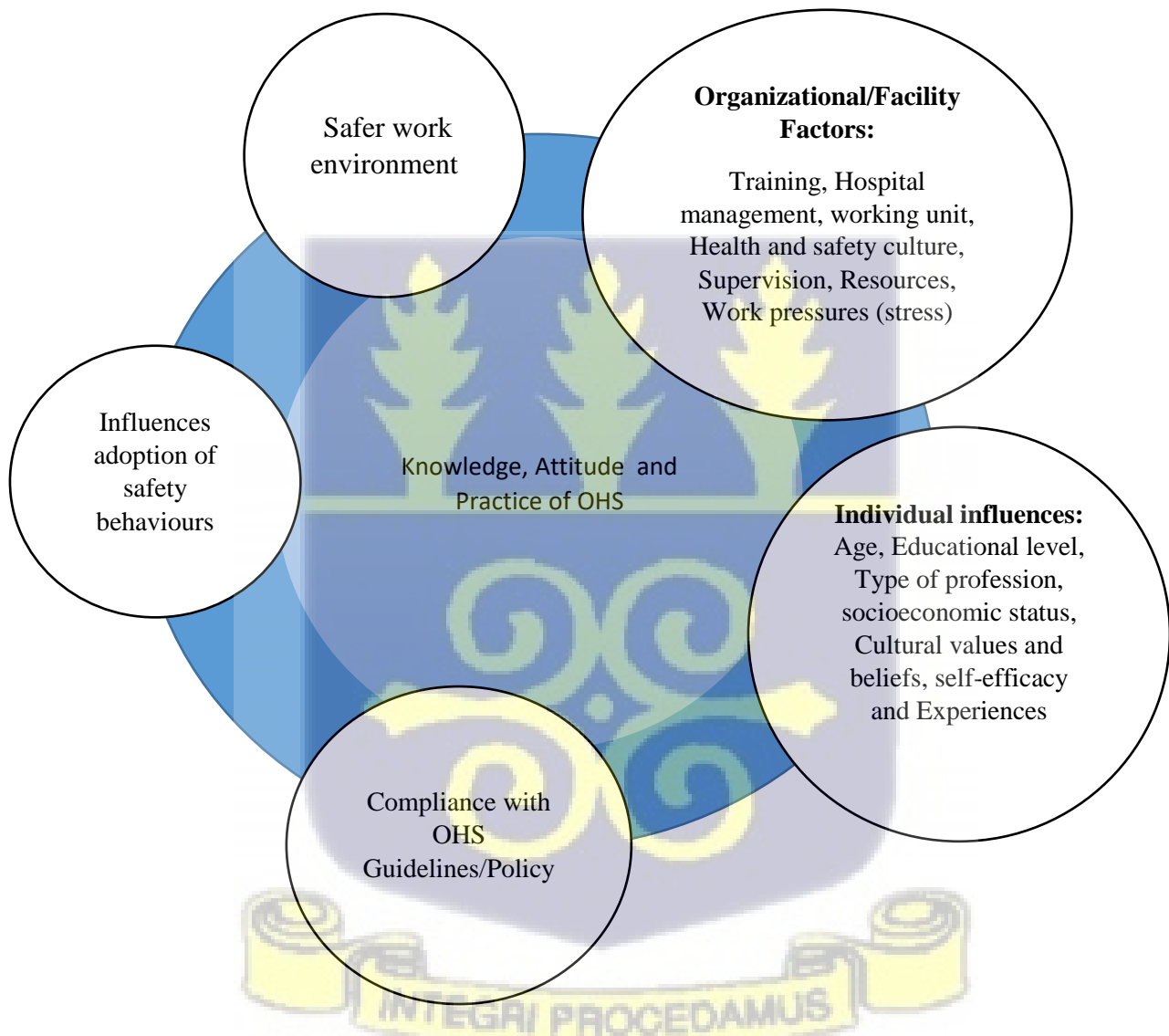


Figure 1: A conceptual framework for assessment OHS practices among health workers. Adapted from Gershon et al., (2000) with some modifications.

Narrative to the conceptual framework

Factors that underline behavior include knowledge and attitude as illustrated in the conceptual framework in figure 1. Within the conceptual framework, some considerations are given to factors such as health and safety behavior.

Occupational hazards at the workplace cannot be completely avoided but can be reduced to the barest minimum if standards and protocols are strictly adhered to. At the centre of any attempt to curb occupational hazards and ensuring compliance with OHS guidelines is the individuals' knowledge, attitude toward occupational health and safety (OHS) and practices. Individual factors such as Level of education, type of profession, experience level, age may directly vary with regards to KAP of OHS. Besides, potential psychosocial factors such as self-efficacy may limit staff adherence to OHS guidelines and protocols.

Employees' influence through training, safety culture, supervision, and making available resources may directly impact knowledge of OHS or impact staff behavior which may consequently improve compliance and management of occupational hazards. Inadequate supply of basic safety equipment and PPE may force health employees in health institutions to work without ensuring health and safety standards thereby compromising on standard and OHS protocol.



1.7 Scope of the Study

Knowledge, attitude, and behavior on OHS are the main component of the study. The assessment included all health personnel regardless of their educational level, skills, experience, age, and ethnicity.

This study was fixed to the assessment of the knowledge, attitude, and behavior of health workers towards OHS issues in the Kibi Government Hospital. The scrutiny of the study was done exclusively on sampled respondents from the facility, whilst the conclusions made an effort to generalize the findings. These limitations were made due to time and other resource restrictions.



CHAPTER TWO

REVIEW OF LITERATURE

2.0 Introduction

The literature review talks about the important writings on workplace hazards and safety standard practices concerning the objectives of the study. Workplace hazards from a global perspective and sub-regional levels were reviewed. Principal occupational exposures of health care workers were also reviewed. Major thematic areas are health and safety at the workplace, global or international safety guidelines, OHS in sub-Saharan, and Ghana. Additionally, the knowledge, attitude, and behavior of OHS among workers were explored.

2.1 Occupational health and safety

Research in advanced jurisdictions indicated that the causal agent of ninety percent of occupational accidents as a result of error from man, and just about ten percent is associated with inappropriate working environment and tools for work (Fleming M, 2002).

As reported by Fleming M, (2002) human elements include “lack of knowledge, lack of interest, negative attitude, unsafe behavior, and incompetence”. Apathy is one of the critical elements that militate against health promotion activities at the workplace (Fleming M, 2002). Structured training is therefore needed to change the attitude of staff from unsafe behaviors to a safe work culture through the observance of safety standards and principles (Mearns K, Whitaker S, Flin R & P, 2000). Also, important factors to promote safe behavior as stated by Feyer AM, (1997) are “knowledge and attitude of workers about safety”, which form the basis for drafting safety activities to suit the work environment (Feyer AM, 1997).

Many workers are spending most of their time on the job in the globe today. Work guarantees that individuals receive revenue to provide social, psychological, and financial experiences that

encourage individuals' emotional well-being. As a result, the work environment should be free of hazardous exposures as much as possible that could be harmful to the worker's health and safety. At various workplaces, however, several crashes, injuries, diseases, and damage happen (Awan, 2007). Accordingly, steps and recommendations are urgently needed to assist handle and enhance workplace safety and health. (Perroy & Careas, Melorose, 2015).

The (WHO, 1995) describes occupational health “as promoting and maintaining the greatest level of employees' physical, mental, and cultural well-being in all occupations”. It is recognized that occupational health is an interdisciplinary activity that focuses on protecting and promoting employees' health. This guarantees that employees are secure from work-related accidents and illnesses by preventing and controlling conditions and circumstances that are deemed detrimental to employee health and safety (Morgan, 2002). Besides, occupational health includes the creation of a good job setting, enhancing the physical, emotional, and cultural well-being of employees, and reinforcing the creation and retention of all employees' operating ability to empower them to live socially and economically efficient life for viable growth (Dijk et al., 2011).

The International Au Pair Association (IAPA) (2007) also describes occupational safety as ‘maintaining a working atmosphere that is comparatively free of real or potential risks that can harm staff.’ It seeks to improve operating and environmental circumstances in the workplace.

Besides, the ILO (2009) describes OHS “as the science of anticipating, recognizing, assessing, and controlling risks resulting in or from the workplace that could affect the health and wellbeing of employees, and taking into consideration the potential effect on the surrounding populations and the overall climate”.

2.2 Occupational health and safety issues in Ghana

Industrialization in Ghana is gradually on the rise, exposing a huge number of workers to all forms of risks (Melorose et al., 2015). According to accounts from the International Labor Organization (ILO), 160 million employees are impacted by occupational diseases, more than 270 million workers put up with work-related accidents, and greater than 2 million fatalities annually from work-related sicknesses including noise-induced hearing loss (NIHL), silicosis, musculoskeletal injuries, infection of the skin and respiratory systems, and cancers (Awan, 2007).

In its annual report, the Ghana Labor Department reported 8,692 occupational injuries in the year 2000, while the 1999 record was 4,088. This is a depiction of statistics that were only recorded in the formal sector for reported accidents (Melorose et al., 2015). The International Labor Organization (ILO)'s main issues suggest that employees must be shielded from employment-related illnesses and accidents and it is a fundamental component of social justice. Health and safety at work is a natural right (WHO, 2010).

One of the major problems facing OHS practice is that the state of Ghana has no comprehensive national OHS strategy (Asumeng et al., 2015). Nonetheless, the jurisdictions of various organizations in Ghana have pieces of legal demands (Annan et al., 2015) dealing with workplace health and safety problems.

At the workplace, most workers are constantly subjected to risks. This is one of the main issues cited by scientists in occupational health and security (Asumeng et al., 2015).

According to the Occupational Health and Safety Policy and Guidelines, 2010 Hazards refer to those characteristics at the workplace, either physical or psychosocial, or a mixture of both, that can contribute to damage or unwanted effects. It is intrinsic ownership of a drug, agent, source of

energy, or condition that can cause substantial implications such as chemical exposures, slippery ground, work while standing, and work while sitting on a ladder (Ghana Ministry of Health-MOH, 2010).

The Kumasi Central Market, the largest market in Ghana, was gutted in a fire epidemic, destroying more than 400 market stalls, a substantial quantity of products, and money (Ghana News Agency, 2009). In 2000, 902 crashes were reported by the construction industry, of which 56 were fatal crashes, and 846 were non-fatal (UNDP, 2017). Fire and explosion affected a huge number of about 11,000 Ghanaian employees, as recorded by the National Disaster Management Organization, and the price of harm was expected to be about \$7 million.

2.2.1 OHS Management in Ghana

Abubakar, Abdullahi, & Bala (2018) observed in their research that OHS regulations are ways of controlling the working atmosphere to guarantee the security, well-being of staff, and people expected to be seriously impacted by the work settings. The OHS law took its root from the British legal and institutional framework. As reported by Abubakar et al., (2018) that before independence, “the health and safety of employees in Ghana's mining and wood processing sectors were covered under the factories' ordinance of 1952, and this lasted until its annulment by the factories, offices, and shops Act of 1970”.

Again, existing legislation on OHS in Ghana is divided and does not cover some important financial industries. The agricultural industry is a remarkable instance, although it uses more than 60% of Ghana's workforce there is no form of OHS regulation governing its operations. The British put more premium on labor relations in economic industries back then where formal employment relations occurred (Kuranchie et al., 2019). The mining and manufacturing industries are such as economic sectors.

Pronouncing on the flaws of Ghana's OHS laws, Tetteh, (2003) observed that statutes on the well-being evolve without regard to existing laws leading to segmentation, crisscrossing jurisdictional regions, and variabilities in the country's OHS laws.

2.2.2 Institutional Arrangements for the Health and Safety Management

In Ghana, there are five government institutions mainly ministries responsible for ensuring that occupational health and safety standards are maintained at workplaces. These ministries are the Ministry of Manpower Development and Employment (MMDE), Ministry of Environment and Science (MES), Ministry of Health (MOH), Ministry of Roads Transport (MRT), and Ministry of Lands and, Forestry. They formulate policies and agencies under those ministries to implement the policies. Trade unions, employer associations, end-users, financiers, and clients also influence OHS and welfare issues.

Efforts to form institutions such as the National Commission on Occupational Safety and Health (NACOSH) and the Ghana Society of Occupational Health (GSOH) were unsuccessful (Haizel 2000).

Partnership, networking, and collaboration concerning these organization's health and security tasks have been poor, leading to low profile health and safety within Ghana's occupations. There are no consultations on policy issues influencing OHS at the domestic level with employers' organizations, trade unions, and health and safety stakeholders (AMEKO, 2015). This may remain for a while unless the health and safety concerns of these organs are activated. Public health and safety organizations have failed as enforcers and advocates of health and safety in the environment due to the absence of resources and/or logistical problems (Tetteh 2003).

The Ministry of Health's Occupational Health Service Unit is responsible for offering curative care, first aid, health employee training, workplace health monitoring, and threat reviews. The health ministry of Ghana is working proactively to ensure that job settings are good for employees. The Occupational Health Unit, unfortunately, faces comparable limitations to the Factory Inspectorate Department. AMEKO (2015) reports that the percentage of Ghanaian employees getting extensive occupational health facilities is 1-2%, compared to the amount of occupational health unit employees in 2003 comprising four physicians and one qualified occupational health nurse.

The labor department is accountable for Ghana's labor administration. Issues bordering on labor like the health and safety of employees are therefore within its jurisdiction (MOH/GHS, 2010). The department implements labor standards per the labor regulations of the nation as well as Ghana ratified international labor conventions (MOH/GHS, 2010). The department implements two domestic labor laws: the workmen's compensation law and the Labor Law (Centres et al., 2014). Besides Ghana has signed 46 ILO conventions.

The department has 10 national headquarters, 36 district labor centers, and 62 regional centers across the country according to the 2004 Annual Employment Report. The Ministry of Environment, Science and Technology is responsible for the Environmental Protection Agency. The agency was established by the Decree of the Environmental Protection Agency, 1974, in charge of implementing the country's environmental laws (MOH/GHS, 2010). A segment of the organization handles environmental issues related to the built environment.

2.3 Knowledge and awareness of OHS among workers

Safety and health awareness are usually growing, making it a crucial element in every workplace. Staff training and operations are carried out by the labor unions, employers, and other stakeholders

to ensure that employees meet safety standards to maintain an efficient and safe workforce. However, serious injuries and diseases in emerging nations are still a task for sectors (Adebola, 2014). Each employee has a fundamental right to operate in a secure and healthy environment. Regardless of this, the International Labor Organization revealed that more than 160 million employees fall sick at the workplace due to hazardous exposure, while more than one million employees have died because of employee crashes and illnesses. Occupational accidents and illnesses are very different in incidence among nations, particularly among emerging and advanced nations (Lugah et al., 2010). Employers and stakeholders in emerging nations ignore the significance of employee occupational health and safety procedures, which is due to the low level of workplace health and safety understanding in Africa. HIV / AIDS, tuberculosis, child mortality, and water quality issues of public health concern in Sub-Saharan Africa have eclipsed occupational health issues (Wukro, 2016).

Efforts to free the work environment from illness and injuries become pointless when employees do not have a suitable understanding, attitude, and approach to safety interventions. Research work in manufacturing nations indicates that the causes of about 90% of workplace crashes are caused by human mistakes, whereas 10% of crashes are caused by inappropriate workplaces and machinery (Nasab et al., 2009).

2.3.1 Knowledge and awareness of OHS in Ghana

Like many sub-Saharan nations, Ghana has little knowledge of OHS that can be ascribed to poor educational rates. A 2008 Ghana Living Standards Survey Five (GLSS5) study on employment satisfaction stated that about 31 percent of Ghanaians aged 15 and above did not have formal education. Approximately 55.7% of Ghanaians had primary schooling and 13.6% or greater had secondary schooling. In short, 86.7% of Ghanaians do not have less than or greater rates of

schooling (Nana-otoo, 2016). This describes why the workplace health and safety awareness level is small. Policy processes are regarded as one of Africa's difficult problems because strategies are not working. According to AMEKO (2015), most of Ghana's OHS laws are small in that many job industries are addressed loosely. Nevertheless, the application of OHS is informed by scanty legislation. These laws include but not exclusive to the 1970 Factories, Offices and Shops Act, Act 328, and the 1970 LI 665 Mining Regulations, which enabled the application of OHS in the production, transport, and mining industries. Other OHS-related laws are the Environmental Protection Agency Act 490, 1994, Workmen's Compensation Act 1987, and the Ghana Health Service and Teaching Hospitals Act 526, 1999, but these legal frameworks need to be amended to comply with international standards (Rantanen et al., 2017).

Research by Wanjiku (2017) reports that, on a median, about 60 percent of manufacturing employees are without understanding of any current workplace safety and health legislation or regulations. While a substantial percentage of employees have no concept of OHS legislation, it is disastrous the magnitude of learners who have also been unaware of OHS regulations and will quickly be introduced to the job market. The OHS legislation, frequently recognized by the 40% of participants who asserted to be familiar with OHS legislation, was the Labor Act (Wanjiku, 2017). These results demonstrate that among employees there is a low level of understanding and awareness of OHS.



Principal occupational exposures in healthcare facilities

Per the dictionary of epidemiology, 5th edition, a hazard is anything that has the “inherent capability of an agent or a situation to have an adverse effect”. An element that can seriously cause health problems if not checked (Last, 1986).

Workplace hazard is a risk relative to a particular working environment and emerges from a usual occupation and includes the possibility of accidental injuries and disease (Contreras & Leonduarte, 2017). An occupational hazard encompasses many types of hazards including physical, chemical, biological, psychosocial, and behavioral changes and ergonomics.

Biological Hazards

Any occupation that results in contact with body fluids exposes workers to biological hazards (Sass, 1977). Biological hazards at the HCFs result from exposure to microorganisms such as viruses, bacteria, fungi, etc. that may cause ill health/diseases (Sass, 1977). HCWs are exposed to several infectious diseases in the work environment including Tuberculosis, Hepatitis, Covid-19, HIV/AIDS, etc, (Izadi, 2018). Simple standard precautions such as hand hygiene, appropriate use of PPE's, and safe injection practices reduce the risk of occupational infection among health care workers (Sass, 1977).

Besides, staff should be trained on infection prevention and control measures to minimize/curtail needle stick injuries and occupational infections.

Chemical Hazards

Several hazardous chemicals exist in HCFs and pose danger to HCWs. Chemicals used in HCFs include antineoplastic drugs, aerosolized medications, anesthetic gases, etc. Also, chemical agents are used in cleaning and disinfection of instruments and working surfaces. Examples are bleach,

phenolics, ethylene oxide, and glutaraldehyde. Besides, chemicals such as xylene, toluene, and formaldehyde are used for fixative tissue specimens (Wilding et al., 2016). Regular maintenance and monitoring are required to prevent or minimize the risk of chemical hazards (Sass, 1977).

Physical Hazards

Physical hazards in HCFs include extreme temperatures, noise, electrical accidents, and radiation (Izadi, 2018). Radiation exposure can occur in diagnostic imaging procedures, oncology treatment areas, and patients treated with radioactive isotope agents (Walton AL, 2017). Bodily protection with aprons containing lead is effective to avoid exposure to radiation (Walton AL, 2017).

Ergonomic Hazards

“Fitting the job to the worker”. “It is the adaptation, modification, manipulation of machinery, work environment, work and rest schedule, and job demands to suit the capacity, limitations, and expectations of the workers” (Izadi, 2018).

HCWs likely to lift and move patients in their line of duty are at risk for back strain and injuries associated with disorders of the musculoskeletal system. Prolong standing, reaching, pushing, repetitive motion, lifting, improperly adjusted workplaces, and chairs, eyestrain resulting from poor lighting, etc. are some ergonomic hazards healthcare workers may come across in the HCFs (OSHA United state department of labor, 2018).

As stated by OSHA United state department of labor, (2018) “a work-related musculoskeletal disorder (MSD) is an injury of the muscle, tendons, ligaments, nerves, joints, cartilage, bones, or blood vessels in the arms, legs, head, neck, or back that caused or aggravated by work tasks such as lifting, pushing and pulling” (OSHAcademy & Training, 2020). Some signs & symptoms include swelling, tingling, numbness, stiffness, and pain.

HCWs may suffer injuries associated with ergonomics when handling, positioning, and transferring sick people (OSHAcademy & Training, 2020).

Psychosocial hazards

“A psychological hazard is any hazard that affects the mental well-being or mental health of the worker by overwhelming individual coping mechanisms and affecting the worker’s ability to work healthily and safely” (Safety Institute of Australia, 2012).

Factors at the workplace that contribute or associated with psychosocial hazards include organizational factors at the workplace; (violence, sexual abuse/harassment, change/and modernization, shift work, stress resulting from work demands), and individual factors such as problems associated with aging, existing medical conditions, drug abuse, anxiety, etc. In this current dispensation, workers go through a lot of stressors that are even external to the workplace. One has to juggle through pressures from private life and also meeting the demands of work as an employee every day resulting in work burnout and consequently stress (Safety Institute of Australia, 2012). Psychosocial hazards at the workplace are acknowledged globally as a crucial challenge to OHS and productivity (Safety Institute of Australia, 2012).

Some of these hazards could be avoided at the workplace if the employer and management are concerned and serious about improving the well-being of workers and promote safe work practices to minimize the occurrence of these factors that result in work-related stress (Safety Institute of Australia, 2012).



2.4 Factors influencing knowledge, attitude, behavior of OHS

2.4.1 Intrinsic and Extrinsic factors

Health knowledge, attitude, behaviors are determined by influences at multiple levels, including personal (i.e., biological, psychological), organizational/institutional, environmental (i.e., both social and physical), and policy levels (Safety Institute of Australia, 2012).

Many research concentrated on variables contributing to workplace injuries and mishaps. According to Karim and Chee's (2000) research, many of the accidents resulted from carelessness, and staff level of education, indiscipline, and unreadiness to comply with the job regulations. The main cause of such occurrences was discovered to be poor behavior (Goswami, Soni, S.M.Patel, and M.K.Patel, 2011). However, during the post-implementation of these measures, there were no measurements of behavior or awareness carried out.

2.4.2 Socio- demography factors

Studies have shown that the perception of risk among medical laboratory staff is strongly affected by socio-demographic variables such as ethnicity, level of schooling, work situation, and laboratory room/the workplace (Izegbu, Amole, and Ajayi, 2006; Anuar, Zahedi, Kadir, and Mokhtar, 2009). It has been observed that the amount of education and staff situation imposes a higher impact on the understanding of OHS relative to the different age groups and laboratory kinds (Onibokun, Akinboro, Adejumo, and Olowokere, 2012).

Legislation/Policies

As reported by Sass, (1977) “a healthy workforce is important for sustainable social and economic development on a global, national, and local level, and vital approach to ensuring OHS in the

workplace has depended mainly on the ratification of legislation and inspection of workplaces to ensure compliance with health and safety standards” (Sass, 1977). The approach has worked since the industrial revolution in controlling many specific occupational hazards in the advanced nations but has not helped that much in developing countries (Sass, 1977) due to the absence/fragmentation of legislation and more importantly the lack of enforcement even if one exists. As reported by Osaretin Owie & Apanga, (2016) the inadequate regulations and policy guidelines within the labor space expose numerous staff to hazards that may be life-threatening. OHS laws cover about 10% of the population in LMICs, omitting many major hazardous industries and occupations like the health sector (Osaretin Owie & Apanga, 2016). Besides, in situations that OHS laws are in existence, staff are still engaged to work in conditions that deprive people of their respect and value as humans and expose workers to several hazards resulting in a decline of health and well-being, affecting performance at work (Osaretin Owie & Apanga, 2016).

Ghana Health Service Policy Guidelines on Ohs/ International Conversions

Ghana’s 1992 constitution, section 24(1) states, “Every person has the right to work under safe and healthy conditions....” The Labor Act, 2003 (Act 651) has validated such a basic human right.

The Labor Act, 2003 (Act 651)

According to the labor act, “it is obligatory on the employer to ensure the health, safety, and welfare of persons at the workplace by minimizing the cause of hazards inherent in the working environment” (Act 651, 2020). Under the act, the employer is responsible for taking measures that seek to prevent hazards/reduce risk in the work environment to protect staff from work-related

injuries and diseases (Act 651, 2020). Any employer who fails to comply with the regulations spelled out in the Act 2003 will be sanctioned accordingly.

Again, as spelled out in the act, workers are also to work according to safety protocols and instruction to preserve one's well-being and life and any risk/hazards identified at the workplace should be reported and the worker must not be compelled to work while the hazard persists (651), 2020).

The report compiled must be sent to the relevant authorities by the employer within the stipulated time of seven days should an injury or illness occurred in the work environment (651), 2020).

Training

Based on Act 651 of the labor law 2003, "it is the responsibility of the employer to provide instruction, training, and supervision according to the age, literacy level, and other circumstances of the workers to ensure health and safety at work" (MOH/GHS, 2010).

Labour Inspection

Systems are put in place to ensure that organizations adhere to the labor laws of Ghana. Workplace inspection can be carried out at any time of the day, and documented in a report. The inspector also makes available relevant information and advice to the employer and workers regarding best practices and observance of the Act (651), 2020). Persons, who obstruct the work of the inspector, is given a fine of up to 250 penalty units or imprisonment of 12 months maximum or both (651), 2020).

Administrative arrangements

Per the MOH/GHS OHS policy guidelines, at the district hospital, “the OHS function is performed by an OHS team made up of at least two members and led by a senior public health officer. The unit is to run full time, at least once a week should be devoted to planning, monitoring and evaluation, and supervisory function (MOH/GHS, 2010). The team is to report to the District Director of Health Service (DDHS) through a focal person at the district who then collates all reports from the sub-district and district facilities. Health and safety representatives should be nominated at the departmental level within the health facilities to serve on the central Health and Safety committee at their respective facilities. Each department/unit will in turn form its health and safety committee” (MOH/GHS, 2010).

2.5 Theoretical framework of health and safety behavior

As said by Fertman & Allensworth, (1982) “the most effective health promotion programs are based on health theories. Theories are used for two purposes. Firstly, they provide the conceptual basis on which health promotion programs are built. Secondly, they guide the actual process of planning, implementing, and evaluating a program” (Fertman & Allensworth, 1982). The study uses the health belief model (HBM) and the theory of reasoned action (TRA).

2.5.1 Health Belief Model (HBM)

The HBM as stated by Fertman & Allensworth, (1982) a person’s action to change a behavior (or inaction) results from one’s determination of some models. Initially, one determines the susceptibility of a disease or illness (**perceived susceptibility**) and considers the susceptibility against the seriousness of the illness/disease (**perceived severity**). An instance is one believing that all humans are susceptible to any form of a disease and the disease is serious enough to cause one to modify his/her lifestyles, such a person is most likely to take measures to change. The

reverse is true even if the condition may be severe, it would likely not elicit any act of change (Fertman & Allensworth, 1982). Besides, one considers the benefit of changing behavior (**perceived benefits**) against the obstacles one is likely to encounter as a result of changing behavior (**perceived barriers**) and these form the strongest predictive constructs for change in behavior according to Fertman & Allensworth, (1982). **Cues to action** are external phenomena to an individual such as protocols or guidelines that serve as reminders in prompting a desire of making a change. Self-efficacy, a person's ability to perform a changed behavior successfully was added to the earlier constructs as a factor in behavior maintenance (Fertman & Allensworth, 1982).

The HBM takes factors, such as age, gender, and personality, into consideration, on the premise that such factors can incentivize a behavior change (Fertman & Allensworth, 1982).

2.5.2 Theory of planned behavior and theory of reasoned action

The theory of planned behavior (TPB) was obtained from the theory of reasoned action (TRA) and states that “people are motivated to change based on their perceptions of norms, attitudes, and control over behaviors” (Fertman & Allensworth, 1982). Such elements can influence one's purpose to change behavior. Intension to modify behavior then is conceptualized to be directly linked to behavior change (Fertman & Allensworth, 1982). Some vital models are intricated in “this value expectancy theories: attitude, subjective norm, perceived behavioral control, intention, and behavior” (Fertman & Allensworth, 1982).

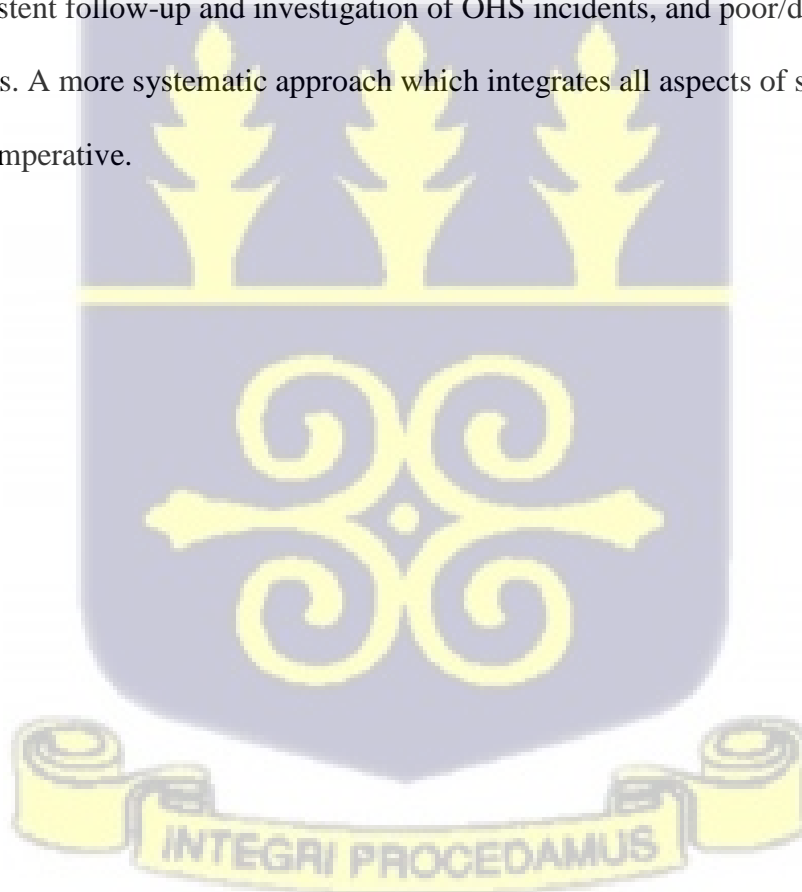
As suggested by the theory, “attitudes toward behavior are shaped by beliefs about what is entailed in performing the behavior and outcomes of the behavior and that beliefs about social standards and motivation to comply with those norms affect **subjective norms**”. The presence/absence of these factors will make it easier or difficult to perform the behaviors and this affects **perceived**

behavioral control. Thus, a chain of “beliefs, attitudes, and intentions” drive behaviors (Fertman & Allensworth, 1982).

A range of healthy activities, including PPE use, weight loss, infant safety seats, and condom use DeJoy (1996); have been implemented with significant achievement. For example. The HBM and TRA were employed in predicting behaviors such as dieting (Nejad L, Wertheim E, 2005) and the use of seat belts (Simsekoglu O, 2008).

Summary of Key Issues

Key issues include non-availability of OHS professionals/units, inadequate incident reporting systems, inconsistent follow-up and investigation of OHS incidents, and poor/deficient analysis of the root causes. A more systematic approach which integrates all aspects of safety management is imperative.



CHAPTER THREE

METHODS

3.0 Introduction

This part outlines the study design, the study site and population, sampling methods and techniques, data collection tools, sources, processing, and analysis as well as ethical considerations.

3.1 Study Design

The study employed a cross-sectional study to assess the knowledge, attitude, and behavior of HCWs towards occupational health safety in both Kibi and New Tafo Government Hospitals of East Akim Municipality. A cross-sectional study is a type of observational study that analyzed data from a population or representative sub-set at a specific point in time (Creswell, 2009). The data gathered was from a pool of participants with varied characteristics and demographics after some initial assessment of the work environment, identifying what the issues were, determining the group of interest, etc. Besides, data was collected by a self-administered questionnaire to measure the targeted variables.

3.2 Study Site

The study took place in the Kibi and New Tafo government hospital of the East Akim Municipality of the Eastern Region of Ghana. The district was founded in the year 1988 by LI 1420. It was later elevated to municipal status again by LI 1878 in 2008 and the name changed to Abuakwa South in 2018 by LI 2304 after Abuakwa North Municipal Assembly was carved out of it in April the same year. Kyebi (Kibi) is the administrative capital of the municipality and is surrounded by 6 districts namely Atiwa district to the north, West Akim to the northwest, Fanteakwa to the east, New Juaben to the south, Yilo Krobo to the southeast, and Suhum-Krabo-Coaltar to the west. The

distance of the municipal capital Kibi to the regional capital Koforidua is 55km, 105km from the national capital Accra, and 179km from Kumasi the Ashanti regional capital.

The Kibi Government Hospital is one of the hospitals and the biggest in the municipality.

New Tafo is now part of Abuakwa North Municipal Assembly but the New Tafo Government hospital is still under the management of the East Akim (Abuakwa South) District health administration (DHA) until the Abuakwa North Municipal Assembly is fully functional with its own District/Municipal Health Directorate, hence the reason New Tafo Government Hospital is still captured under East Akim as one of the sites for this study because New Tafo is part/ used to be part of East Akim before the current separation.

The Akyem New Tafo Government Hospital was founded in the year 1962 to cater to the health needs of staff and relatives of the then West African Cocoa Research Institute (WACRI), currently the Cocoa Research Institute of Ghana (CRIG). The name was however changed to New Tafo Government Hospital when it was converted to a general hospital to serve the general public within the catchment area and beyond by the government. Both hospitals are public facilities that offer services of general and specialist care.

Kibi Government Hospital's average daily bed occupancy stood at 18 with an average length of stay of 2.6 days. The facility had a turnover per bed of 2.4 and a bed occupancy rate of 42.7. Nurse to patient ratio stood at 1: 354 and the Doctor-patient ratio was 1: 8388 as of the year 2019 while the New Tafo Government Hospital average daily bed occupancy stood at 15 with an average length of stay also being 3.2 days. A turnover per bed rate was 2.8 and a bed occupancy rate of 53.2. Nurse to patient ratio of 1: 302 as well as a doctor to patient ratio of 1: 7701 of the same year.

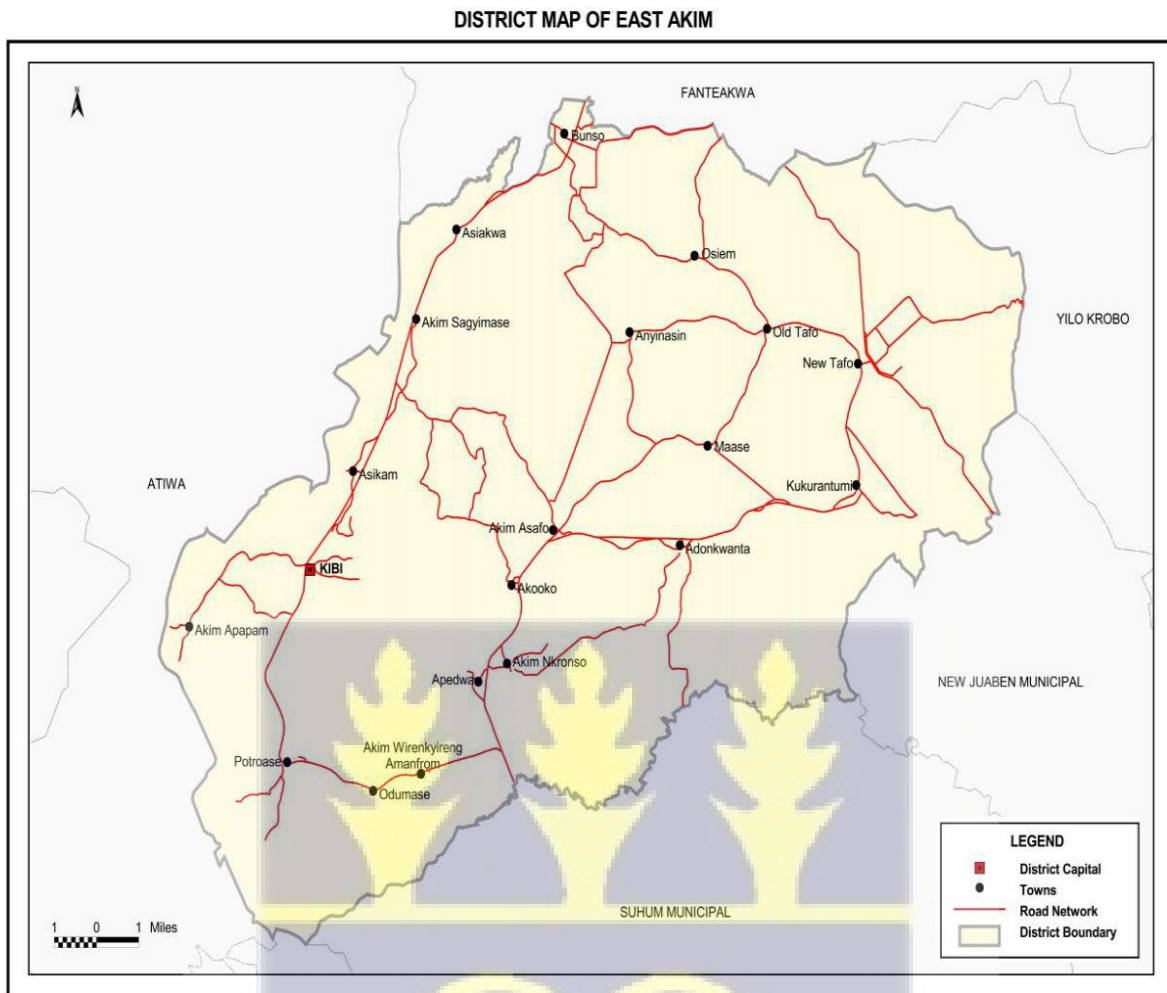


Figure 1.2: Map of East Akim Municipality

The population of the municipality according to the 2010 Population and Housing Census, is 167,896 representing 6.3% of the region's total population. Males constitute 49.7% and females represent 51.3%. Nearly 40% of the population is rural. The District has a sex ratio of 94.9. The population of the district is youthful (35.9%) depicting a broad base population pyramid that tapers off with a small number of elderly persons (6.7%) (Ghana Statistical Service (GSS), 2013).

Health facilities providing health service delivery within the Municipality consist of public, private, and CHAG.

The level of health facilities in the municipality is hospitals, Health centers, Maternity Homes, and Community-Based Health Planning Services (CHPS).

Health Infrastructure includes; Two Public hospitals; One CHAG hospital; Four Health Centres; Three Private Maternity Clinics; 18 functioning CHPS compounds (35 demarcated CHPS sites); 120 health care volunteers

3.3 Source Population

Participants of the study included hospital workers (clinical and non-clinical staff) of both Kibi and New Tafo government hospitals who were present during the period of the study.

3.3.1 Inclusion Criteria

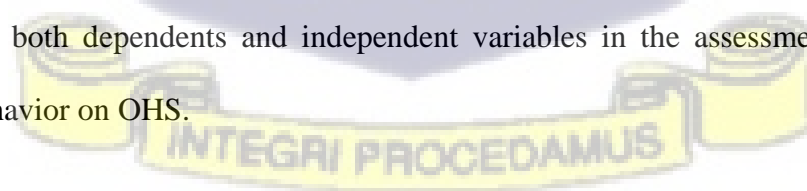
All health workers and management of both facilities present at the time of the study and accepted to enroll in the study.

3.3.2 Exclusion criteria

Temporal workers/contract staff established staff, but have worked less than six months, and service personnel were all excluded from the study.

3.4 Study Variables

The study used both dependents and independent variables in the assessment of knowledge, attitude, and behavior on OHS.



3.4.1 Independent variables

These were the respondents' demographic variables (age, marital status, residence, years of work experience, a category of work) as well as facility factors (number of workers, the existence of OHS guideline, management composition, etc.); and training on OHS

3.4.2 Dependent variables

They were the main outcome of interest, and include knowledge, attitude, and practice of health workers towards OHS in the hospital.

3.5 Sample size and Sampling method

Sample size determination

The sample size was estimated using Cochran 1977 formula. From a previous study, the proportion of health workers reported to be complying with OHS standards was estimated to be 20% (Nyame-annan, 2017). Assuming the same proportion for this study: $n = Z^2pq/d^2$

Where n = sample size required.

Z = confidence level (95% level of confidence - 1.96).

P = Estimated prevalence of Occupational hazard occurrence of 20% (Nyame-annan, 2017).

d = Margin of error (5% =0.05).

Substituting, $n = (1.96) (1.96) (0.2 \times 0.8) / (0.05) (0.05) = 246$

Adding an excess of 25 to correct for non-response, the total number of participants would be 271.



Sampling method

The proportionate-to-size and simple random sampling method were used in sampling participants for the study. The proportionate sampling method was initially used to determine the number of participants to be sampled from each facility.

After determining the number to be sampled from each of the health facilities, the simple random sampling approach was then employed by balloting to sample participants from the categories of health workers from the facilities.

This study made use of all the categories of health workers, and management members of both Kibi and New Tafo Government Hospital in the municipality. Records from both facilities gave a staff population of 242 per facility as of June 2019, which total up to 484-health workforce.

Example;

142 nurses were working at both Kibi and New Tafo government hospitals at the time of the study.

i.e. For Kibi Government Hospital $142/484 * 271 = 79.5$, approximately 80, and

For New Tafo Government Hospital $142/484 * 271 = 79.5$ approximately 79, given a total of 159 nurses sampled from both facilities.

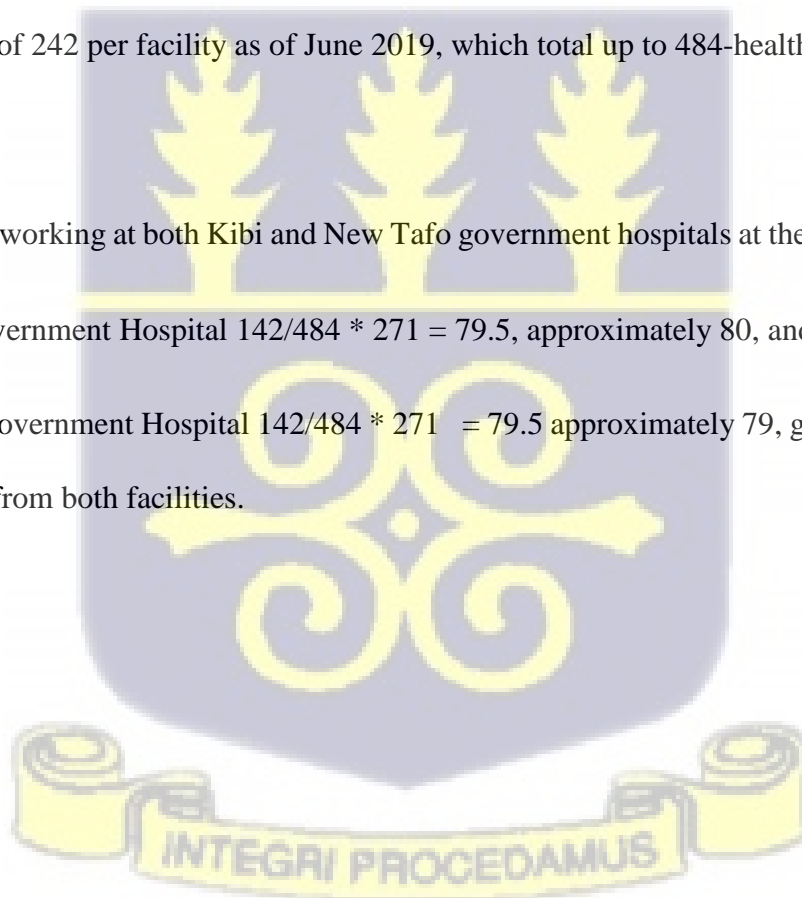


Table 4.0 Participants sampled from the categories of staff in both facilities

Staff category	Kibi Gov't Hospital		New Tafo Gov't Hosp		Total Sampled
	No. of Staff	No. Sampled	No. of Staff	No. Sampled	
Nurses	142	80	142	79	159
Doctors/Prescriber	8	5	6	3	8
Pharmacy	13	7	14	8	15
Orderly/Cleaners	21	12	30	16	28
Laboratory staff	10	6	8	4	10
Mortuary attendants	4	2	3	2	4
Radiography staff	1	1	1	0	1
Physiotherapy Staff	3	2	0	0	2
Dental unit	4	2	0	0	2
Administration Staff	20	11	28	16	27
Account Staff	16	9	10	6	15
Grand Total	242	137	242	134	271

3.6 Data Collection Techniques and Tools

The data collection tool made use of a structured questionnaire. The questionnaire had 6 portions and each segment focused on a specific objective of the study. Section A focused on the respondents' demographics and hospital factors. Section B also included knowledge on OHS;

section C attitudes of respondents, section D captured the behavior of participants, section E centered on self-reported compliance with universal precautions and part F captured employees' reported hazard exposure incidents in the previous six months. The questionnaire was composed of closed-ended questions intended to answer the research questions. Respondents were guided by research assistants in completing the questionnaire.

To study the safe behavior of workers, the self-report method was used. Knowledge can be defined as factual information from training or experience. The “knowledge” questions were designed to gauge worker knowledge of exposure pathways in the workplace and worker understanding of types of hazards and the conditions favorable to OHS.

An attitude is defined as an effect (e.g., an emotion, feeling, or desire) or as the result of an evaluative process. The “attitude” questions were designed to examine worker's mind, or predisposition to certain ideas, values, people, systems, institutions, etc. about the adequacy of protection from hazard exposures, how workers access OHS information in the workplace, and potential facilitators and barriers/factors of workers to OHS practices.

3.7 Quality Control

To ensure data quality the tool was tested for validity and reliability using the Cochran alpha test. Again, there was the training of Research Assistants and data collectors.

3.7.1 Training of Research Assistants

The study involved one research assistant and two data collectors. These people were trained and taken through the process of data collection and how questionnaires are administered.

3.7.2 Pre-testing

Reliability was also gained by test-retest for knowledge question, and internal consistency for attitude and safe behavior through a sample of 5% of the study population from the Hawa memorial hospital as a pilot, which has similar characteristics to both Kibi and Tafo government hospitals. This was useful in uncovering aspects of the questionnaire that would have made it difficult for respondents to interpret and respond as intended.

3.7.3 Data Handling

Data collection was done by the researcher and trained assistants. All questionnaires returned were checked for mistakes and completeness. The data was entered in an excel spreadsheet and exported into STATA 15. Programmed error checked and cleaning was done to reduce data entry errors and authenticity.

3.8 Data Analysis

The statistical analysis was done using STATA 15 (Stata Corp LP, College Station, TX, USA). Preliminary analysis was carried out on the 270 questionnaires to summarize the data on socio-demographic characteristics of respondents, knowledge, attitude, and behavior. Univariate, bivariate, and multivariate analyses were performed to explore the effects of the independent variables on the study outcomes.

Univariate analysis. The univariate analysis was conducted to describe the background characteristics of the study participants. The tabulation of each independent variable resulted in a percentage of the characteristic of respondents.

Bivariate analysis. The bivariate analysis was the second level of analysis done. This was performed on each independent variable against the study outcomes. This then indicated the extent

to which each variable is associated with KAP. Fisher's exact Chi-square test with a 95 % confidence level; $p < 0.05$ was considered.

The third stage of the analysis were the multiple logistic regression models to adjust for other variables were fitted for knowledge, attitude and practice in three separate multiple logistic regressions with knowledge, attitude and practice as outcome variables respectively.

3.9 Ethical Consideration

The researcher sought ethical clearance from the GHS through the East Akim Health Directorate. Administrative approval was taken from the management of both facilities in the Municipality. Other ethical issues involved confidentiality and privacy and informed consent. Consent was duly secured from participants after the objective and rationale for the study had been vividly explained.

3.9.1 Study subjects

The study subject included all categories of staff; nurses and midwives, doctors, laboratory staff, physiotherapists, pharmacists/dispensary staff, radiographers, hospital engineering staff, health aids/health extension workers, laborers, scavengers, orderlies, and mortuary staff of the Kibi and New Tafo government hospitals classified under clinical and non-clinical staff.

3.9.2 Consenting

The Principal Investigator and Data Collection Assistants read and explain information on the consent form to the participant. This was done to each respondent before the interview. The nature, purpose, risk, and benefits of the study are explained to each accordingly. Participants who agreed to the terms and conditions in the consent either signed their signatures or thumb printed and were interviewed.

3.9.3 Privacy and confidentiality

Issues of privacy and confidentiality of participants were handled as stated in the approved study protocol. Information given by the study participants was kept in confidence. Participants were identified with codes and no name or identity was revealed.

3.9.4 Compensation

No compensation was given for participation in the study.

3.9.5 Risk and Benefits

The study poses no risk to participants and it was solely voluntary.

3.9.6 Data storage and usage

Data obtained from participants in a form of a hard copy was kept under lock and key whereas soft copies entered into laptop computers were secured with a password. Data collected was used purposely for academic work. Anonymity ensured in the dissemination of findings from the study since participants were not identified by their names.

3.9.7 Voluntarily Withdrawal

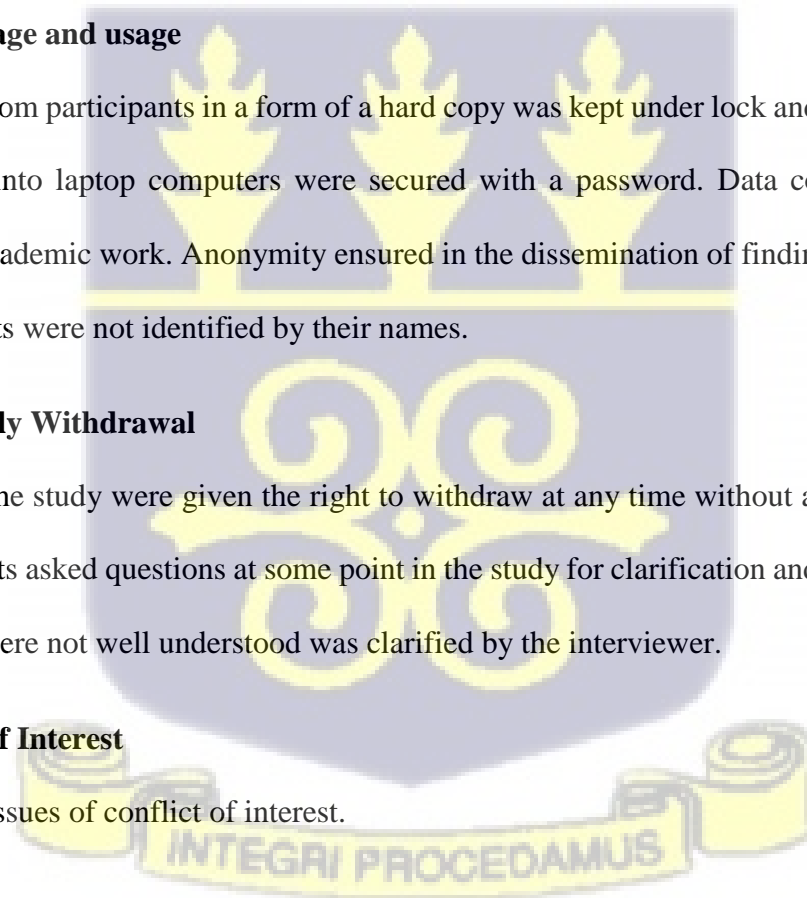
Participants in the study were given the right to withdraw at any time without any consequences. Most respondents asked questions at some point in the study for clarification and any aspect of the questions that were not well understood was clarified by the interviewer.

3.9.8 Conflict of Interest

There were no issues of conflict of interest.

3.9.9 Funding

The work was fully funded by the principal investigator with no external support.



3.10 Limitations of Study

The study included only health workers and management members. Patients were not included because their characteristics differ from the study group. The research relied on self-reports from the respondents and the information given by the respondents was not verified entirely. A consequence of information bias was reduced by occasionally requesting respondents to show proof of some information that was verified.

3.11 Assumptions

The study made use of the following assumptions;

- It is assumed that all conditions will be stable at the time of the study.
- It is also assumed that health workers will be available and willing to participate in the study.
- It is assumed that all respondents are of sound reasoning and understanding.
- Responses from respondents are assumed true and accurate.

3.12 Expected Outcome

The study is expected to reveal the existing knowledge of OHS among HCWs and management at the hospitals. It is also expected to identify gaps in knowledge and inappropriate practices of OHS guidelines/standards. This will inform relevant stakeholders in planning targeted interventions and ways to improve safety practices among health workers in the municipality.

Dissemination Of Findings

A copy of the research will be presented to the school of Public Health in partial fulfillment of the requirement for the award of a master's degree in public health. A copy of the results will also be

submitted to the East Akim municipal health directorate. Besides, the findings of the study would as well be presented to both facilities.



CHAPTER FOUR

RESULTS

4.1 Socio-demographic characteristics of respondents

Out of 270 health workers sampled from selected hospitals in the East Akim Municipality, female workers formed the majority (63.3%). The mean age of the respondents was 32.2 years \pm 7.8 SD. A little over half of the respondents were single (50.7%) and another 45.6 percent of them were married. The majority (84.8%) of health workers had had some tertiary education. Christians formed the majority (91.4%) of the health workers sampled. clinical staff formed the majority (74.8%) of respondents. Akans were more than all other ethnic groups (68.9%) as shown in table 4.1.

Table 4.1 Socio-demographic characteristics of respondents (n = 270)

Variables	Frequency	Percent (%)
Age in years (M \pm SD)	32.2 \pm 7.8	
Sex		
Male	99	36.7
Female	171	63.3
Marital status		
Single	137	50.7
Married	123	45.6
Widowed	0	0.0
Divorced	3	1.1
Separated	5	1.9
Cohabitation	2	0.7
Level of education		
None	4	1.5
Primary	0	0.0
Middle/jss	17	6.3
Sss/a 'level'	20	7.4
Tertiary	229	84.8

Other	0	0.0
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Religion

Christian	247	91.4
Muslim	22	8.2
Traditional	1	0.4
Other	0	0.0

Profession

Clinical staff	202	74.8
Non-clinical staff	68	25.2

Median years of work experience

Range (6 months, 35 years)	4
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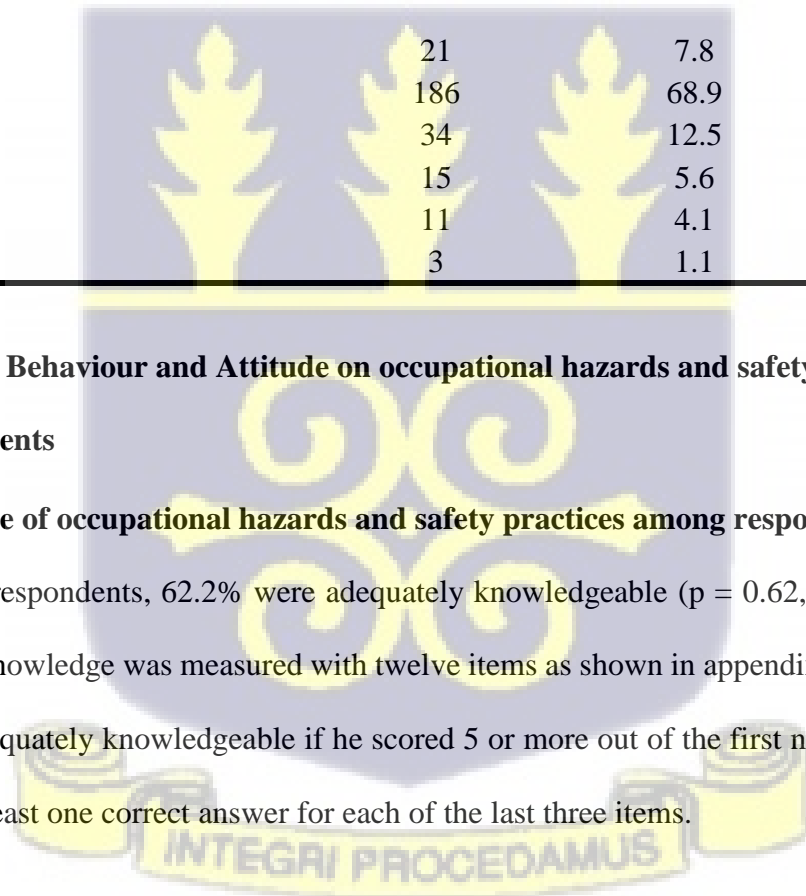
Ethnicity

Ga-adangbe	21	7.8
Akan	186	68.9
Ewe	34	12.5
Hausa	15	5.6
Dagomba	11	4.1
Other	3	1.1

4.2 Knowledge, Behaviour and Attitude on occupational hazards and safety practices among respondents

4.2.1 Knowledge of occupational hazards and safety practices among respondents

Out of the 270 respondents, 62.2% were adequately knowledgeable ($p = 0.62$, 95% CI = 0.56 – 0.68). Overall knowledge was measured with twelve items as shown in appendix (). A respondent was deemed adequately knowledgeable if he scored 5 or more out of the first nine items and was able to state at least one correct answer for each of the last three items.



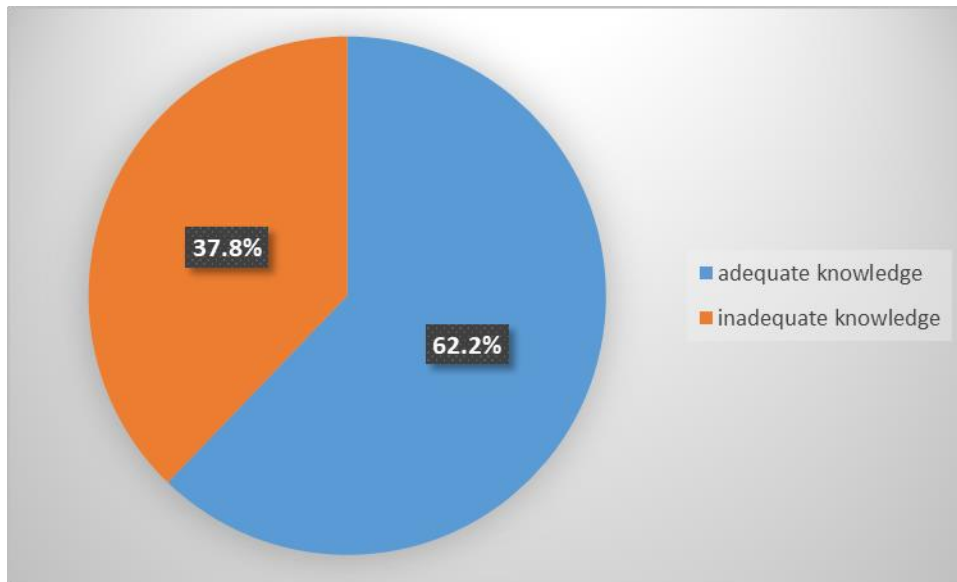


Figure 4.2.1 Proportion of adequately knowledgeable of occupational hazards and safety practices among respondents

4.2.2 Safety behavior towards occupational hazards and safety practices among respondents

Safety behavior was measured with 46 items in the work environment on a Likert scale (1 – 5), strongly disagree, disagree, neutral, agree, strongly agree. A behavior score ranging from 46 to 230 was generated by summing all forty-six item responses. A respondent was deemed to have good behavior if he scored 184 or more that is if he at least agreed to all 46 items. Nearly eight percent (7.8%) of the workers had good behavior towards occupational hazards and safety practices ($p = 0.07$, 95% CI = 0.05 – 0.12).



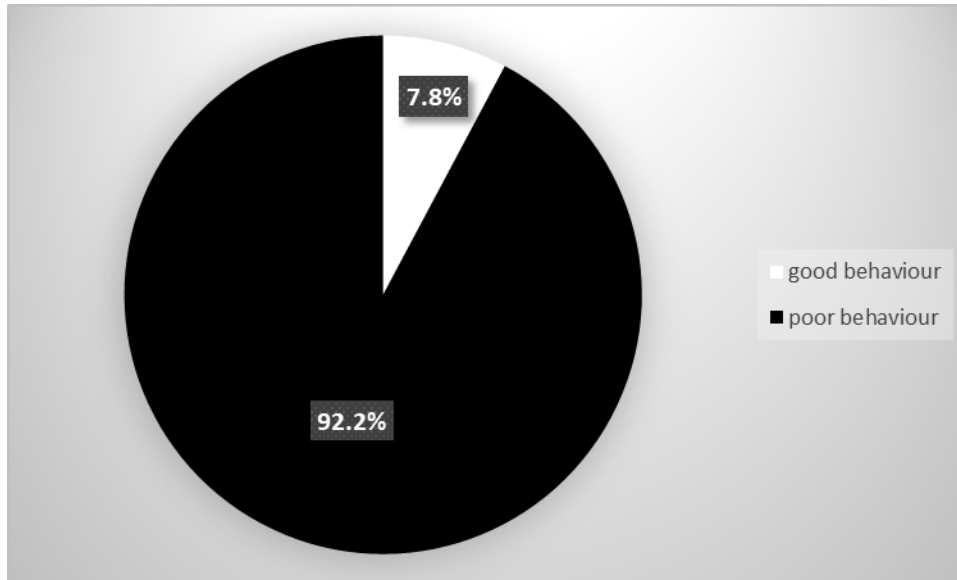
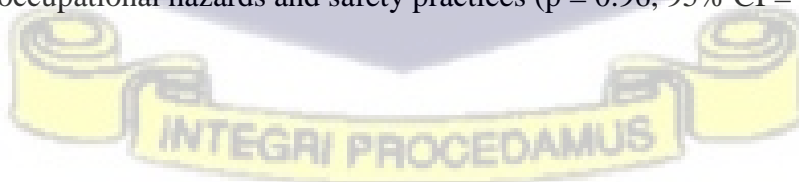


Figure 4.2.2 Proportion of respondents with good behavior towards occupational hazards and safety practices

4.2.3 Attitudes of respondents towards occupational hazards and safety practices among respondents

The attitude was measured with 15 items as shown in the appendix (). Respondents were to select, whether they agreed – 2, were undecided – 1, or disagreed – 0 with each of the 15 items. A total attitude score ranging from 0 to 30 was generated. Those who scored 16 or more had a good attitude and those who scored ≤ 15 had a poor attitude. Respondents generally (96%) had good attitude towards occupational hazards and safety practices ($p = 0.96$, 95% CI = 0.93 – 0.98).



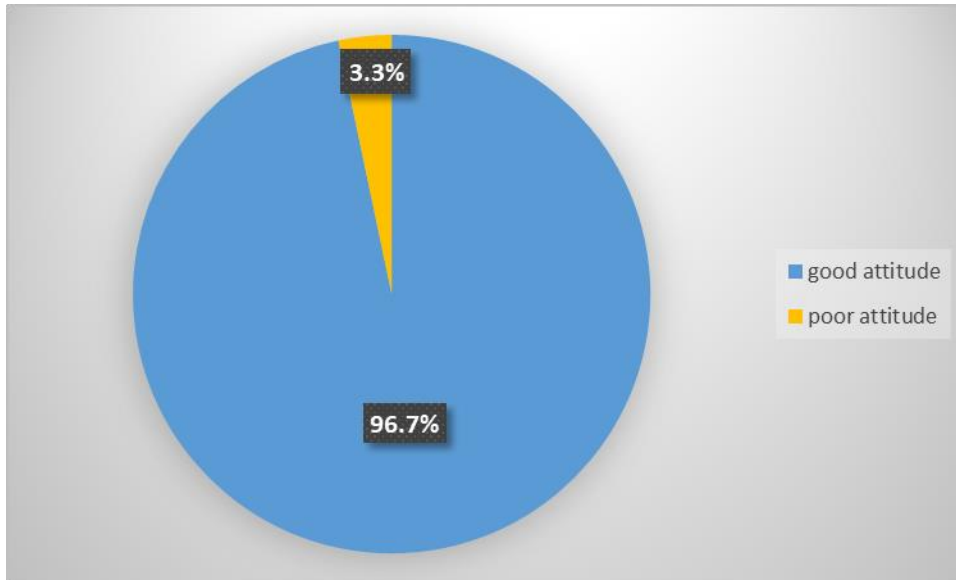


Figure 4.2.3 Proportion of respondents with good attitudes towards occupational hazards and safety practices

4.3 Socio-demographic characteristics associated with knowledge of occupational hazards and safety practices

A bivariate analysis (chi-square test) conducted to determine the association between socio-demographic factors and knowledge of occupational hazards and safety practices among respondents revealed sex ($p = 0.006$) and marital status ($p = 0.038$) as the socio-demographic factors significantly associated with knowledge of occupational hazards and safety practices.



Table 4.3 Socio-demographic characteristics associated with knowledge of occupational hazards and safety practices

Variables	Knowledge		χ^2
	Adequate knowledge (n = 168)	Inadequate knowledge (n = 102)	p-value
Age in years (M ± SD)	32.3 ± 7.4	32.2 ± 8.5	0.924
Sex			0.006*
Male	51 (51.5)	48 (48.5)	
Female	117 (68.4)	54 (31.6)	
Marital status			0.038*
Not living together	82(56.6)	63(43.4)	
Living together	86(68.8)	39(31.2)	
Level of education			+0.611
No formal education	2 (50.0)	2 (50.0)	
Formal education	166(62.4)	100(37.6)	
Religion			+0.555
Christians	155 (62.8)	92 (37.3)	
Others	13(56.5)	10(43.5)	
Profession			0.286
Clinical staff	122 (60.4)	80 (39.6)	
Non-clinical staff	46 (67.7)	22 (32.3)	
Years of work experience	6.4 ± 6.5	6.3 ± 7.9	0.896
Ethnicity			0.997
Ga-adangbe	13(61.9)	8(38.1)	
Akan	116(62.4)	70(37.6)	
Other	39(61.9)	24(38.1)	

+ (fisher's exact)

*(statistically significant, p<0.05)

4.3.1 Factors associated with knowledge of occupational hazards and safety practices

In multiple logistic regression, the odds of having adequate knowledge of occupational hazards and safety practices were significantly two times as high among female respondents as compared

to males (cOR = 2.04; 95% CI = 1.23 – 3.39; p = 0.006) as shown in table 4.3.1 Adjusting for all other socio-demographic factors, the odds of having adequate knowledge of occupational hazards and safety practices was significantly 2.06 times as high among female respondents as compared to males (aOR = 2.06; 95% CI = 1.20 – 3.53; p = 0.009).

Respondents who were living together with their partners had significantly 1.69 times the odds of having adequate knowledge of occupational hazards and safety practices as compared to those who were not living together or had no partners (cOR = 1.69; 95% CI = 1.03 – 2.80; p = 0.039). This association was however significant after adjusting for all other variables.

Table 4.3.1 Factors associated with knowledge of occupational hazards and safety practices

Variables	cOR (95 % CI)	p-value	aOR (95% CI)	p-value
Age in years (M ± SD)	1.00(0.97 - 1.03)	0.924	0.98(0.91 - 1.06)	0.602
Sex				
Male	1.00		1.00	
Female	2.04 (1.23 - 3.39)	0.006*	2.06 (1.20 - 3.53)	0.009*
Marital status				
Not living together	1.00		1.00	
Living together	1.69 (1.03 - 2.80)	0.039*	1.85 (1.02 – 3.36)	0.042*
Level of education				
No formal education	1.00		1.00	
Formal education	1.66 (0.23 – 11.97)	0.615	2.15 (0.26 – 17.99)	0.479
Religion				
Christians	1.00		1.00	
Others	0.77 (0.33 – 1.83)	0.556	0.74 (0.28 – 1.93)	0.536
Profession				

Clinical staff	1.00		1.00	
Non clinical staff	1.37 (0.77 - 2.45)	0.287	1.80 (0.92 – 3.53)	0.086
Years of work experience	1.00 (0.97 - 1.03)	0.895	1.00 (0.93 - 1.08)	0.970
Ethnicity				
Ga-adangbe	1.00		1.00	
Akan	1.02 (0.40 - 2.58)	0.967	1.11 (0.42 – 2.94)	0.832
Others	1.00 (0.36 – 2.76)	1.00	1.27 (0.43 – 3.76)	0.664

*(statistically significant, $p < 0.05$)

4.4 Socio-demographic characteristics associated with safety behavior towards

occupational hazards and safety practices

A bivariate analysis (chi-square test) conducted to determine the association between socio-demographic factors and safety behavior towards occupational hazards and safety practices among respondents revealed sex ($p = 0.027$) as the only socio-demographic factor significantly associated with safety behavior towards occupational hazards and safety practices. The odds of good behavior towards occupational hazards and safety practices were significantly 3.76 times as high among female respondents as compared to males (cOR = 3.76; 95% CI = 1.08 – 13.12; $p = 0.037$) as shown in table 4.4. However, this association was not statistically significant after adjusting for all other socio-demographic characteristics (aOR = 2.87; 95% CI = 0.78 – 10.46; $p = 0.111$) (see Table 4.4.1).

In addition, a one year increase in the age of respondents significantly reduced the odds of good behavior towards occupational hazards and safety practices by 13% after adjusting for all other factors (aOR = 0.87; 95% CI = 0.76 – 0.99; $p = 0.037$).

Table 4.4 Socio-demographic characteristics associated with safety behavior towards occupational hazards and safety practices

Variables	Safety behaviour		χ^2
	Good behaviour (n = 21)	Poor behaviour (n = 249)	
Age in years (M ± SD)	30.0 ± 5.4	32.4 ± 8.0	0.186
Sex			0.027*
Male	3 (3.0)	96 (97.0)	
Female	18 (10.5)	153 (89.5)	
Marital status			0.560
Not living together	10 (6.9)	135 (93.1)	
Living together	11 (8.8)	114 (91.2)	
Level of education			+1.000
No formal education	0 (0.0)	4 (100.0)	
Formal education	21 (7.9)	245 (92.1)	
Religion			+1.000
Christian	20 (8.1)	227 (91.9)	
Others	1 (4.4)	22 (95.6)	
Profession			0.085
Clinical staff	19 (9.4)	183 (90.6)	
Non-clinical staff	2 (2.9)	66 (97.1)	
Years of work experience	6.0 ± 7.3	6.4 ± 7.0	0.784
Ethnicity			+0.333
Ga-adangbe	3 (14.3)	18 (85.7)	
Akan	15 (8.1)	171 (91.9)	
Other	3 (4.8)	60 (95.2)	

+ (fisher's exact) *(statistically significant, p<0.05)

4.4.1 Factors associated with safety behavior towards occupational health hazards and safety practices

The table below 4.4.1 shows results from a multiple logistic regression of factors associated with safety behavior towards occupational hazards and safety practices.

Table 4.4.1 Factors associated with safety behavior towards occupational hazards and safety practices

Variables	cOR (95 % CI)	p-value	aOR (95% CI)	p-value
Age in years (M ± SD)	0.95 (0.88 - 1.02)	0.188	0.87 (0.76 – 0.99)	0.037*
Sex				
Male	1.00		1.00	
Female	3.76 (1.08 - 13.12)	0.037*	2.90 (0.80 - 10.48)	0.104
Marital status				
Not living together	1.00		1.00	
Living together	1.30 (0.53 - 3.18)	0.561	1.79 (0.62 - 5.17)	0.281
Religion				
Christians	1.00		1.00	
Others	0.52 (0.07 – 4.03)	0.528	0.68 (0.07 – 6.18)	0.733
Profession				
Clinical staff	1.00		1.00	
Non clinical staff	0.29 (0.07 - 1.29)	0.104	0.37 (0.08 – 1.78)	0.214
Years of work experience	0.99 (0.93 - 1.06)	0.783	1.13 (0.99 - 1.29)	0.063
Ethnicity				
Ga-adangbe	1.00		1.00	
Akan	0.53 (0.14 - 1.99)	0.345	0.35 (0.08 - 1.43)	0.143
Other	0.33 (0.06 – 1.62)	0.161	0.32 (0.05 – 1.92)	0.210

4.5 Socio-demographic characteristics associated with attitude towards occupational hazards and safety practices

A bivariate analysis (chi-square test) conducted to determine the association between socio-demographic factors and attitude towards occupational hazards and safety practices among respondents revealed religion ($p = 0.032$) as the only socio-demographic factor significantly associated with good attitude towards occupational hazards and safety practices. The odds of a good attitude towards occupational hazards and safety practices was significantly reduced by 83%

among Muslims as compared to Christians (cOR = 0.17; 95% CI = 0.04 – 0.71; p = 0.016) as shown in table 4.5.1 However, after adjusting for all other variables this association, it was found that the odds of good attitude towards occupational hazards and safety practices was significantly reduced by 96% among Muslims as compared to Christians (aOR = 0.04; 95% CI = 0.01 – 0.34; p = 0.003)

Table 4.5 Socio-demographic characteristics associated with attitude towards occupational hazards and safety practices

Variables	Attitude		χ^2
	Good attitude (n = 261)	Poor attitude (n = 9)	p-value
Age in years (M ± SD)	32.3 ± 7.8	29.4 ± 6.1	0.279
Sex			+0.295
male	94 (94.9)	5 (5.1)	
female	167 (97.7)	4 (2.3)	
Marital status			+0.183
Not living together	138 (95.2)	7 (4.8)	
Living together	123 (98.4)	2 (1.6)	
Level of education			+0.873
No formal education	4 (100.0)	4 (0.0)	
Formal education	257 (96.6)	9 (3.4)	
Religion			+0.032
Christians	241 (97.6)	6 (2.4)	
Others	20 (87.0)	3 (13.0)	
Profession			+0.696
clinical staff	196 (97.0)	6 (3.0)	
non-clinical staff	65 (95.6)	3 (4.4)	
Years of work experience	6.5 ± 7.1	3.4 ± 3.5	0.200
Ethnicity			+0.517
ga-adangbe	20 (95.2)	1 (4.8)	
akan	179 (96.2)	7 (3.8)	

other 62 (98.4) 1 (1.6)

+ (fisher's exact) *(statistically significant, p<0.05)

4.5.1 Factors associated with attitude towards occupational hazards and safety practices

The table below 4.5.1 shows results from a multiple logistic regression of factors associated with attitude towards occupational hazards and safety practices

Table 4.5.1 Factors associated with attitude towards occupational hazards and safety practices

Variables	cOR (95 % CI)	p-value	aOR (95% CI)	p-value
Age in years (M ± SD)	1.06 (0.95 - 1.20)	0.281	0.94 (0.76 - 1.17)	0.568
Sex				
Male	1.00		1.00	
Female	2.22 (0.58 - 8.47)	0.243	2.95 (0.59 - 14.65)	0.187
Marital status				
Not living together	1.00		1.00	
Living together	3.12 (0.64 - 15.30)	0.161	1.52 (0.20 - 11.34)	0.685
Religion				
Christian	1.00		1.00	
Muslim	0.17 (0.04 - 0.71)	0.016*	0.04 (0.01 - 0.34)	0.003*
Profession				
Clinical staff	1.00		1.00	
Non clinical staff	0.66 (0.16 - 2.73)	0.569	0.46 (0.08 - 2.47)	0.363
Years of work experience	1.13 (0.93 - 1.36)	0.217	1.18 (0.89 - 1.58)	0.247
Ethnicity				
Ga-adangbe	1.00			
Akan	1.28 (0.15 - 10.93)	0.822	0.55 (0.03 - 9.89)	0.687
Other	3.10 (0.19 - 51.87)	0.431	8.04 (0.25 - 258.68)	0.239

*(statistically significant, p<0.05)

4.6 Compliance with or adherence to universal precautions or occupational health and safety policy

Out of the 270 respondents, 17.4% indicated strict compliance with universal precautions

($p = 0.17$, 95% CI = 0.13 – 0.22).

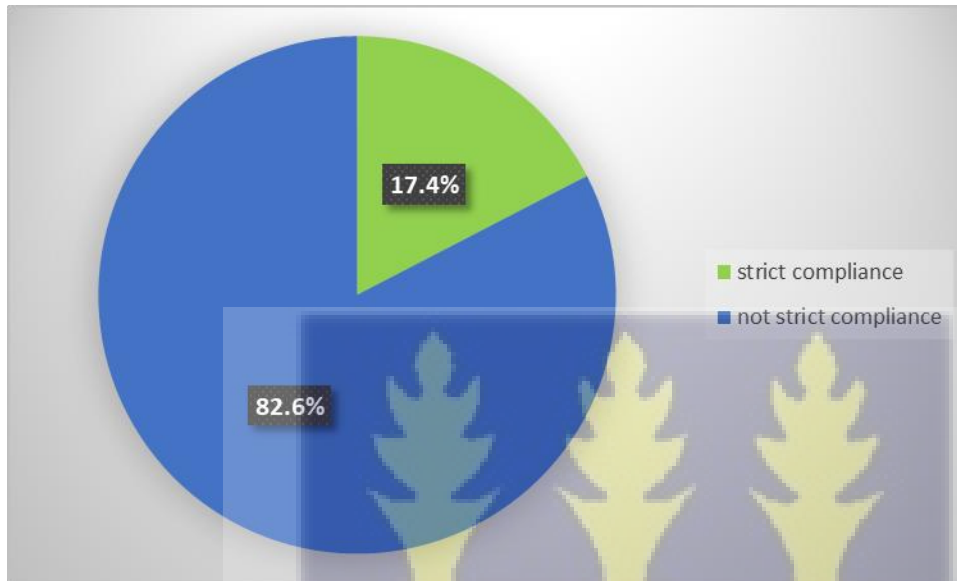


Figure 4.6 Proportion of respondents with strict compliance with universal precautions or occupational health and safety policy

4.7 Factors associated with compliance with universal precautions or occupational health and safety policy

From a chi-square analysis, age ($p = 0.017$), religion ($p = 0.028$), profession ($p = 0.031$), ethnicity ($p = 0.039$) and safety behaviour ($p = 0.001$) were found to be significantly associated with compliance to universal precautions or occupational health and safety policy. However, a multiple logistic regression to determine the strength of this association revealed that;

A one year increase in the age of a health worker significantly reduced the odds of strict compliance with universal precautions by 6 percent (cOR = 0.94; 95% CI = 0.89 – 0.99; p = 0.019).

This association was still significant after adjusting for all other variables (aOR = 0.87; 95% CI = 0.77 – 0.98; p = 0.021).

Non-clinical staff had a significantly 62% reduction in the odds of strictly complying with universal precautions as compared to clinical staff (cOR = 0.38; 95% CI = 0.15 – 0.94; p = 0.036).

This association was found not to be significant after adjusting for all other variables (aOR = 0.62; 95% CI = 0.23 – 1.65; p = 0.338).

Respondents who showed good behavior had significantly 4.16 times the odds of strictly complying with universal precautions as compared to respondents with poor behavior (cOR = 4.16; 95% CI = 1.64 – 10.56; p = 0.003). However, after adjusting for all other variables this association was still found to be statistically significant (aOR = 4.18; 95% CI = 1.46 – 11.98; p = 0.008).

The results from the multiple logistic regression are shown below in table 4.7.1.

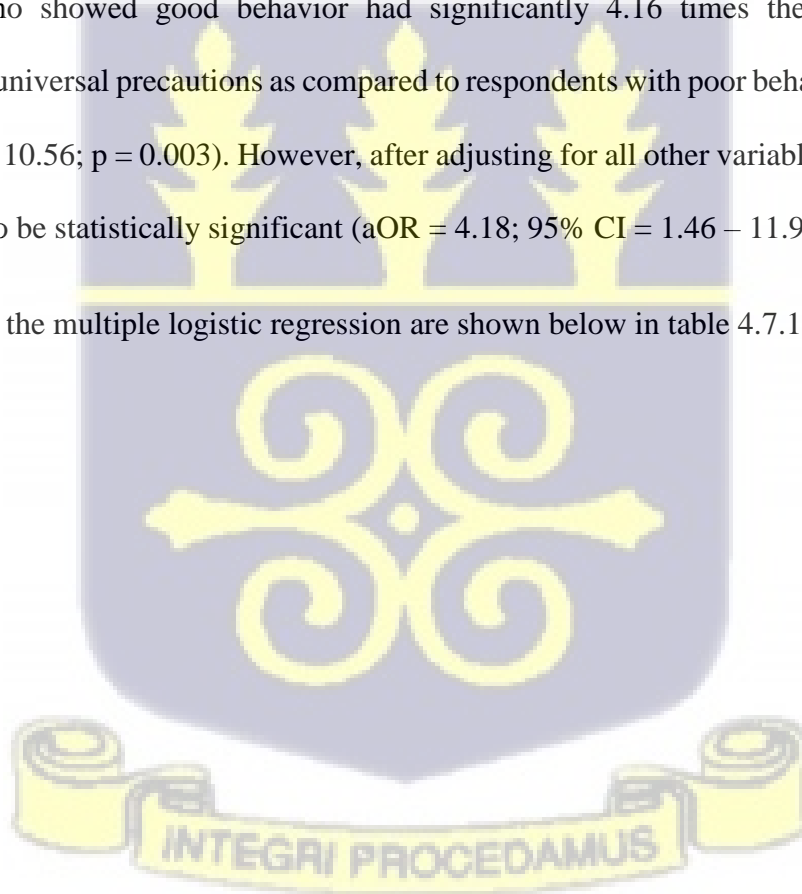


Table 4.7 Factors associated with compliance with universal precautions or occupational health and safety policy

Variables	Compliance		χ^2
	strict compliance (n = 47)	not strict compliance (n = 223)	p-value
Age in years (M \pm SD)	29.7 \pm 5.4	32.7 \pm 8.1	0.017*
Sex			0.938
Male	17 (17.2)	82 (82.8)	
Female	30 (17.5)	141 (82.5)	
Marital status			0.226
Not living together	29 (20.0)	116 (80.0)	
Living together	18 (14.4)	107 (85.6)	
Level of education			+1.000
No formal education	0 (0.0)	4 (100.0)	
Formal education	47 (17.7)	219 (82.3)	
Religion			+0.018*
Christian	47 (19.0)	200 (81.0)	
Other	0 (0.0)	23 (100.0)	
Profession			0.031*
Clinical staff	41 (20.3)	161 (79.7)	
Non-clinical staff	6 (8.8)	62 (91.2)	
Years of work experience	5.5 \pm 5.6	6.6 \pm 7.3	0.339
Ethnicity			+0.003*
Ga-adangbe	2 (9.5)	19 (90.5)	
Akan	42 (22.6)	144 (77.4)	
Other	3 (4.8)	60 (95.2)	
Knowledge			0.936
Inadequate knowledge	17 (17.7)	84 (82.3)	
Adequate knowledge	29 (17.3)	139 (82.7)	
Attitude			0.161

Good attitude	47 (18.0)	214 (82.0)
Poor attitude	0 (0.0)	9 (100.0)
Safety behavior		0.001*
Poor behavior	38 (15.3)	211 (84.7)
Good behavior	9 (42.9)	12 (57.1)

+ (fisher's exact) *(statistically significant, p<0.05)

4.7.1 Factors associated with compliance to universal precautions or occupational health and safety policy (multiple logistic regression)

The table below 4.7.1 shows results from a multiple logistic regression of factors associated with compliance to universal precautions or occupational health and safety policy.

Table 4.7.1 Factors associated with compliance to universal precautions or occupational health and safety policy (multiple logistic regression)

Variables	cOR (95 % CI)	p-value	aOR (95% CI)	p-value
Age in years (M ± SD)	0.94 (0.89 - 0.99)	0.019*	0.87 (0.77 - 0.98)	0.021*
Sex				
Male	1.00		1.00	
Female	1.03 (0.53 - 1.97)	0.938	0.61 (0.29 - 1.28)	0.189
Marital status				
Not living together	1.00		1.00	
Living together	0.67 (0.35 - 1.28)	0.228	0.88 (0.39 - 2.03)	0.774
Profession				
Clinical staff	1.00			
Non clinical staff	0.38 (0.15 - 0.94)	0.036*	0.62 (0.23 - 1.65)	0.338
Years of work experience	0.98 (0.93 - 1.03)	0.340	1.12 (0.99 - 1.28)	0.064
Ethnicity				
Ga-adangbe	1.00		1.00	
Akan	2.77 (0.62 - 12.38)	0.182	3.14 (0.61 - 16.13)	0.171
Other	0.48 (0.07 - 3.06)	0.433	0.56 (0.08 - 4.03)	0.563

Knowledge

Inadequate knowledge	1.00			
Adequate knowledge	0.97 (0.51 – 1.86)	0.936	1.06 (0.52 – 2.16)	0.862

Safety behavior

Poor behavior	1.00		1.00	
Good behaviour	4.16 (1.64 – 10.56)	0.003*	4.18 (1.46 – 11.98)	0.008*

*(statistically significant, $p < 0.05$)



CHAPTER FIVE

5.0 Discussion

Occupational health is a neglected public health issue especially among health care workers in Ghana exposing them to all kinds of hazards. In this study, knowledge of occupational hazards and safety practices among workers in the East Akim municipality were assessed, and out of the 270 respondents, 62.2% were adequately knowledgeable a figure higher than what has been recorded by a few authors (Aluko et al., 2016; Agbana et al., 2016; Nasab et al., 2009; Sanaeinasab et al., 2009). In neighboring Nigeria, Aluko et al. (2016) revealed that 57.6 % of health workers had a high level of knowledge while Agbana et al. in the same year recorded a knowledge level of 61.7% among sawmill workers on occupational hazards and safety practices. An older study (Nasab et al., 2009) conducted in Iran indicated that the majority (52.9%) of workers had a low level of knowledge while another Iranian study showed that only 10.5% of Iranian workers had a high level of knowledge on occupational hazards and safety practices (Sanaeinasab et al., 2009). Amabye (2016) in Ethiopia discloses a good level of knowledge (66.7%) among workers of a bottling company while 67.5% of Pakistani nurses had a high level of knowledge about occupational hazards (Awan et al., 2017). However, a more recent Nigerian study revealed a much higher level of knowledge (87%) of occupational hazards (Obono et al., 2019) among healthcare workers in a tertiary health facility. Analysis of results from this current study shows that health workers with adequate knowledge of occupational hazards and safety practices had higher exposure to hazard as compared to those with inadequate knowledge. This could be the case because those who are highly knowledgeable are more likely to identify possible hazards or dangers that exist in their workspace compared to those who are less knowledgeable. More effort

should be put into improving the knowledge levels of workers in areas of occupational hazards and safety practices to help curb the occurrence of avertible accidents or injuries.

The majority (96%) of study respondents had a good attitude while only 7.8% had good behavior towards occupational hazards and safety practices. In this study, respondents who showed good behavior were more likely to comply strictly with universal precautions as compared to those with poor behavior. Similarly, Aluko et al. (2016) reveal that 80% of health workers had a good attitude towards occupational hazards and safety believing that occupational hazards and safety should be highly prioritized. In Iran, 75.7% of workers in a petrochemical company had positive attitudes towards occupational health and safety while 70% exhibited good behavior (Sanaeinasab et al., 2009). Awan et al. (2017) record an overall positive attitude of 56.91% while Nasab et al. (2009) indicate that about 75.7% of Iranian workers showed a positive attitude with 70% exhibiting good behavior towards occupational hazards and safety practices as well as increased tendency to practice precautionary measures. The disparities or non-correlation saw in knowledge level, attitude, and behavior need to be thoroughly assessed for better understanding to help policymakers develop more strategic steps in improving the outcome variables.

Only 17.4% of respondents in this present-day study indicated strict compliance with universal precautions. This number is very low considering the important role compliance plays in the prevention of occupational hazards. A much lower compliance rate of 6.6% was seen in a study in Northern Rural Pakistan which focused on compliance with universal precautions at first-level health facilities (Yousafzai et al., 2015). However, in Nigeria, 52.1% of workers exhibited strict compliance with precautions when performing procedures (Aluko et al., 2016) which is much higher. Eighty-two out of the 270 (30.4%) of the health workers in East Akim reported being exposed to hazard in the last six months. Out of these, 29.3%, 25.6%, 14.6% represented splashes,

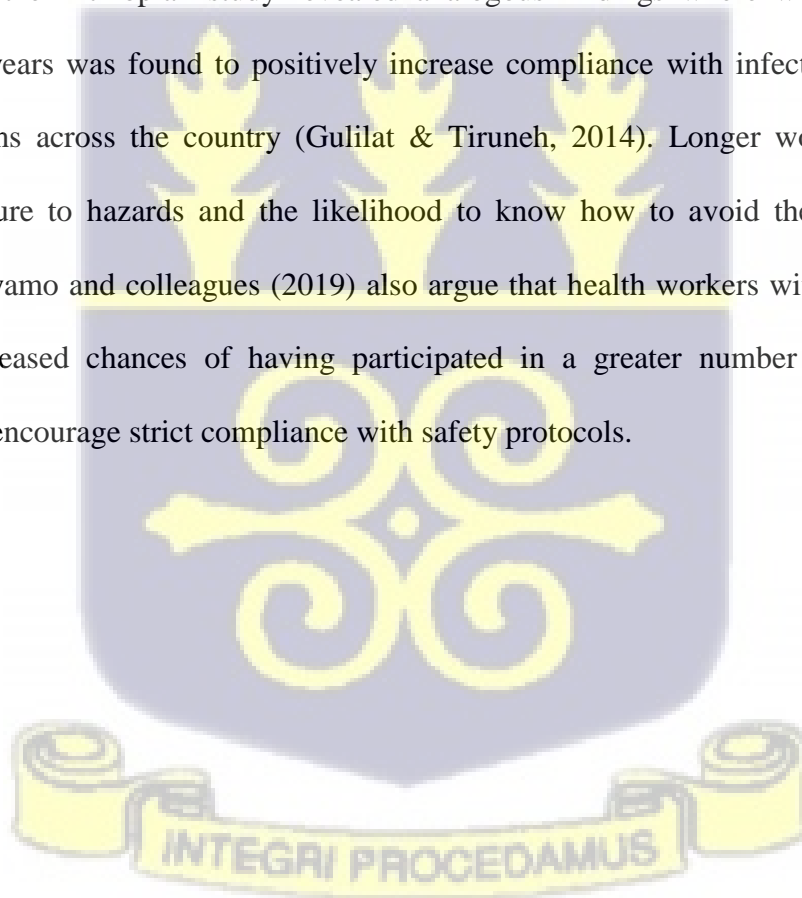
direct contacts, and needle sticks respectively. Only 29.3% of these hazard exposure incidents were reported and action was taken for 36.6% of the hazard exposure incidents. The odds of adequate knowledge of occupational hazards and safety practices were significantly two times as high among female respondents as compared to males. The odds of good behavior towards occupational hazards and safety practices were significantly high among female respondents as compared to males. A one year increase in age of a health worker significantly reduced the odds of strict compliance with universal precautions but increases the odds of hazard exposure. In contradiction, Beyamo et al. (2019), finds that younger health workers were less likely to comply with safety measures compared to those who are older. Non-clinicians tend to have significantly 3.48 times the odds of having adequate knowledge as compared to clinicians. Non-clinicians had a significant reduction in the odds of strictly complying with universal precautions as compared to clinicians.

The odds of a good attitude towards occupational hazards and safety practices were significantly reduced among Muslims as compared to Christians in this study. Papers studied by the researcher in concordance with this topic failed to analyze whether or not workers of a religious group or sect had a better precautionary attitude compared to the other. Meanwhile, Amponsah-Tawiah (2018) in socio-cultural practices and health and safety behaviors among Ghanaian employees showed the influence of religious and traditional beliefs on attitude towards workplace safety policies. He documented the use of talisman, beads, and other jewelry by some workers as better forms of protection against workplace hazards compared to following safety protocols and wearing protective equipment at the workplace. On the other hand, Umeokafor & Windapo (2019) observed a positive correlation between supernatural beliefs and strict compliance with safety precautions.

In heeding to workplace protocols, employees were conscious of preventing injuries, damage to

properties, and ensuring the safety of others because their religious principles preach similar themes (Umeokafor & Windapo, 2019).

A one-year increase in work experience significantly increased the odds of strict compliance with universal precautions and the odds of hazard exposure. Similar observations were made in India where knowledge and compliance with universal precautions were significantly higher among laboratory technicians who had higher years of work experience (Phukan, 2014). Nonetheless, Beyamo et al. (2019) discovered that Ethiopian health recruits having work experience of five years or less were more likely to exhibit compliance than those with greater than 5 years' working experience. Another Ethiopian study revealed analogous findings where working experience greater than 10years was found to positively increase compliance with infection prevention in health institutions across the country (Gulilat & Tiruneh, 2014). Longer working experience increases exposure to hazards and the likelihood to know how to avoid them eliciting strict compliance. Bayamo and colleagues (2019) also argue that health workers with longer working years have increased chances of having participated in a greater number of seminars and workshops that encourage strict compliance with safety protocols.



CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 Conclusion

Knowledge of OHS was high, with about 62.2% of adequately knowledgeable whiles practice was low with 7.8% of the workers having good behavior towards occupational hazards and safety practices. The majority of respondents (96%) had a good attitude towards occupational hazards and safety practices.

Being female or non-clinicians increased the odds of adequate knowledge of occupational hazards and safety practices. The odds of a good attitude towards occupational hazards and safety practices were significantly reduced among Muslims as compared to Christians.

Strict compliance with universal precautions was low, (17.4%). Age, good behavior, increase in work experience of a health worker influenced strict compliance with universal precautions.

Nealry 3 in 10 of the health workers reported exposure to hazard in the last six months with 29.3%, 25.6%, and 14.6% representing splashes, direct contacts, and needle sticks respectively.

Only 29.3% of these hazard exposure incidents were reported while action was taken for 36.6% of the hazard exposure incidents. Adequate knowledge of occupational hazards and safety practices increased hazard exposure among health workers.



6.2 Recommendations

1. Authorities at the Kibi and Tafo government hospitals within the East Akim municipality should organize half yearly training for health workers to enable them to identify and report possible hazards.
2. Health workers at the Kibi and Tafo government hospitals should be encouraged to comply strictly with universal precautions.
3. Health workers at the Kibi and Tafo government hospitals should be encouraged to report hazardous exposures to authorities for immediate action.



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APPENDICES

Appendix 1

Prevalence of hazard exposure in the last six months

As shown in figure 4.8, eighty-two out of the 270 (30.4%) of the health workers reported being exposed to hazard in the last six months ($p = 0.30$; 95% CI = 0.25 – 0.36). out of these, 29.3%, 25.6%, 14.6% represented splashes, direct contacts, and needle sticks respectively (see table 4.8). According to respondents, only 29.3% of these hazard exposure incidents were reported. The action was taken for 36.6% of the hazard exposure incidents.

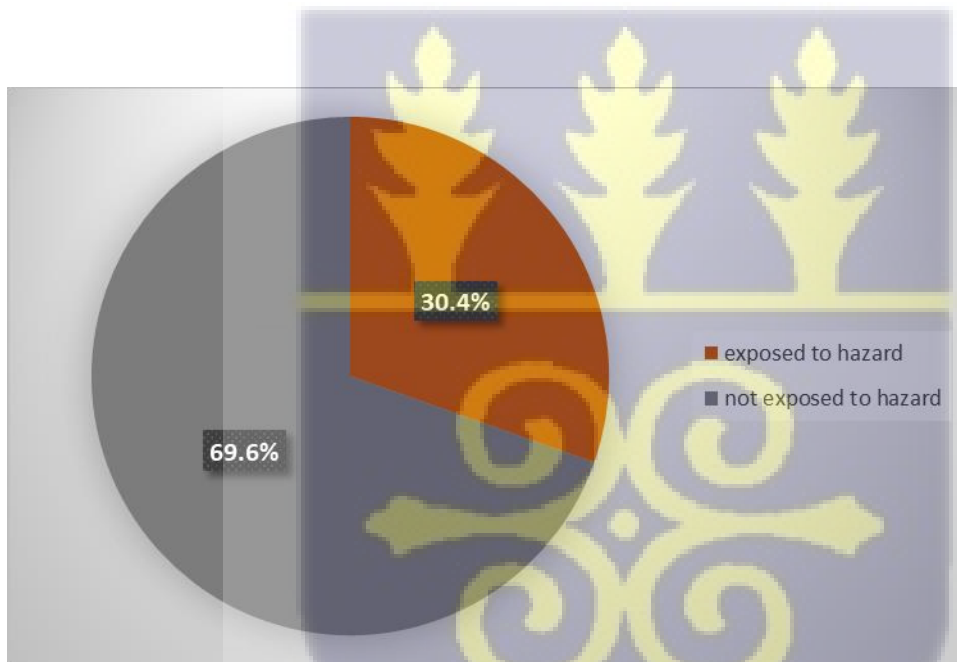


Figure 4.8 Proportion of hazard exposure in the last six months

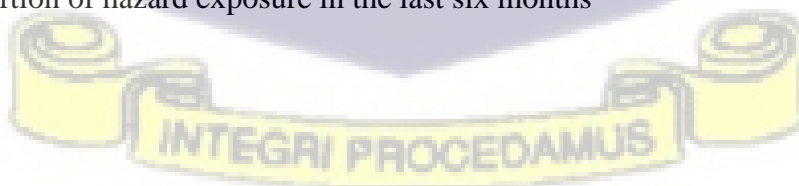


Table 4.8 Hazard exposures among respondents (n = 82)

Hazard exposure incident	Frequency	Percent
Needle sticks	12	14.6
Splashes	24	29.3
Direct contacts	21	25.6
Cuts	3	3.7
Falls	3	3.7
Musculoskeletal pains	15	18.3
Assault	1	1.2
Other	3	3.7

4.9 Factors associated with hazard exposure

A one year increase in age significantly increases the odds of hazard exposure (in the last six months) by eight percent (cOR = 1.08; 95% CI = 1.04 – 1.11; $p < 0.001$). However, after adjusting for all other variables this association was found not to be statistically significant (aOR = 1.04; 95% CI = 0.96 – 1.14; $p = 0.349$).

Respondents who were married had a 96% increase in their odds of hazard exposure as compared to those who were single (cOR = 1.96; 95% CI = 1.14 – 3.36; $p = 0.014$). This association was found not to be significant after adjusting for all other variables (aOR = 1.24; 95% CI = 0.61 – 2.53; $p = 0.547$).

Hospital workers with tertiary education had significantly 78% reduction in their odds of hazard exposure as compared to those who were had had middle school or jss education (cOR = 0.22; 95% CI = 0.08 – 0.61; $p = 0.003$). This association was found not to be significant after adjusting for all other variables (aOR = 0.42; 95% CI = 0.09 – 1.93; $p = 0.268$).

The odds of hazard exposure among non-clinical staff was significantly 3.50 times as high as compared to clinical staff (cOR = 3.50; 95% CI = 1.96 – 6.23; $p < 0.001$). This association was

found not to be significant after adjusting for all other variables (aOR = 1.45; 95% CI = 0.65 – 3.20; p = 0.364).

A one-year increase in years of work significantly increased the odds of hazard exposure by 7% (cOR = 1.07; 95% CI = 1.03 – 1.11; p < 0.001). However, after adjusting for all other variables this association was found not to be statistically significant (aOR = 0.99; 95% CI = 0.90 – 1.08; p = 0.824).

Health workers from the dagomba ethnic group as compared to the ga-adangbe ethnic group had significantly increased odds of hazard exposure by 7.4 folds (cOR = 7.44; 95% CI = 1.44 – 38.41; p = 0.017). This association was found not to be significant after adjusting for all other variables (aOR = 3.08; 95% CI = 0.48 – 19.81; p = 0.236).

Health workers with adequate knowledge of occupational hazards and safety practices had a significantly 86% increment in their odds of hazard exposure as compared to those with inadequate knowledge of occupational hazards and safety practices (cOR = 1.86; 95% CI = 1.06 – 3.26; p = 0.031). This association was still significant after adjusting for all other variables (aOR = 2.23; 95% CI = 1.14 – 4.36; p = 0.019).

The table below 4.9.1 shows results from a multiple logistic regression of factors associated with compliance to universal precautions or occupational health and safety policy.



Table 4.9 Factors associated with hazard exposure

Variables	Hazard exposure		χ^2	cOR(95% CI)	p-value
	Exposed to hazard (n = 82)	Not exposed to hazard (n = 188)	p - value		
Age in years (M ± SD)	35.4 ± 9.6	30.8 ± 6.4		1.08 (1.04 - 1.11)	0.000*
Sex			0.985		
male	30 (30.3)	69 (69.7)		1.00	
female	52 (30.4)	119 (69.6)		1.01 (0.59 - 1.72)	0.985
Marital status			+0.073		
single	32 (23.4)	105 (76.6)		1.00	
married	46 (37.4)	77 (62.6)		1.96(1.14 - 3.36)	0.014*
widowed	0 (0.0)	0 (0.0)		1	
divorced	1 (33.3)	2 (66.7)		1.64(0.14 - 18.69)	0.690
separated	2 (40.0)	3 (60.0)		2.19(0.35 - 13.67)	0.402
cohabitation	1 (50.0)	1 (50.0)		3.28(0.20 - 53.95)	0.406
Level of education			+0.000*		
none	4 (100.0)	0 (0.0)		1	
primary	0 (0.0)	0 (0.0)		1	
middle/jss	10 (58.8)	7 (41.2)		1.00	
sss/a 'level'	13 (65.0)	7 (35.0)		1.30 (0.34 - 4.93)	0.700
tertiary	55 (24.0)	174 (76.0)		0.22 (0.08 - 0.61)	0.003*
other	0 (0.0)	0 (0.0)		1	
Religion			+1.000		
Christian	75 (30.4)	172 (69.6)		1.00	
Muslim	7 (31.8)	15 (68.2)		1.07 (0.42 - 2.73)	0.887
traditional	0 (0.0)	1 (100.0)		1	
other	0 (0.0)	0 (0.0)		1	
Profession			0.000*		
clinical staff	47 (23.3)	155 (76.7)		1.00	
non-clinical staff	35 (51.5)	33 (48.5)		3.50 (1.96 - 6.23)	0.000*
Years of work experience	9.0 ± 8.9	5.3 ± 5.7		1.07(1.03 - 1.11)	0.000*

Ethnicity			+0.044*		
ga-adangbe	4 (19.1)	17 (80.9)		1.00	
akan	52 (28.0)	134 (72.0)		1.65 (0.53 - 5.13)	0.388
ewe	10 (29.4)	24 (70.6)		1.77 (0.48 - 6.60)	0.395
hausa	7 (46.7)	8 (53.3)		3.72 (0.84 - 16.47)	0.084
dagomba	7 (63.6)	4 (36.4)		7.44 (1.44 - 38.41)	0.017*
other	2 (66.7)	1 (33.3)		8.50(0.61 - 118.64)	0.112
Knowledge			0.029*		
inadequate knowledge	23 (22.6)	79 (77.4)		1.00	
adequate knowledge	59 (35.1)	109 (64.9)		1.86 (1.06 - 3.26)	0.031*
Attitude			+0.061		
good attitude	82 (31.4)	179 (68.6)		1.00	
poor attitude	0 (0.0)	9 (100.0)		1	
Compliance			0.136		
not strict compliance	72 (32.3)	151 (67.7)		1.00	
strict compliance	10 (21.3)	37 (78.7)		0.57 (0.27 - 1.20)	0.139
Safety behavior			0.852		
poor behavior	76 (30.5)	173 (69.5)		1.00	
good behavior	6 (28.6)	15 (71.4)		0.91 (0.34 - 2.44)	0.852
+ (fisher's exact)		*(statistically significant, p<0.05)			

4.9.1 Factors associated with hazard exposure (multiple logistic regression)

The table below 4.9.1 shows results from a multiple logistic regression of factors associated with hazard exposure.



Table 4.9.1 Factors associated with hazard exposure (multiple logistic regression)

Variables	cOR (95 % CI)	p-value	aOR (95% CI)	p-value
Age	1.08 (1.04 - 1.11)	0.000*	1.04 (0.96 - 1.14)	0.349
Marital status				
single	1.00		1.00	
married	1.96 (1.14 - 3.36)	0.014*	1.24 (0.61 - 2.53)	0.547
widowed	1		1	
divorced	1.64 (0.14 - 18.69)	0.690	0.21 (0.01 - 4.83)	0.329
separated	2.19 (0.35 - 13.67)	0.402	0.36 (0.05 - 2.82)	0.331
cohabitation	3.28 (0.20 - 53.95)	0.406	3.26 (0.16 - 64.56)	0.438
Level of education				
none	1		1	
primary	1		1	
middle/jss	1.00		1.00	
sss/a 'level'	1.30 (0.34 - 4.93)	0.700	2.78 (0.53 - 14.76)	0.229
tertiary	0.22 (0.08 - 0.61)	0.003*	0.42 (0.09 - 1.93)	0.268
other	1		1	
Profession				
clinical staff	1.00		1.00	
non clinical staff	3.50 (1.96 - 6.23)	0.000*	1.45 (0.65 - 3.20)	0.364
Years of work experience	1.07 (1.03 - 1.11)	0.000*	0.99 (0.90 - 1.08)	0.824
Ethnicity				
ga-adangbe	1.00		1.00	
akan	1.65 (0.53 - 5.13)	0.388	1.78 (0.53 - 6.00)	0.352
ewe	1.77 (0.48 - 6.60)	0.395	1.55 (0.37 - 6.48)	0.547
hausa	3.72 (0.84 - 16.47)	0.084	3.54 (0.71 - 17.59)	0.123
dagomba	7.44 (1.44 - 38.41)	0.017*	3.08 (0.48 - 19.81)	0.236
other	8.50 (0.61 - 118.64)	0.112	6.20 (0.35 - 109.87)	0.213
Knowledge				
inadequate knowledge	1.00		1.00	
adequate knowledge	1.86 (1.06 - 3.26)	0.031*	2.23 (1.14 - 4.36)	0.019*
Compliance				
not strict compliance	1.00			
strict compliance	0.57 (0.27 - 1.20)	0.139	0.85 (0.37 - 1.97)	0.711

 *(statistically significant, $p < 0.05$)

Appendix 2

i. Heading

PARTICIPANTS INFORMATION SHEET

ii. Title of Study

OCCUPATIONAL HEALTH HAZARDS AND SAFETY PRACTICES AMONG HEALTH WORKERS AT THE EAST AKIM MUNICIPALITY OF GHANA

iii. Introduction:

My name is Francis Kweku Sablah from the School of Public Health, University of Ghana pursuing Masters in Public Health. My contact is 0242823544 and the e-mail address is francissablah@gmail.com.

iv. Background and Purpose of the research:

Occupational health and safety at the workplace are typical issues confronting workers and employers at the workplace. The International Labour Organization (ILO) announced that approximately 6,400 people die daily from work accidents and over eight hundred thousand are injured on the job. Occupational health is a neglected public health issue among health care workers, particularly in low resource nations. This has exposed healthcare workers in these areas to various forms of hazard that impact negatively on their wellbeing and performance at work. Occupational health is aimed at promoting and maintaining the highest degree of physical, mental, and social well-being of employees in all occupations. It also covers the prevention amongst workers of departures from health caused by their employment from risks

v. Nature of research:

This study aims to assess the level of knowledge, attitude, and behavior of workers toward occupational health and safety standards/guidelines among health workers in the East Akim municipality of Ghana. The people who can participate in the study are health staff in both Kibi and New Tafo government hospitals. I will need about 270 health workers to enroll in the study. As part of this study, your participation would be appreciated to achieve the objectives of this study.

vi. Participants involvement:

- **Duration /what is involved:**

You would be asked specific questions based on your knowledge and practice of occupational health and safety guidelines for Ghana Health Service and other relevant information for this study. Please respond appropriately and sincerely to the best of your knowledge. The questionnaire will take 20 to 30 minutes to complete.

- **Potential Risks:**

There is no anticipated risk and discomfort associated with partaking in this study.

- **Benefits:**

The findings of the study will provide current information on caregivers' knowledge and practices of OHS in the East Akim municipality. It will also help in identifying the gaps in knowledge and inappropriate safety practices of OHS which will inform stakeholders when planning interventions to improve on OHS standards in the municipality.

Participating in the study will not attract any cost.

- **Costs:**

The study is self-funded, therefore any cost incurred in the course of this research work will be bonded by the researcher.

- **Compensation:**

Compensation will not be given to participants for completing/answering the questionnaire, but a word of gratitude will be offered.

- **Confidentiality:**

All information elicited from participants will be kept confidential and used for the research purpose only.

- **Voluntary participation/withdrawal:**

Participation in this study is completely voluntary and you are free to withdraw your participation at any stage of this study without offering any reason. There would be no consequences or whatsoever to you.

- **Outcome and Feedback:**

All responses obtained will be held in confidence. Completed questionnaires will be locked in a cabinet, whereas electronic generated data will be protected by passwords. Data collected will be used purposely for academic work.

- **Feedback to participant:**

A copy of the results will be submitted to the East Akim municipal health directorate and also made available to the participants through the hospitals' administration and/or inservice training coordinators at the hospital's libraries.

- **Funding information:**

The study is fully funded by the Principal Investigator with no external support.

- **Sharing of participants Information/Data:**

Data collected will be used purposely for academic work. Anonymity will be ensured in the dissemination of findings from the study since participants would not be identified by their names.

Provision of Information and Consent for participants

A copy of the information sheet and consent form will be given to you after it has been signed or thumb printed to keep.

Who to Contact for Further Clarification/Questions:

The underlisted persons can be contacted in case of any issues/concerns that might emanate from the research work.

RESEARCHER'S CONTACT

Francis Kweku Sablah

Department of Biological, Environmental & Occupational Health

School of Public Health, University of Ghana

Telephone: 0242823544/0506628999

E-mail: francissablah@gmail.com

ETHICAL REVIEW ADMINISTRATOR

Nana Abena Apatu

Ethics Review Committee

Ghana Health Service

Adabraka

Telephone: 0503539896



INFORMED CONSENT

PARTICIPANTS' STATEMENT

I acknowledge that I have read or have had the purpose and contents of the Participants' Information Sheet read and satisfactorily explained to me in a language I understand (English Twi). I fully understand the contents and any potential implications as well as my right to change my mind (i.e. withdraw from the research) even after I have signed this form.

I voluntarily agree to be part of this research.

Name or Initials of Participant..... ID Code

Participants' SignatureOR Thumb Print OR Mark (Please specify)

Date:

INTERPRETERS' STATEMENT (where applicable)

I interpreted the purpose and contents of the Participants' Information Sheet to the aforementioned participant to the best of my ability in the (English Twi) language to his proper understanding.

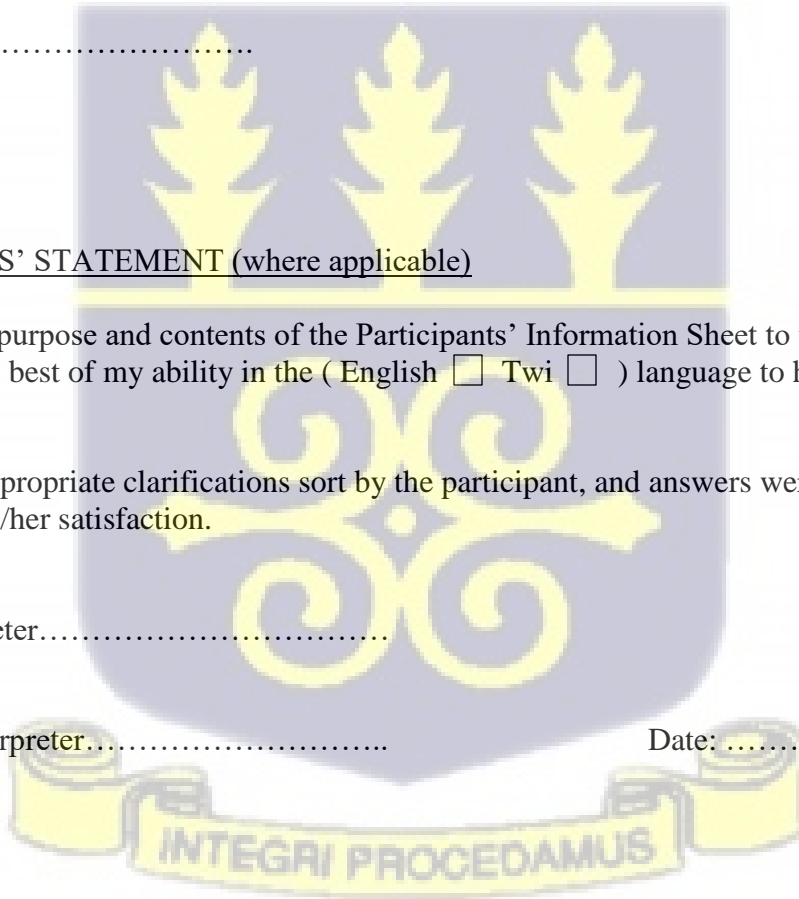
All questions, appropriate clarifications sort by the participant, and answers were also duly interpreted to his/her satisfaction.

Name of Interpreter.....

Signature of Interpreter.....

Date:

Contact Details



STATEMENT OF WITNESS (where applicable)

I was present when the purpose and contents of the Participant Information Sheet were read and explained satisfactorily to the participant in the language he/she understood (English, Twi)

I confirm that he/she was allowed to ask questions/seek clarifications and the same were duly answered to his/her satisfaction before voluntarily agreeing to be part of the research.

Name:

Signature..... OR Thumb Print OR Mark (please specify)

Date:

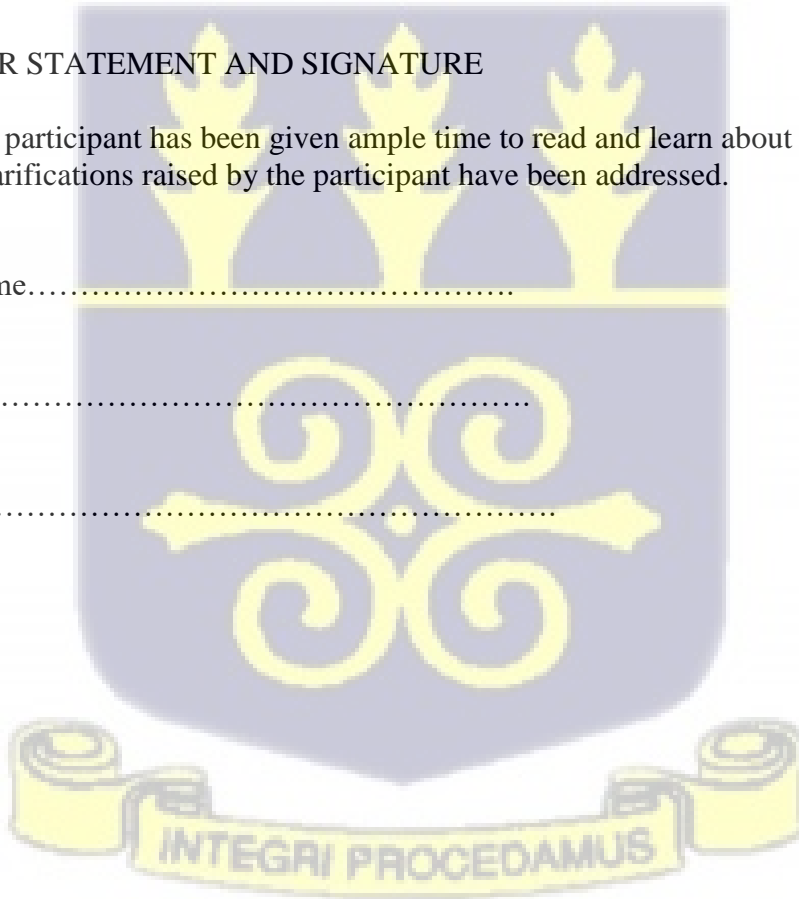
INVESTIGATOR STATEMENT AND SIGNATURE

I certify that the participant has been given ample time to read and learn about the study. All questions and clarifications raised by the participant have been addressed.

Researcher's name.....

Signature

Date.....



Appendix 3

STUDY QUESTIONNAIRE

OCCUPATIONAL HEALTH HAZARDS AND SAFETY PRACTICES AMONG HEALTH WORKERS AT EAST AKIM MUNICIPALITY OF GHANA

ID NO..... DATE.....

FACILITY.....

NAME OF INTERVIEWER..... INTERVIEWER CODE.....

SECTION A: SOCIO-DEMOGRAPHIC DATA OF HEALTH WORKER

Question Number	Question	Response
1.	How old were you on your last birthday?	Age in completed years:
2.	Sex a. Male b. Female	
3.	What is your current marital status? a. Single..... b. Married..... c. Widowed..... d. Divorced..... e. Separated..... f. Cohabitation.....	
4.	What is your highest level of education completed?	

	<ul style="list-style-type: none"> a. None..... b. Primary..... c. Middle/JSS..... d. SSS/A 'Level..... e. Tertiary..... f. Other (Specify) 	
5.	<p>What is your religious affiliation?</p> <ul style="list-style-type: none"> a. Christian..... b. Muslim..... c. Traditional..... d. Other (Specify) 	
6.	What is your profession/Job	State your profession
7.	<p>Years of working experience?</p> <ul style="list-style-type: none"> a. < 1 b. 1-5 c. 6-10 d. 11-15 e. 16-20 f. > 20 	
8.	<p>Which ethnic group do you belong to?</p> <ul style="list-style-type: none"> a. Ga-Adangbe b. Akan c. Ewe d. Hausa e. Dagonba f. Other (Specify) 	

SECTION B: KNOWLEDGE OF RESPONDENTS ON OCCUPATIONAL HAZARDS AND SAFETY PRACTICES

Question Number	Question	Response
9.	Awareness about occupational hazards in the health care facility? a. Yes b. No	
10.	Knowledgeable of occupational hazards and their categories a. Yes b. No c. Give two of the categories if yes...	
11.	Knowledgeable on occupational infections. a. Yes b. No c. State any two if yes.....	
12.	The most likely sources of occupational infections are a. b. c. d.....	
13.	Procedures where needle stick injuries are most likely to occur a. b. c. d.	

14.	<p>Procedures that violate the standard precautions</p> <p>a.</p> <p>b.</p> <p>c.</p> <p>d.</p>	
15.	<p>Occupational cross-infection after clinical procedures could be prevented by effective hand washing</p> <p>a. True</p> <p>b. False</p>	
16.	<p>Knowledgeable of physical hazards</p> <p>a. Yes</p> <p>b. No</p> <p>c. 2 examples.....</p>	
17.	<p>Knowledgeable of chemical hazards</p> <p>a. Yes</p> <p>b. No</p> <p>c. 2 examples.....</p>	
18.	<p>Knowledgeable of biological hazards</p> <p>a. Yes</p> <p>b. No</p> <p>c. 2 examples.....</p>	
19.	<p>Knowledgeable of ergonomic hazards</p> <p>a. Yes</p> <p>b. No</p> <p>c. 2 examples.....</p>	

20.	<p>Knowledgeable of mechanical hazards</p> <p>a. Yes</p> <p>b. No</p> <p>c. 2 examples</p>	
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SECTION C: ATTITUDE OF RESPONDENTS TOWARDS OCCUPATIONAL HAZARDS AND SAFETY PRACTICES

Question Number	Question	Response		
		Agree	undecided	Disagree
21.	Occupational Health and Safety should be taken seriously and given prompt attention in the hospital.			
22.	Prevention of occupational hazard is a joint responsibility of the hospital management and the staff			
23.	Paying extra attention to occupational hazard is an unnecessary burden on me			
24.	Training of staff and provision of personal protective equipment is necessary to reduce the risk of exposure to an occupational hazard			
25.	Aprons and face masks should be worn in procedures where splash/spill of blood is likely			

26.	Gloves should always be worn when administering injections, starting IVs, and drawing blood			
27.	Hands should be properly washed after each contact with a patient			
28.	Used needles should NEVER be recapped			
29.	Sharps should be disposed of in sharps' boxes			
30.	Safety boxes should be located at close distances to where required procedures are administered			
31.	HBV, Measles, Mumps, Rubella, and Influenza vaccines should be received by all health workers			
32.	Prolonged standing by HCWs should be avoided			
32.	All exposures to occupational hazards should be reported and documented by appropriate authorities			
33.	Adequate staffing of HCFs will reduce occupational hazards			
34.	Incentives should be provided for adhering to universal standard precautions			

35.	Punitive actions should be taken against HCWs that violates standard safety precautions and practices			
36.	Exposure and infection control policies (standard operating procedures) should be regularly reviewed and updated by the hospital management			

SECTION D: WORK ENVIRONMENT AND SAFETY BEHAVIOR (CULTURE)

Question Number	Question	Response				
		1	2	3	4	5
		Strongly disagree	Disagree	Neither disagree or agree	Agree	Strongly agree
37.	Elements of the safety guidelines					
	• A copy of the G.H.S. Occupational Health and Safety guidelines/Standard is available in my hospital library.					
38.	• In my hospital, there is a safety committee.					
39.	• Health and safety inspections of my work area are conducted at least once a year.					
40.	• On my unit, a copy of the hospital's safety manual is available.					

41.	<ul style="list-style-type: none"> • On my unit, written safety policies are always available. 					
	Support for safety programs					
42.	<ul style="list-style-type: none"> • Where I work, employees are encouraged to make suggestions for improving work safety. 					
43.	<ul style="list-style-type: none"> • Investigations of reported accidents are top priorities where I work. 					
44.	<ul style="list-style-type: none"> • Exposures to blood/bodily fluids from HIV/AIDS patients are always investigated. 					
45.	<ul style="list-style-type: none"> • On my unit, all reasonable steps are taken to minimize hazardous job tasks and procedures. 					
46.	<ul style="list-style-type: none"> • Employees are encouraged to become involved in safety and health matters. 					
47.	<ul style="list-style-type: none"> • Managers on my unit do their part to ensure employee protection from occupational HIV/AIDS 					
48.	<ul style="list-style-type: none"> • Safety is regularly discussed at departmental meetings. 					
49.	<ul style="list-style-type: none"> • My immediate supervisor is concerned about my safety on the job. 					
50.	<ul style="list-style-type: none"> • On my unit, safety issues are considered when purchasing new equipment. 					

51.	<ul style="list-style-type: none"> • In my unit, managers attend safety seminars. 					
52.	Senior management support for safety					
53.	<ul style="list-style-type: none"> • The protection of workers from occupational exposure to HIV is a high priority with senior management where I work. 					
54.	<ul style="list-style-type: none"> • On my unit, senior-level management gets personally involved in safety activities. 					
55.	<ul style="list-style-type: none"> • I believe that senior management attitudes about Universal Precautions influence employee behavior. 					
56.	<ul style="list-style-type: none"> • I believe the ultimate responsibility for safety rests with top management. 					
57.	<ul style="list-style-type: none"> • In my facility, no significant compromises or shortcuts are taken when worker protection from infectious diseases is at stake. 					
	Communication and feedback about safety					

58.	• On my unit, employees, supervisors, and managers all work together to ensure the safest possible working conditions.					
59.	• There is minimal conflict within my department.					
60.	• The members of my unit always support one another.					
61.	• I feel comfortable reporting violations to my department supervisor.					
62.	• In my unit, communication is open between supervisors and staff.					
63.	• In my unit, unsafe work practices are corrected by supervisors.					
64.	• My supervisor often discusses safe work practices with me.					
65.	• If I were to experience a needlestick injury, I would report it.					
	Accountability and responsibility					
66.	• On my unit, my compliance with Universal Precaution procedures and practices is part of my annual written evaluation.					
67.	• Employees in my unit are rewarded for safe work behavior.					
68.	• Employees are disciplined or reprimanded when they fail to follow Universal Precautions.					

	Accessibility, availability, and quantity of safety equipment and supplies and engineering controls					
69.	• On my unit, personal protective equipment is readily available and accessible.					
70.	• I am provided with all of the necessary equipment and devices for me to protect myself from possible HIV exposures.					
71.	• Sharps containers are readily accessible in my work area.					
72.	• Disposable gloves are readily available in my work area.					
	Design, maintenance, and housekeeping of the work site					
73.	• My work area is kept clean.					
74.	• My work area is not cluttered.					
75.	• My work area is not crowded.					
	Training and education					
76.	• My hospital offers training sessions or special seminars on infection prevention.					
77.	• I have had the opportunity to be properly trained to use personal					

	protective equipment devices so that I can protect myself from HIV exposure.					
78.	• In my unit, managers encourage employees to attend safety seminars.					
79.	• Employees are taught to be aware of and to recognize potential health hazards at work.					
	Absence of job hindrances to safety					
80.	• My job duties do not interfere with my being able to follow Universal Precautions.					
81.	• I have enough time at work to always follow Universal Precautions.					
82.	• Staff is adequate for me to get my work done safely.					
83.	• I rarely have that much to do that it interferes with my ability to always follow Universal Precaution.					

SECTION E: EMPLOYEES' SELF-REPORTED COMPLIANCE WITH UNIVERSAL PRECAUTIONS

Question Number	Question	Response	
		Always (ie, Strict compliance)	Not always (ie, not strict compliance)
84	Dispose of sharp objects into a sharps container.		

85	Take special caution when using scalpels or other sharp objects.		
86	Dispose of all potentially contaminated materials into a red (and/or labeled) bag for disposal as biomedical waste.		
87.	Wear gloves while drawing a patient's blood.		
88.	Wear disposable gloves whenever there is a possibility of exposure to blood or other bodily fluids.		
89.	Never eat or drink while working in an area where there is a possibility of becoming contaminated with blood or body fluids.		
90.	Never recap needles that have been contaminated with blood.		
91.	Wash my hands after removing my disposable gloves.		
92.	Treat all materials that have been in contact with the patient's secretions as if they were infectious.		
93.	Promptly wipe all potentially contaminated spills with a disinfectant.		
94.	Never unscrew needles from needle holders that have been used to draw patient's blood.		
95.	Wear a disposable outer garment that is resistant to blood and bodily fluids whenever there is a good chance of soiling my clothes		
96.	Wear protective eye shields whenever there is a possibility of a splash or splatter to my eyes.		
97.	Wear a disposable face mask whenever there is a possibility of a splash or splatter to my mouth.		

SECTION F: Employees' reported hazard exposure incidents in the previous 6 months

Question Number	Question	
98	Were you exposed to any form of hazard in the previous 6 months a. Yes b. No	
99.	If the answer to the above is yes, what exposure incident type was it? a. Needle sticks b. Splashes c. Direct contacts d. Cuts e. Falls f. Musculoskeletal pains g. Assault h. Other (Specify).....	
100.	Was the incident reported and documented? a. Yes b. No	
101.	Was any action taken? a. Yes b. No	