ENSIGN GLOBAL UNIVERSITY, KPONG

EASTERN REGION, GHANA

FACULTY OF PUBLIC HEALTH

DEPARTMENT OF COMMUNITY HEALTH

OCCUPATIONAL HEALTH AND SAFETY PRACTICES AMONG WORKERS AT GHANA PORTS AND HARBOURS AUTHORITY (GPHA) IN TEMA IN THE GREATER ACCRA REGION OF GHANA

BY

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JUNE, 2025

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A THESIS SUBMITTED TO THE DEPARTMENT OF COMMUNITY HEALTH, FACULTY OF PUBLIC HEALTH, ENSIGN GLOBAL UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE MASTER OF PUBLIC HEALTH DEGREE

JUNE, 2025

DECLARATION

I, Kissi Dompreh-Ofori, hereby certify that except for references to other people's work, which I have duly cited, this project submitted to the Department of Community Health, Ensign Global University, Kpong is the result of my own investigation, and has not been presented for any other degree elsewhere.

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(Head of Academic Program)	Signature	Date

DEDICATION

This dissertation is dedicated to my family, whose unwavering support, love, encouragement, and belief in me made this journey possible. Their love and sacrifices have been my greatest strength throughout this research. This work is as much theirs as it is mine.

ACKNOWLEDGEMENT

I wish to express my appreciation to my supervisor, Dr. Stephen Manortey for his guidance and immense contribution throughout the study. I am very grateful for everything. I want to express my sincere gratitude to all of the faculty of Ensign Global University's Department of Community Health for helping and teaching me.

DEFINITION OF TERMS

Occupational Health and Safety (OHS): A multidisciplinary approach focused on promoting and maintaining the physical, mental, and social well-being of workers by preventing workplace hazards, injuries, and diseases.

Personal Protective Equipment (PPE): Safety gear such as helmets, gloves, goggles, reflective vests, and safety boots used to protect workers from occupational hazards.

Hazard: Any source of potential harm or danger in the workplace, including physical (machinery, noise), chemical (toxic substances), biological (infections), ergonomic (poor posture), and psychosocial (stress, workplace violence) hazards.

Risk: The likelihood that a hazard will cause harm, injury, or adverse health effects in the workplace.

Port Operations: The daily activities carried out at a port, including cargo handling, storage, vessel docking, and logistical management, which expose workers to various occupational hazards.

Workplace Accident: An unexpected event that results in injury, illness, or property damage within a work environment.

Health and Safety Training: Structured programs designed to educate workers on workplace hazards, safety protocols, emergency response procedures, and the proper use of protective equipment.

Emergency Procedures: Predefined actions and response plans implemented during workplace incidents such as fires, spills, equipment malfunctions, or medical emergencies.

Adherence to Safety Practices: The extent to which workers follow established safety guidelines, use protective equipment, and comply with workplace regulations to minimize risks.

Maritime Industry: The sector involving the transportation of goods and passengers by sea, including port operations, ship management, and logistics services.

LIST OF ABBREVIATIONS

GPHA - Ghana Ports and Harbours Authority

HBM - Health Belief Model

ILO - International Labour Organization

IMO - International Maritime Organization

IRB - Institutional Review Board

KAP - Knowledge, Attitude and Practice

MOH - Ministry of Health

NHIS - National Health Insurance Scheme

OHS - Occupational Health and Safety

PPE - Personal Protective Equipment

WHO - World Health Organization

ABSTRACT

Background: Occupational health and safety (OHS) is essential in high-risk environments such as ports and harbours, where workers are exposed to various hazards including physical, chemical, and psychosocial risks. The maritime sector's complex operations pose significant OHS risks, and despite the critical role of ports in economic development, there are limited context-specific studies on OHS practices in Ghanaian port settings, especially at GPHA Tema.

Aim: This study aimed to assess occupational health and safety practices among workers at the Ghana Ports and Harbours Authority (GPHA) in Tema, focusing on their knowledge, utilization of safety resources, and factors influencing adherence to safety protocols.

Methods: A descriptive cross-sectional survey design was employed involving 323 workers across six departments within GPHA-Tema. Stratified random sampling ensured departmental representation. Data were collected using structured questionnaires and analyzed using STATA software, with bivariate and multivariate logistic regression used to identify factors influencing OHS adherence.

Findings: The results revealed that 51.7% of respondents demonstrated good knowledge of OHS measures, while 53.9% showed good utilization of safety resources. Key motivators for OHS adherence included supervisor enforcement and personal awareness. However, gaps were identified in areas such as formal training participation, access to written safety manuals, and awareness of biological hazards. Support from management and perceived adequacy of resources were significant predictors of compliance.

Conclusion: While knowledge and basic adherence to OHS practices at GPHA Tema are encouraging, substantial gaps remain in training access, resource utilization, and policy

enforcement. Strengthening training programs, improving accessibility of safety materials, and fostering a safety-oriented organizational culture are recommended to enhance workplace safety.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

Occupational Health and Safety (OHS) is a critical aspect of workplace management, particularly in high-risk environments such as ports and harbours (Abugre, 2021). OHS is a multidisciplinary field concerned with the safety, health, and welfare of people at work. The goal of OHS programs is to foster a safe and healthy work environment, preventing workplace injuries and illnesses through the anticipation, recognition, evaluation, and control of hazards (ILO, 2017). This comprehensive approach to workplace safety is especially relevant in the maritime industry, where complex operations pose numerous risks. The International Labour Organization (ILO) estimates that approximately 2.3 million workers die annually from work-related accidents and diseases, with an additional 340 million suffering from occupational injuries (ILO, 2021). This global issue underscores the importance of robust OHS practices in all industries, including maritime and port operations.

Ports play a crucial role in global trade and economic development, acting as gateways for the movement of goods and serving as significant employment hubs (Rodrigue & Notteboom, 2020). However, the complex nature of port operations, involving heavy machinery, hazardous materials, and diverse work environments, poses numerous health and safety risks to workers. A study by Walters & Wadsworth (2021) highlighted that port workers face various occupational hazards, including physical injuries, exposure to harmful substances, and psychosocial risks, emphasizing the need for comprehensive OHS measures.

In the context of Ghana, the Ghana Ports and Harbours Authority (GPHA) is responsible for planning, building, developing, managing, maintaining, operating, and controlling ports in the country (Sena-Mawuli, 2021). The port of Tema, being one of the largest in West Africa, handles a significant portion of Ghana's import and export trade (Adams, 2021). With such a crucial role in the nation's economy, ensuring the health and safety of workers at GPHA Tema is not only a moral imperative but also essential for maintaining operational efficiency and productivity.

Recent studies have shown that implementing effective OHS practices in port settings can lead to significant improvements in worker well-being and operational performance (Mabuza, 2018; Walters et al., 2021; Walters *et al.,* 2020). For instance, Walters *et al.,* (2020) found that ports with comprehensive OHS programs experienced fewer accidents, reduced absenteeism, and improved worker satisfaction. However, the success of such programs heavily depends on various factors, including management commitment, worker participation, and the availability of resources.

Despite the recognized importance of OHS, challenges persist in many developing countries, including Ghana (Abugre, 2021). A report by the World Health Organization (WHO, 2020) noted that many low and middle-income countries struggle with inadequate OHS policies, limited resources, and insufficient awareness among workers and employers. This situation calls for continuous assessment and improvement of OHS practices, particularly in critical sectors like port operations.

1.2 Problem Statement

The maritime industry, particularly port operations, continues to face significant occupational health and safety challenges despite advancements in technology and safety protocols (Corrigan *et al.,* 2019). In developing countries, where regulatory frameworks may be less robust, these risks can be even more severe. The World Health Organization (WHO, 2022) reports that low- and

middle-income countries bear over 80% of the global burden of occupational accidents and diseases despite having only 70% of the global workforce. In the transportation and storage sector, which includes port operations, the fatal occupational injury rate is estimated at 16.1 per 100,000 workers globally (Hämäläinen *et al.*, 2017).

In Ghana, the broader occupational safety landscape reveals concerning trends. A study by *Amponsah-Tawiah and Dartey-Baah* (2016) highlights how Ghana continues to face challenges in implementing OHS policies across industries. According to recent reports, only 40% of companies in Ghana have a formal Occupational Health and Safety (OHS) policy (Atarah *et al.*, 2023). This significant gap in OHS management puts workers at greater risk, particularly in high-risk sectors such as port operations.

Moreover, the rapid modernization of port operations introduces new challenges. A study by *Sætren and Laumann* (2015), although not specific to Ghana, highlights that the introduction of new technologies in ports can create new safety risks if not properly managed. This finding is likely relevant to GPHA Tema as it continues to modernize its operations.

Despite these challenges, there is a lack of comprehensive, context-specific research on OHS practices in Ghanaian ports, particularly at GPHA Tema. While global studies provide valuable insights, they may not fully capture the unique cultural, economic, and operational factors that influence OHS practices in Ghana. Additionally, there is limited understanding of how workers' knowledge, resource availability, and various influencing factors interact to shape OHS outcomes in this specific context. This study aims to fill this research gap by assessing the occupational health and safety practices among workers at Ghana Ports and Harbours Authority (GPHA), Tema.

1.3 Rationale of the Study

Occupational health and safety (OHS) in port environments represents a significant public health concern, as port workers face elevated risks of workplace injuries, occupational diseases, and fatalities that extend beyond individual workers to affect families and communities. Poor OHS practices in ports can lead to increased healthcare costs, loss of a productive workforce, and broader socioeconomic impacts on Ghana's coastal communities that depend on port operations for their livelihoods.

This study addresses a critical public health gap by examining OHS practices in Ghanaian ports, where limited research exists despite the substantial health risks faced by thousands of workers daily. Port-related occupational hazards, including exposure to hazardous chemicals, heavy machinery accidents, and ergonomic injuries contribute to preventable morbidity and mortality that strain Ghana's healthcare system and reduce quality of life for workers and their families.

The public health significance of this research extends to informing evidence-based interventions that can prevent occupational injuries and diseases, reducing the burden on healthcare services, and improving population health outcomes in port communities. By identifying factors that influence safety compliance, this study will provide actionable insights for developing targeted public health strategies that protect vulnerable worker populations.

Furthermore, the findings will enable policymakers to develop regulations that not only improve workplace safety but also contribute to broader public health goals, including reducing healthcare inequities and promoting healthy working conditions as a fundamental right. This research ultimately serves the public interest by working toward safer ports that protect both individual

workers and community health while supporting Ghana's economic development through improved maritime operations.

1.4 Conceptual Framework

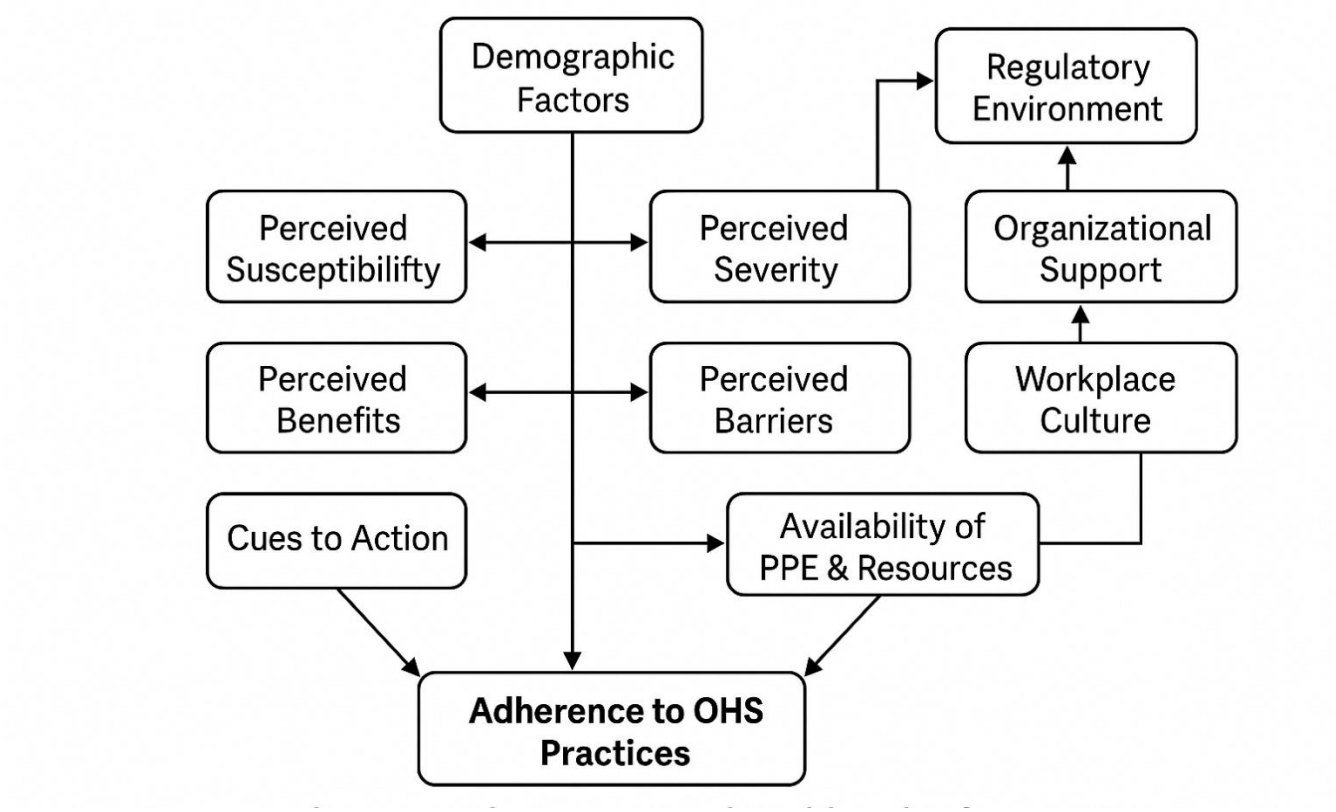

Figure 1: Conceptual Framework of Study

Source: Adapted from the Health Belief Model *(Champion and Skinner, 2018)*

The conceptual framework of this study is grounded in the Health Belief Model (HBM), a psychological model that explains and predicts health-related behaviours by focusing on individuals' beliefs and attitudes. Originally developed to understand preventive health behaviours, the HBM has been extensively applied to various public health issues, including occupational safety. For this study, which seeks to investigate the determinants of adherence to Occupational Health and Safety (OHS) practices, the model has been expanded and adapted to reflect a more comprehensive and context-sensitive understanding of worker behaviour.

At the core of the framework is the concept of adherence to OHS practices, which refers to the consistent and correct application of safety protocols, use of protective equipment, and participation in safety-related training or interventions. This behaviour is influenced by several key constructs from the HBM: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy.

Perceived susceptibility refers to an individual's belief about the likelihood of experiencing a workplace injury or illness. Workers who perceive themselves to be at high risk are more likely to engage in protective behaviours. Similarly, perceived severity relates to one's understanding of the potential seriousness of an occupational hazard, including physical, financial, or emotional consequences. Together, these beliefs shape a worker's motivation to take precautionary measures.

Perceived benefits represent the individual's assessment of the advantages of adhering to OHS practices, such as reduced risk of harm, increased productivity, or compliance with regulations. Conversely, perceived barriers reflect the challenges or obstacles that may prevent individuals from following safety protocols, such as time constraints, discomfort associated with protective gear, or lack of managerial support.

Cues to action are the external or internal stimuli that prompt the adoption of health behaviors. In the workplace context, these may include safety trainings, warning signs, reminders from supervisors, or witnessing an accident. Self-efficacy, the belief in one's ability to successfully execute a behaviour, is also critical. Workers who feel confident in their ability to follow safety procedures are more likely to adhere to them consistently.

While these constructs form the foundation of the HBM, this study acknowledges that health-related behaviour is not shaped in a vacuum. Therefore, additional intervening variables have been incorporated to reflect the complexity of the occupational environment. These include

demographic factors such as age, gender, level of education, and years of work experience, which may influence individual perceptions and behaviours.

Moreover, organizational support and workplace culture have been introduced as important contextual factors. A culture that prioritizes safety, alongside tangible support from management such as provision of equipment and regular safety audits, can enhance the impact of individual-level perceptions. Previous experience with workplace accidents or training has also been included both as a determinant and a reinforcing feedback variable. Workers who have experienced past incidents or have undergone relevant safety interventions may adjust their beliefs and behaviors accordingly.

This adapted conceptual framework provides a multidimensional view of the factors that influence OHS adherence. By situating the individual within a broader socio-organizational context, the model serves not only as a theoretical guide for the study but also as a practical roadmap for identifying leverage points for intervention in workplace safety programs.

1.5 Research Questions

1. What is the current knowledge level of occupational health and safety measures among GPHA workers in Tema?
2. How utilized are occupational health and safety resources at GPHA, Tema?
3. What factors influence adherence to occupational health and safety practices among workers at GPHA, Tema?

1.6 General Objective

To assess the occupational health and safety practices among workers at Ghana Ports and Harbours Authority (GPHA), Tema.

1.7 Specific Objectives

1. To assess the current knowledge of occupational health and safety measures among GPHA workers in Tema.
2. To evaluate the utilization of occupational health and safety resources at GPHA, Tema.
3. To identify factors influencing adherence to occupational health and safety practices among workers at GPHA, Tema.

1.8 Profile of Study Area

The Ghana Ports and Harbours Authority (GPHA) manages Ghana's seaports, with Tema Port being the largest and most significant. Located in the Greater Accra Region, approximately 30 kilometres east of Accra, Tema Port serves as a crucial gateway for Ghana's international trade. Commissioned in 1962, Tema Port has undergone significant expansion and modernization over the years. It now features advanced infrastructure including multiple terminals, docks, warehouses, and storage facilities, handling the majority of Ghana's imports and exports.

The port environment is characterized by diverse operations such as cargo handling, storage, customs processing, and ship services. These activities involve the use of heavy machinery, cranes, and forklifts, creating a high-risk environment for workers. The workforce at Tema Port includes stevedores, dockworkers, engineers, administrative staff, and other support personnel (GPHA website). Given the nature of port activities, occupational health and safety are critical concerns at Tema Port. Workers face various risks including heavy lifting, machinery accidents, exposure to hazardous substances, and environmental factors like noise and dust. The complex interplay of these diverse operations, advanced technology, and potential occupational hazards makes Tema Port an excellent setting for research on occupational health and safety practices in a dynamic industrial environment.

1.9 Scope of Study

This study focuses on assessing occupational health and safety (OHS) practices among workers at the Ghana Ports and Harbours Authority (GPHA) in Tema. The study specifically examines the knowledge of OHS measures among employees, their utilization of available OHS resources, and the factors influencing adherence to safety practices. Given the diverse operational structure of GPHA, the study includes workers from six key departments: Health Services, Port Operations, Fire and Safety, Security, Logistics, and Administrative Staff.

The study employs a descriptive cross-sectional survey design to capture a snapshot of OHS practices at a single point in time. Using a stratified random sampling technique, participants are proportionally selected from each department to ensure fair representation. The final sample size, determined using Yamane's formula, accounts for both the workforce distribution and a non-response buffer. Data is collected through structured questionnaires, allowing for quantitative analysis of key variables, including knowledge levels, resource accessibility, and compliance with safety protocols. The study is limited to full-time employees who have worked at GPHA for at least one year, ensuring that participants have sufficient experience with workplace safety measures.

In terms of geographical scope, the research is conducted within GPHA's Tema Port operations, excluding other port facilities in Ghana such as the Takoradi and Inland Port operations. The findings are, therefore, context-specific to GPHA Tema but may offer insights applicable to other maritime and port environments. This study does not cover external stakeholders such as contractors, shipping companies, or regulatory agencies, nor does it evaluate OHS policy implementation at the national level. Instead, the focus remains on internal workforce safety behaviours, challenges, and opportunities for improvement within GPHA Tema.

1.10 Organization of Report

This thesis is organized into six main chapters, each addressing different aspects of the study:

Chapter One: Introduction – This chapter provides background information on occupational health and safety (OHS), highlighting its importance in port operations. It includes the problem statement, research rationale, conceptual framework, research questions, objectives, study area profile, scope, and organization of the report.

Chapter Two: Literature Review – This chapter examines existing literature related to occupational health and safety. It explores relevant theories, global and regional trends in OHS, studies conducted in Ghanaian ports, knowledge and utilization of safety measures, and key factors influencing adherence to OHS practices. The chapter also identifies research gaps that this study aims to address.

Chapter Three: Methodology – This chapter details the research design, study population, sampling techniques, and data collection methods. It explains how the sample size was determined, the process of data collection, and the ethical considerations taken into account. Additionally, it outlines how the collected data was processed and analysed.

Chapter Four: Results – This chapter presents the findings of the study using descriptive and inferential statistical analyses. The data is organized in tables, charts, and graphs to enhance clarity and readability.

Chapter Five: Discussion – This chapter interprets the results in relation to existing literature, highlighting key trends, patterns, and factors influencing OHS practices among GPHA workers. It also explores the implications of the findings on policy and practice.

Chapter Six: Conclusion and Recommendations – The final chapter summarizes the study's key findings, discusses their implications for policy and practice, and provides recommendations for improving OHS practices at GPHA Tema. It also highlights areas for future research.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This study aims to assess occupational health and safety practices among workers at Ghana Ports and Harbours Authority (GPHA) in Tema. Occupational Health and Safety (OHS) remains a critical workplace management concern, particularly in high-risk environments such as ports and harbours where complex operations pose numerous risks to worker wellbeing. This literature review explores the theoretical foundations of workplace safety behaviour. It examines current evidence regarding OHS knowledge, resource utilization, and barriers to safety practices, drawing from global, African, and specifically Ghanaian contexts.

2.2 Theory Underpinning the Study

The Health Belief Model (HBM) was developed in the 1950s by social psychologists Hochbaum, Rosenstock, and Kegels at the U.S. Public Health Service to understand people's failure to adopt disease prevention strategies and screening tests for early detection of disease. The model emerged from a study investigating why free tuberculosis screening programs had low participation rates (Rosenstock, 1974). Since its development, the HBM has become one of the most widely used conceptual frameworks for understanding health behaviour, particularly in relation to preventive health behaviours.

The HBM posits that health-related behaviours are influenced by six key constructs. According to *Champion and Skinner* (2008), these constructs include perceived susceptibility (belief about getting a disease), perceived severity (belief about the seriousness of a condition), perceived benefits (belief in efficacy of the advised action), perceived barriers (belief about costs of the advised action), cues to action (strategies to activate readiness), and self-efficacy (confidence in

one's ability to take action). The model suggests that individuals are more likely to engage in preventive health behaviours when they perceive themselves as susceptible to a health condition, view the condition as serious, believe in the benefits of preventive actions, and perceive few barriers to taking those actions.

Recent studies have demonstrated the HBM's relevance to occupational safety. For instance, *Zhang et al.* (2021) found that workers with higher perceived susceptibility to workplace hazards were more likely to consistently use personal protective equipment. Similarly, *Abdullah and Weng* (2020) showed that perceived barriers and self-efficacy significantly predicted compliance with safety protocols in maritime operations.

2.2.1 Implications for Current Study

The HBM provides a theoretical foundation for the current study at GPHA Tema for several reasons. First, the model's emphasis on individual perceptions aligns with the study's objective of assessing workers' knowledge and utilization of OHS measures. Understanding how workers perceive their susceptibility to workplace hazards and the severity of potential injuries can help explain their safety behaviours.

Furthermore, the model's construct of perceived barriers directly relates to the study's aim of identifying obstacles to OHS practice. As demonstrated by recent work (Muhammad et al., 2020), the HBM framework effectively captures both individual and organizational barriers that influence safety behaviours in high-risk industrial settings. This theoretical lens will help systematically examine how workers' beliefs, knowledge, and environmental factors interact to influence their adherence to safety practices at GPHA.

2.3 Global and Regional Context of OHS

2.3.1 Global Statistics and Trends

Occupational health and safety remain a critical global concern, particularly in high-risk sectors like maritime operations and port facilities (Shan, 2022). According to the International Labour Organization (ILO, 2021), approximately 2.3 million workers die annually from occupational accidents and work-related diseases globally, with an additional 340 million workers suffering from occupational injuries. The transportation and storage sector, which includes port operations, has one of the highest fatality rates among all industrial sectors.

Port operations present unique occupational hazards due to their complex nature involving heavy machinery, cargo handling, and exposure to various environmental conditions (Vilko et al., 2019). An analysis by *Johnsen et al.* (2021) demonstrated that the increasing automation of port operations, while reducing some traditional risks, has created new safety challenges related to human-machine interfaces and system complexity. Their study highlighted how technological advancement without proper safety protocols can increase occupational risks.

The economic impact of occupational accidents in the maritime sector is substantial. Research by *Walters and Wadsworth* (2021) found that workplace accidents in ports significantly impact operational efficiency and create substantial direct and indirect costs including medical expenses, lost productivity, equipment damage, and compensation claims. *Walters and Wadsworth* (2021) study of global port operations revealed that ports with comprehensive occupational health and safety programs experienced fewer accidents and showed improved worker satisfaction.

The COVID-19 pandemic has significantly reshaped port safety practices globally (Notteboom, et al., 2021; Chua et al., 2022). According to *Chua et al.* (2022) examining international ports found

that the pandemic necessitated substantial modifications in work procedures, including enhanced personal protective equipment requirements and new protocols for crew changes. Many of these enhanced safety measures have now become standard practice in ports worldwide.

2.3.2 Sub-Saharan African Perspective

In sub-Saharan Africa, occupational health and safety in port operations face distinct challenges shaped by infrastructure limitations and regulatory constraints (Konstantinus & Woxenius, 2022). According to *Walters et al*. (2020), ports in sub-Saharan Africa struggle with implementing comprehensive occupational safety measures due to resource constraints, inadequate infrastructure, and limited technical capacity. Their study of container terminal operations revealed significant gaps in safety management systems, particularly in areas of risk assessment and preventive maintenance.

Healthcare delivery systems within port facilities also present crucial challenges. Maritime operations in sub-Saharan Africa face significant challenges in occupational health service provision, with many ports struggling to maintain adequate healthcare facilities and safety monitoring systems. Resource constraints and technical capacity limitations often affect the implementation of comprehensive safety programs (ILO, 2021).

Regional efforts to improve port safety in sub-Saharan Africa demonstrate mixed outcomes. According to *Christodoulou-Varotsi* (2024) while many African ports have adopted international safety standards, implementation remains inconsistent. Their analysis revealed that resource constraints, limited technical capacity, and gaps in monitoring systems continue to affect the sustainability of safety programs (Christodoulou-Varotsi, 2024).

The implementation of safety protocols shows marked variations across different regions. Findings from *Debela et al.,* (2023) demonstrate that while formal safety policies often exist, their practical implementation faces numerous obstacles, including resource limitations, inadequate supervision, and insufficient training programs. This implementation gap significantly impacts the effectiveness of occupational safety measures in port operations.

Traditional safety practices often intersect with modernization efforts in African ports, creating unique challenges. According to *Brunila et al.* (2021), the rapid introduction of modern cargo-handling equipment in traditional port settings requires careful consideration of local contexts and worker capabilities. Their research emphasized the importance of adapting international safety standards to local conditions while maintaining core safety principles.

2.3.3 Ghanaian Context and Statistics

In Ghana, the management of occupational health and safety within port operations continues to evolve amidst various challenges. According to *Abugre* (2021), despite the existence of regulatory frameworks, port operations in Ghana face significant challenges in implementing comprehensive safety measures, particularly in areas of risk assessment and hazard control.

The historical context of occupational safety in Ghanaian ports is closely tied to the establishment and development of the Ghana Ports and Harbours Authority (GPHA). *Adams* (2021) documents that while initial safety protocols were basic, subsequent reforms have attempted to align port safety standards with international best practices. However, the implementation of these standards has been hampered by various institutional and resource constraints.

Infrastructure development has significantly influenced occupational safety patterns in Ghanaian ports. *Sena-Mawuli* (2021) highlights how the expansion of port facilities, particularly in Tema,

has introduced new safety challenges requiring enhanced safety management systems. Their research emphasizes the need for safety protocols to evolve alongside technological advancements and increased operational complexity.

Asiedu et al. (2023) report that Ghana continues to face challenges in implementing occupational health and safety policies across industries. According to their findings, many companies struggle with maintaining consistent safety standards due to limited resources and inadequate monitoring mechanisms. This broader industrial safety context significantly influences port operations' safety management.

Training and capacity building present particular challenges in Ghanaian ports. Research by *Atarah et al.* (2023) reveals significant gaps in specialized safety training and certification programs. Their study emphasizes the importance of continuous professional development in maintaining effective safety standards, particularly in high-risk operational areas.

The regulatory framework for occupational safety in Ghanaian ports, while comprehensive on paper, faces implementation challenges. According to *Boadu et al.,* (2021), the enforcement of safety regulations is often hampered by resource constraints and institutional capacity limitations. Their research highlights the need for strengthened monitoring and evaluation systems to ensure compliance with established safety protocols.

2.4 Knowledge of Occupational Health and Safety Measures

Understanding of occupational health and safety practices in maritime operations shows significant variation across different workforce segments. According to *Walters et al.* (2020), knowledge of safety protocols is particularly crucial in terminal operations where workers face multiple hazards daily. Their research across global container terminals revealed that workers' comprehension of

safety measures varies considerably based on workplace arrangements and management approaches.

Work experience emerges as a critical factor in safety knowledge development. *Ng and ILIAS* (2023) found that while experienced maritime workers demonstrate strong practical safety knowledge, their adherence to new safety protocols can be influenced by established work habits. The study highlighted how years of operational experience, while valuable, must be balanced with ongoing safety training to ensure current best practices are followed.

The relationship between work pressure and safety knowledge application presents interesting patterns. *Nævestad et al.* (2019) examined how work pressure affects safety behaviour in maritime operations. Their findings revealed that even when workers possess adequate safety knowledge, high work pressure can lead to compromised safety practices, suggesting that knowledge alone doesn't guarantee safe behaviour.

Chemical safety knowledge represents another particular concern in port operations. *Nelaj* (2023) conducted a systematic review of chemical safety knowledge in ports, identifying significant gaps in workers' understanding of proper handling procedures and emergency responses. Their research emphasized the need for specialized training in hazardous materials handling, particularly in ports where workers regularly encounter various chemical substances.

The International Maritime Organization (2023) provides comprehensive guidelines for maritime safety knowledge management, emphasizing the importance of systematic approaches to safety training and knowledge dissemination. Their guide highlights how effective knowledge management systems can significantly improve workplace safety outcomes when properly implemented and maintained (Aiken, 2024).

Knowledge and understanding of personal protective equipment (PPE) significantly influence its utilization. Studies have shown that PPE usage varies considerably (10% to 82%) based on multiple factors including accessibility, adequacy, affordability, and user comfort (Diaz-Quijano et al., 2018). Research indicates that workers' knowledge of PPE is significantly influenced by safety training, education levels, and workplace regulations. However, knowledge alone doesn't guarantee proper PPE usage - studies reveal that comfort, fit, and workers' perception of necessity also play crucial roles in adherence to PPE requirements (Asgedom et al., 2019; Diaz-Quijano et al., 2018).

Training effectiveness significantly influences knowledge retention and application (Fletcher et al., 2018). According to (Bertidis, 2020; Hermansson & Papamatthaiou, 2021). Port authorities implementing regular refresher training sessions report higher levels of worker knowledge retention compared to those relying solely on initial safety orientations. Empirical evidence suggests that interactive training methods, including practical demonstrations and simulations, lead to better understanding and retention of safety procedures compared to traditional classroom instruction (Türkistanl, 2024; Sharma, 2023; Maghorom, 2023).

Environmental factors affecting workplace safety require specific knowledge sets. Maritime workers need to understand how weather conditions, tide patterns, and other environmental variables impact operational safety (Göksu, & Arslan, 2020). However, studies show that this aspect of safety knowledge often receives less attention in training programs despite its critical importance (Garcia-Alonso et al., 2020; Maternová et al.,2023).

Documentation and reporting procedures constitute another vital knowledge area. Workers' understanding of incident reporting requirements, near-miss documentation, and safety violation reporting procedures directly impacts the effectiveness of safety management systems (Haas et al.,

2020). Improved knowledge of reporting procedures correlates with better safety outcomes and reduced incident rates (Kalteh et al.,2021; Haas et al., 2020).

Knowledge transfer mechanisms and peer learning dynamics represent significant aspects of OHS knowledge development in port settings. Research by *Haas et al.* (2020) revealed that informal knowledge sharing among workers significantly influences safety practices. Their study found that experienced workers often serve as unofficial mentors, sharing practical safety insights that complement formal training programs.

Safety culture awareness emerges as another crucial knowledge domain. According to *Garcia-Alonso et al.* (2020), workers' understanding of organizational safety culture significantly impacts their interpretation and application of safety protocols. Their research demonstrated that workers with better comprehension of safety culture values showed more consistent adherence to safety practices and demonstrated greater initiative in identifying potential hazards.

Risk perception and assessment knowledge plays a vital role in proactive safety management. *Kalteh et al.* (2021) found that workers' ability to accurately assess workplace risks varies significantly based on their understanding of complex operational interactions. Their study emphasized how comprehensive knowledge of risk assessment principles enables workers to make better safety decisions, particularly in dynamic port environments.

2.5 Utilization of Occupational Health and Safety Resources

The maritime industry's complex operational environment demands effective utilization of various safety resources to protect worker wellbeing (Nelaj, 2023). Beyond mere availability, the practical application and consistent use of these resources significantly impact workplace safety outcomes (Devereux, 2017; Nelaj, 2023). *Walters and Wadsworth* (2021) found that effective resource

utilization in container terminals depends heavily on organizational safety culture and systematic management approaches rather than just resource availability.

Port modernization has introduced sophisticated safety monitoring systems and automated safety controls, transforming how safety resources are utilized (Sadiq et al., 2021). However, *Lee et al.* (2023) discovered that despite technological advancements, effective utilization varies significantly across ports. Their research revealed that while advanced safety systems were often installed, their effective utilization was frequently hampered by inadequate user training and resistance to new technologies.

Personal protective equipment (PPE) represents a fundamental safety resource in port operations (Diaz-Quijano et al., 2018). A study by *Lu et al.* (2023) in Asian ports demonstrated that PPE utilization rates vary significantly across different operational areas. While basic PPE like hard hats and safety boots showed relatively high usage rates, specialized protective equipment for specific hazards often saw lower utilization despite availability. They found that proper allocation and accessibility of PPE significantly influenced consistent usage patterns.

The allocation and deployment of safety personnel emerges as another crucial aspect of resource utilization. Research examining how ports utilize their safety officers and health professionals found that facilities with integrated safety teams achieved better outcomes compared to those with fragmented safety management structures (Størkersen, 2021; Nelaj, 2023). The International Maritime Organization (2021) emphasizes that successful resource utilization requires balanced distribution across different operational areas based on risk assessment and operational needs.

In the same vein, *Liu and Chang*, (2020) and *Liyanage and Villalba-Romero* (2021) demonstrated that ports with regular emergency drills and clear response protocols showed significantly better resource utilization during actual emergencies. According to *Liu and Chang*, (2020) while most

ports maintain basic first aid stations, their effective utilization often depends on workers' awareness of these facilities and confidence in using emergency equipment.

Consequently, Safety training resources show varying levels of utilization across port facilities. *Casey et al.* (2021) found that practical, hands-on safety training sessions achieved higher participation and engagement rates compared to traditional classroom instruction. However, their research also highlighted challenges in maintaining consistent participation in ongoing safety education programs, particularly when operational demands compete with training schedules.

2.6 Barriers to Occupational Health and Safety Practices

The implementation of occupational health and safety practices in port operations faces multiple complex challenges that hinder effective safety management (Abugre, 2021). *Walters and Wadsworth* (2021) found that barriers exist at various levels including organizational, individual, and systemic- creating a complex web of challenges that affect safety outcomes in maritime operations.

Resource constraints significantly impact safety practice implementation in port operations. Research by *Wang et al.* (2024) examining risk development process for port authority revealed that financial limitations often affect the quality and consistency of safety programs. Their study found that while ports recognize the importance of comprehensive safety measures, budget constraints frequently result in compromised safety initiatives and delayed maintenance of safety equipment.

Organizational culture also emerges as a crucial factor influencing safety practice adherence. *Alamoush et al.* (2021) demonstrated that hierarchical structures and production pressures in port operations often create environments where safety concerns become secondary to operational

targets. Their research highlighted how tight schedules and productivity demands can lead to shortcuts in safety procedures, particularly during peak operational periods.

Communication barriers present significant challenges in multilingual port environments. According to *Lyu et al*. (2022), language differences and cultural variations often complicate the effective transmission of safety instructions and emergency procedures. Their study revealed that misunderstandings due to communication gaps contributed to safety procedure violations and increased accident risks.

Worker resistance to change poses another significant barrier, particularly when implementing new safety protocols (Ikpogu, 2021). Research by *Ikpogu* (2021) found that established work practices and ingrained habits often conflict with updated safety requirements. Their findings showed that workers with long-standing experience sometimes resist adopting new safety measures, perceiving them as unnecessary or disruptive to their established work routines.

Technical complexity in modern port operations creates additional barriers to safety practice implementation. *Popoola et al.* (2024) examined how increasing automation and technological advancement, while aimed at improving safety, can introduce new challenges. Their research revealed that inadequate training on new equipment and systems often leads to improper use or complete avoidance of advanced safety features.

2.7 Research Gaps and Innovation

Despite extensive research on occupational health and safety in maritime operations, several important gaps persist. While studies have documented various aspects of OHS in port operations, research has mainly focused on major ports in developed nations, with limited attention to ports in developing countries like Ghana (Walters & Wadsworth, 2021). Additionally, most studies concentrate on accident statistics and compliance rates rather than examining the complex

interplay between knowledge, resource utilization, and barriers to safety practices. The literature also reveals a significant gap in understanding the effectiveness of safety training programs in multilingual port environments. While studies acknowledge communication challenges, there is limited research on innovative approaches to overcome language and cultural barriers in safety training delivery (Lyu et al., 2022). These gaps highlight the need for context-specific research that can provide detailed insights into safety practices. Such research could inform the development of more effective, culturally appropriate safety interventions and training programs.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study Design

A descriptive cross-sectional survey design was employed for this study. This design involves collecting data from a population or a representative subset at a single point in time, making it suitable for assessing prevalence and associations between variables without requiring long-term follow-up (Levin, 2006; Setia, 2016). Key advantages include its cost-effectiveness, efficiency, and ethical simplicity, as no interventions are applied (Philip, 2014). However, its main limitation is the inability to establish causality, since exposure and outcome are measured simultaneously (Mann, 2003). There is also a risk of recall or reporting bias, particularly when dealing with self-reported data on sensitive issues like contraceptive use (Coughlin, 1990).

3.2 Study Site

The study was conducted at the Ghana Ports and Harbours Authority (GPHA) in Tema, which serves as one of the key ports in Ghana. GPHA Tema is responsible for managing port activities, including cargo handling, shipping, and logistics. The port covers a vast area along the eastern coast of Ghana and is a crucial hub for trade and commerce in the country. The workforce at GPHA Tema comprises various categories of workers, including dockworkers, administrative staff, engineers, and safety officers, making it an ideal site to study occupational health and safety practices in a high-risk industrial environment.

3.3 Study Population

The study population consists of employees from the following departments at Ghana Ports and Harbours Authority (GPHA): Health Services, Port operations, Fire and safety, Security, Logistics and Administrative staff.

3.4 Inclusion and Exclusion Criteria

Inclusion Criteria:

- Employees aged 18 years and above.
- Employees who have worked with GPHA for more than one year.
- Full-time employees of GPHA in the selected Departments.
- Employees who voluntarily consent to participate in the study.

Exclusion Criteria:

- Employees on extended leave or absent during the study period
- Temporary or contract workers
- Employees less than a year
- Employees who do not consent to participate in the study

3.5 Sampling Technique

The study employed a Stratified Random Sampling Technique, which is particularly well-suited to the departmental structure of GPHA. This method, as described by Taherdoost (2016), ensures that each department is adequately represented in the final sample while maintaining the principle of randomness within each stratum. The process began by dividing the entire GPHA workforce into strata, with each stratum corresponding to one of the six departments: Health Services, Port Operations, Fire and Safety, Security, Logistics, and administrative staff.

Once the population was stratified, the next step involved calculating the proportion of employees in each stratum relative to the total workforce. This calculation was crucial as it allowed for the maintenance of the actual departmental representation ratios in the final sample. Following this, simple random sampling was applied within each stratum to select the actual participants. This approach ensured that every employee within a given department had an equal chance of being selected, thus preserving the randomness of the sample within each stratum.

3.6 Sample Size

The total number of workers included in the study was about 3000 (source from GPHA). To calculate the sample size for a finite population of 3000, the Yamene's formula was used.

$$n = \frac{N}{\{(1 + N(e^2)\}}$$

Where:

n = sample size

N = population size (3000)

e = margin of error (let's use 5% or 0.05)

Therefore;

$$n = \frac{3{,}000}{\{(1 + (3{,}000)(0.05^2)\}} \approx 353$$

A 10% non-response rate was estimated on the calculated sample (≈ 35) and then added to it bringing the total working sample to 388. The proportional allocation technique was used to determine the needed stratum size for each of the six (6) selected Departments using the formula

$$n_h = \left(\frac{N_h}{N}\right) \times n$$

where

n_h = projected sample size of a particular Department

N_h = Population size of a particular Department

N = Total population of GPHA staff

n = working sample size

The Department-focused sample size was then computed using the proportional allocation formula and displayed in **Table 1** below;

Table 1: Required sample sizes by Department

Department	Number of staff available in the Department (n)	Estimated stratum size
Health Services	80	10
Port Operations	920	119
Fire and Safety	410	53
Security	740	96
Logistic	600	78
Administration	250	32
Total (N)	**3,000**	**388**

3.7 Data Collection Methods and Instrument

The primary data collection instrument for this quantitative study was a structured, self-administered questionnaire, developed by the researcher for the purpose of this study. The questionnaire was designed to effectively gather data on the knowledge, practices, available resources, and influencing factors related to occupational health and safety (OHS) among GPHA workers.

The questionnaire comprised four sections. Section A (Sociodemographic Information) included 11 items capturing age, gender, education level, marital status, religious belief, department, years of experience at GPHA, and National Health Insurance Scheme (NHIS) status. Section B (Knowledge of Occupational Health and Safety Measures) consisted of 13 items assessing awareness, understanding of risks, familiarity with procedures, and perceptions of OHS policies using a mix of dichotomous (Yes/No), multiple-choice, and Likert-scale responses.

Section C (Utilization of OHS Resources) featured 14 items examining access to and frequency of use of safety equipment and resources, confidence in usage, and satisfaction with availability, again using multiple-choice and Likert-scale formats. Lastly, Section D (Factors Influencing Adherence to OHS Practices) included 14 items assessing motivational and structural factors that affect safety behavior at work, including perceptions of management support, training, peer influence, and barriers to compliance.

The questionnaire included various response formats, including dichotomous (Yes/No) questions, multiple-choice questions, and Likert scale questions. The instrument was developed by the researcher based on literature review (Awuah, 2022; Akyen, Agyemang, & Forkuor, 2025; Emetumah, Ajaegbu, & Nwokorie, 2025) and consultation with academic supervisor to ensure content validity. A pre-test was conducted with a small sample of workers to refine question clarity and response flow.

3.8 Pre-testing

Before the main study, the questionnaire was pre-tested with a small group of ten (10) GPHA workers who were not part of the final sample. The purpose was to evaluate the clarity of the questions, the time required to complete the survey, and the overall effectiveness of the tool.

Feedback from the pre-test indicated that some questions were ambiguous or too broad, and others were repetitive. As a result, several questions were reworded for clarity, a few were removed to avoid redundancy, and the structure of the questionnaire was slightly revised to improve flow. While no formal statistical analysis was conducted due to the small pre-test sample, qualitative insights from respondents informed all adjustments to enhance the questionnaire's validity and reliability.

3.9 Data Handling

Data security and confidentiality were prioritized throughout the research process. All collected data were stored on a password-protected computer, with access restricted to the researcher only. Physical copies of questionnaires were kept in a locked cabinet. Participants' personal identifiers will be removed from the dataset and replaced with unique codes to ensure anonymity. Data were used solely for the purposes of this study and all research data will be securely stored for 5 years after study completion, after which it will be permanently destroyed

3.10 Data Analysis

The collected data were initially entered into a Microsoft Excel spreadsheet on a Windows 10 computer for preliminary sorting and cleaning. Following verification of data consistency and completeness, the cleaned dataset was imported into STATA analytic software (*StataCorp. 2007. Stata Statistical Software. Release 18. StatCorp LP, College Station TX, USA)*, for thorough analysis. Categorical variables, including job roles, departments, and levels of occupational health knowledge, were presented in terms of frequencies and percentages. Continuous variables, such as age and years of work experience, were analysed to provide mean values and standard deviations.

For visual representation of the results, pie charts and tables were employed. Cross-tabulations were used to determine proportions or prevalence rates for various variables. To determine the levels of knowledge regarding occupational health and safety, the focus was on the responses to knowledge-based questions.

For the knowledge assessment, values were assigned (1 for correct answers and 0 for incorrect ones) to questions testing understanding of occupational health and safety principles. An essential aspect of this objective was to delineate the thresholds for adequate knowledge. This was accomplished by determining cut-off points; participants who score below a certain threshold of the total marks for knowledge questions were classified as having "*Inadequate knowledge*", while those surpassing the threshold were classified as possessing "*Adequate knowledge*".

At the bivariate level, Pearson's Chi-square tests was conducted to assess the association between occupational health knowledge and selected sociodemographic variables. The level of significance for the tests were set at a p-value of less than 0.05.

Parameter estimates were presented as proportions, accompanied by their respective 95% confidence intervals. Simple logistic regression was utilized to report odds ratios, providing a measure of the strength of associations between variables. Variables that demonstrated statistical significance during the bivariate analysis were included in Multivariate Logistic regression models. These models aimed to identify factors that remain statistically significant in influencing knowledge and practices separately, with a p-value less than 0.05 serving as the threshold for statistical significance. Odds ratios, along with their corresponding 95% confidence intervals, were presented in the results. Additionally, the relationship between knowledge was explored to

understand how workers' knowledge of occupational health and safety translates into their actual practices. Data will be stored securely for 10 years for future reference checks.

3.11 Ethical Consideration

Ethical Approval

Ethical approval for the study was obtained from the ~~relevant~~ Institutional Review Board (IRB) at Ensign Global University before data collection begins.

Study Area Approval

Approval for conducting the study at the Ghana Ports and Harbours Authority (GPHA), Tema, was obtained from the GPHA management. The study proceeded only after securing the necessary permissions from all relevant authorities within the organization.

Informed Consent

Informed consent was a crucial aspect of the study, and participation was entirely voluntary. Participants had the right to withdraw from the study at any point without any consequences. Consent forms were provided, and participants either signed or thumb printed them based on their willingness to partake after a clear explanation of the questionnaire's contents and the study's purpose.

Potential Risks

To mitigate potential risks, participants were informed of their right to refrain from answering any questions that make them uncomfortable. The study was designed to minimize any potential psychological or social risks to the participants.

Benefits

While there may be no direct benefits for individual participants, their involvement contributed to the overall understanding of occupational health practices at GPHA. The findings may lead to improvements in workplace safety and health measures, potentially benefiting all employees in the long term.

Confidentiality

Confidentiality was strictly maintained throughout the study. Respondents' names were recorded on the questionnaires, and each questionnaire was assigned a unique identifier. Only the research team had access to the filled questionnaires, which was stored securely. All digital data were password-protected. The information gathered were used solely for the purposes of this study and any resulting publications will present only aggregated data.

3.12 Limitations of Study

While this study provides valuable insights into occupational health and safety (OHS) practices among workers at the Ghana Ports and Harbours Authority (GPHA) in Tema, certain limitations must be acknowledged. Since the study is cross-sectional, it captures data at a single point in time and does not account for changes in OHS practices over time. A longitudinal study could provide deeper insights into trends and improvements. Also, the study focuses exclusively on GPHA workers in Tema and does not include other ports in Ghana, Therefore, the findings may not be fully generalizable to all maritime workers in Ghana.

The study includes only full-time employees who have worked for at least one year, excluding contract workers and temporary staff who may experience different occupational health challenges. Lastly, the study does not account for external factors such as government policies,

economic conditions, or international safety regulations, which may impact OHS practices at GPHA Tema. Despite these limitations, the findings contribute significantly to understanding OHS practices in Ghana's maritime sector and provide a foundation for future research and policy development.

3.13 Assumptions

This study was guided by several key assumptions: that all respondents provided honest and accurate information based on their knowledge and experiences with occupational health and safety (OHS); that employees at GPHA Tema were generally aware of OHS policies; and that the organization supplied essential safety resources such as PPE and safety manuals. It was also assumed that management enforced safety regulations, that workers followed OHS guidelines, and that the sample was representative of the broader workforce. Additionally, the study presumed standardized working conditions across departments and an unbiased data collection process. Any inconsistencies were acknowledged during analysis.

CHAPTER FOUR

4.0 RESULTS

4.1 Introduction

This chapter presents the findings of the study on occupational health and safety (OHS) practices among workers at the Ghana Ports and Harbours Authority (GPHA) in Tema. The results are organized to reflect the study's specific objectives. The chapter begins with an overview of the sociodemographic characteristics of respondents, followed by univariate analyses describing knowledge, resource utilization, and adherence to OHS practices. Bivariate relationships between key variables were explored using Pearson's Chi-square tests, and significant associations were further examined through multivariate logistic regression to identify predictors of adherence to OHS practices.

4.2 Sociodemographic Characteristics of Respondents

The study involved 323 respondents, whose sociodemographic characteristics are summarized in Table 4.1. The findings revealed a diverse representation across various demographic variables. In terms of age distribution, the majority of respondents (37.15%) were between 26–35 years, followed closely by those in the 36–45 age group (35.91%). A smaller proportion of respondents were aged 46–55 years (17.34%), while the youngest age group (18–25 years) accounted for 8.05%. Only 1.55% of the participants were above 55 years. Gender distribution showed a higher proportion of male respondents (64.71%) compared to females (35.29%).

Regarding educational attainment, as at the time of responding to the survey, the majority of respondents (81.42%) had attained tertiary education, while 17.65% had completed secondary education. Only a small fraction (0.93%) reported having completed primary education. Marital

status data indicated that most respondents were married (57.59%), while 40.56% were single. A small segment (1.86%) reported cohabiting. In terms of religious affiliation, Christianity was the predominant belief system, with 83.28% of respondents identifying as Christians. Islam was the second most common religion (13.93%), followed by traditionalist beliefs, which were reported by 2.79% of respondents.

Analysis of departmental representation revealed that the largest proportion of respondents (28.48%) were from the Port Operations department, followed by Security (23.53%) and Fire and Safety (17.96%). Other departments, such as Logistics (14.24%), Administrative (10.53%), and Health Services (5.26%), had comparatively fewer participants. Work experience at GPHA varied, with nearly half of the respondents (47.06%) having 1–5 years of experience. Those with 6–10 years of experience constituted 23.22%, while 15.79% had 11–15 years of experience. A smaller group (13.93%) had over 15 years of work experience, indicating a relatively newer workforce. Lastly, the majority of respondents (57.59%) reported being actively registered with the National Health Insurance Scheme (NHIS). However, 36.84% indicated that their NHIS registration was not active, and 5.57% had never registered with the scheme.

Table 4.1: Sociodemographic Characteristics of Respondents

Variables	Frequency (N=323)	Percentages (%)
Age groups (years)		
18–25	26	8.05
26–35	120	37.15
36–45	116	35.91
46–55	56	17.34
Above 55	5	1.55
Gender		

Male	209	64.71
Female	114	35.29
Highest level of education		
Primary	3	0.93
Secondary	57	17.65
Tertiary	263	81.42
Marital status		
Single	131	40.56
Married	186	57.59
Co-habiting	6	1.86
Religious belief		
Christianity	269	83.28
Islam	45	13.93
Traditionalist	9	2.79
Department		
Administrative	34	10.53
Fire and safety	58	17.96
Health services	17	5.26
Logistics	46	14.24
Port operations	92	28.48
Security	76	23.53
Years of work experience at GPHA		
1–5 years	152	47.06
6–10 years	75	23.22
11–15 years	51	15.79
More than 15 years	45	13.93
NHIS status		
Active	186	57.59
Never registered	18	5.57
Not active	119	36.84

Source: *Field Data, 2025*

4.3 Knowledge of Occupational Health and Safety Measures Among Respondents

Table 4.2 and 4.3 shows an overview of Tema GPHA workers' knowledge of occupational health and safety measures. A substantial majority (84.83%) reported being aware of the occupational health policies implemented by the Ghana Ports and Harbours Authority (GPHA). Additionally, 84.21% of respondents were familiar with the OHS resources available at GPHA.

When asked to rate their awareness levels, respondents demonstrated relatively high self-assessment scores. Nearly half (45.82%) rated their awareness as high, while 44.58% reported moderate awareness. Only a small proportion (9.60%) regarded their awareness as low. The study also explored familiarity with emergency procedures, a crucial component of workplace safety. A significant majority (82.35%) indicated awareness of these procedures. Additionally, 60.68% of respondents reported having received formal training in OHS.

Confidence in identifying potential OHS risks was also notable, with over half (55.42%) of the respondents expressing high confidence and 37.15% reporting moderate confidence. Only 7.43% of participants indicated a lack of confidence in this area. Regarding the proper use of personal protective equipment (PPE), an overwhelming 96.90% of respondents affirmed their knowledge. Similarly, 84.21% of respondents recognized the serious consequences of neglecting OHS measures, with 68.73% being familiar with the procedures for reporting work-related injuries or hazards.

Table 4.2: Responses to questions on knowledge of occupational health and safety measures

Questions	Frequency (n)	Percentages (%)
Awareness of occupational health policies implemented by GPHA		
Yes	274	84.83
No	49	15.17
Rating of awareness level		
High	148	45.82
Moderate	144	44.58
Low	31	9.60
Awareness of emergency procedures in case of an accident or hazard exposure		
Yes	266	82.35
No	57	17.65
Formal training in occupational health and safety (OHS)		
Yes	196	60.68
No	127	39.32
Confidence in identifying potential OHS risks		
Very confident	179	55.42
Somewhat confident	120	37.15
Not confident	24	7.43
Knowledge of proper use of personal protective equipment (PPE)		
Yes	313	96.90
No	10	3.10
Perception of consequences if OHS measures are not followed		
Very serious	272	84.21
Moderately serious	46	14.24
Not serious	2	0.62

Unsure	3	0.93
Familiarity with procedures for reporting work-related injuries or hazards		
Very familiar	180	55.73
Somewhat familiar	108	33.44
Not familiar	35	10.84
Belief in having enough knowledge to protect oneself from workplace hazards		
Yes	238	73.68
No	85	26.32
Belief that following OHS guidelines can significantly reduce chances of an accident or hazard exposure		
Strongly agree	200	61.92
Agree	97	30.03
Neutral	24	7.43
Disagree	2	0.62

Source: *Field Data, 2025*

Table 4.3: Responses to multiple-response questions on knowledge of occupational health and safety measures

Questions	Yes		No		Total	
	N	**(%)**	**N**	**(%)**	**N**	**(%)**
Where do you get information about OHS from?						
Training sessions	176	54.49	147	45.51	323	100.00
Written manuals	69	21.36	254	78.64	323	100.00
Posters and notices	169	52.32	154	47.68	323	100.00

Meetings and briefings	162	50.15	161	49.85	323	100.00
No information	27	8.36	296	91.64	323	100.00
Awareness of hazards in the workplace						
Physical hazards (e.g., machinery, noise)	287	88.85	36	11.15	323	100.00
Chemical hazards (e.g., harmful substances)	244	75.54	79	24.46	323	100.00
Biological hazards (e.g., infections)	157	48.61	166	51.39	323	100.00
Psychosocial hazards (e.g., stress, violence)	222	68.73	101	31.27	323	100.00

Source: *Field Data, 2025*

Despite this generally positive outlook, gaps in knowledge remain. Approximately 26.32% of respondents felt they lacked sufficient knowledge to protect themselves from workplace hazards. Additionally, while the majority (61.92%) strongly agreed that following OHS guidelines significantly reduces risks, a smaller proportion (7.43%) remained neutral.

The study also examined sources of OHS information and awareness of various workplace hazards. Training sessions (54.49%) and posters or notices (52.32%) were the most commonly cited sources of information, followed closely by meetings and briefings (50.15%). However, written manuals were less frequently utilized (21.36%), and 8.36% of respondents reported receiving no information at all. In terms of hazard awareness, physical hazards (88.85%) and chemical hazards (75.54%) were most recognized, while biological hazards (48.61%) and psychosocial hazards (68.73%) had lower levels of awareness.

4.3.1 Overall Level of Knowledge Regarding Occupational Health and Safety Measures

With respect to the overall level of knowledge of respondents, this survey found that one hundred and sixty-seven (51.7 percent) of respondents had strong awareness of occupational health and safety measures and 156 (48.3%) had poor knowledge regarding occupational health and safety

measures. This was measured by adding all responses and determining the median score between responses given per the knowledge assessment (Good knowledge is scored as ≥ 82.14, Poor knowledge is a score of < 82.14). This classification into good and poor knowledge was done to simplify analysis and interpretation of the data by grouping respondents into two distinct categories: those with relatively higher understanding of OHS and those with relatively lower understanding. This is consistent with approaches used in similar studies by Sumago, Mardiyah, and Tsang (2019). Figure 4.1 below represents the levels of knowledge among respondents regarding occupational health and safety measures.

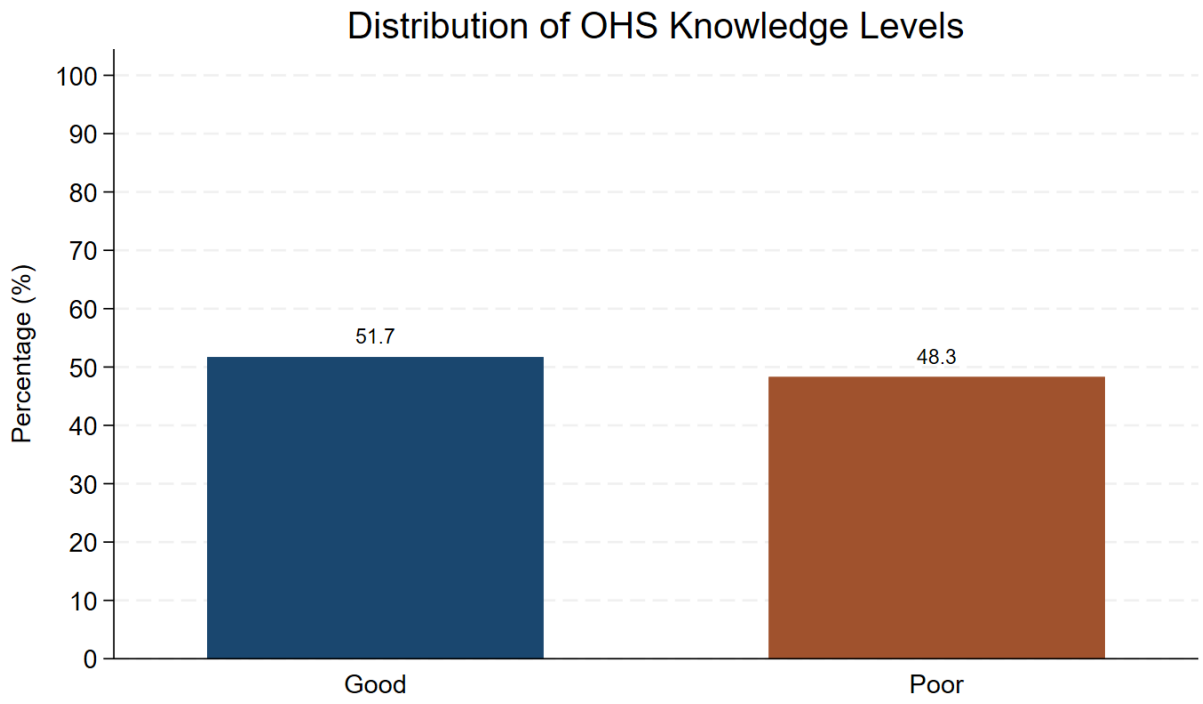

Figure 4.1: *Levels of knowledge among respondents regarding occupational health and safety measures.*

4.4 Utilization of Occupational Health and Safety Resources Among Respondents

Table 4.4 and 4.5 shows an overview of the Tema GPHA workers' utilization of occupational health and safety resources at GPHA, Tema. A significant majority of respondents (84.83%) reported using personal protective equipment (PPE) daily while performing their tasks. However, a smaller proportion of respondents (7.43%) reported using PPE rarely, and 0.93% stated they never use it. Access to safety manuals and guidelines showed variability, with only 41.49% of respondents accessing them daily and 11.76% doing so weekly. A notable proportion (25.39%) reported accessing these resources rarely, while 8.05% never accessed them. Ease of accessing OHS resources also exhibited a positive trend, with 51.08% of respondents describing access as "easy" and 26.63% as "very easy." However, a combined 22.29% of respondents reported difficulty or significant difficulty in accessing resources.

Reporting the lack of necessary OHS resources to supervisors was common, with 65.94% of respondents indicating they had reported such issues. Among those who reported, satisfaction with the response varied, as 45.82% were satisfied, while 17.65% expressed dissatisfaction. Participation in OHS training programs was uneven, with 29.72% of respondents attending such programs regularly (at least once a quarter) and 37.46% participating occasionally (once or twice a year). However, 16.72% reported rarely participating, and 11.15% stated they never participated.

Table 4.4: Responses to questions on the utilization of occupational health and safety (OHS) resources

Questions	Frequency (N)	Percentages (%)
How often do you use PPE while performing your tasks?		
Daily	274	84.83
Weekly	10	3.10

Monthly	8	2.48
Rarely	24	7.43
Never	3	0.93
Not available	4	1.24
How frequently do you access safety manuals or guidelines for your tasks?		
Daily	134	41.49
Weekly	38	11.76
Monthly	28	8.67
Rarely	82	25.39
Never	26	8.05
Not available	15	4.64
How easy is it for you to access OHS resources when you need them?		
Very easy	86	26.63
Easy	165	51.08
Difficult	57	17.65
Very difficult	15	4.64
Have you ever reported a lack of necessary OHS resources to your supervisor?		
Yes	213	65.94
No	93	28.79
Never needed to	17	5.26
If you've reported a lack of OHS resources, how satisfied were you with the response?		
Very satisfied	36	11.15
Satisfied	148	45.82
Dissatisfied	57	17.65
Very dissatisfied	18	5.57
Not applicable	64	19.81

How often do you participate in OHS training programs provided by GPHA?		
Regularly (at least once a quarter)	96	29.72
Occasionally (once or twice a year)	121	37.46
Rarely (less than once a year)	54	16.72
Never	36	11.15
No training programs are offered	16	4.95
How frequently do you access medical or health services?		
Always when needed	192	59.44
Sometimes when needed	99	30.65
Rarely	26	8.05
Never	4	1.24
Not available	2	0.62
Have you received proper training to use the available OHS resources?		
Yes	175	54.18
Partially	67	20.74
No	81	25.08
How confident are you in your ability to use the OHS resources?		
Very confident	174	53.87
Somewhat confident	128	39.63
Not confident	21	6.50
Do you believe the available OHS resources are adequate?		
Yes, completely adequate	95	29.41
Somewhat adequate	196	60.68
No, completely inadequate	32	9.91
Are you aware of the occupational health and safety resources available?		
Yes	272	84.21

No	51	15.79

Source: *Field Data, 2025*

Table 4.5: Responses to multiple-response questions on utilization of OHS resources

Questions	Yes		No		Total	
	N	(%)	N	(%)	N	(%)
Which of the following OHS resources are available to you at work?						
Personal Protective Equipment (PPE)	297	91.95	26	8.05	323	100
First aid kits	195	60.37	128	39.63	323	100
Safety manuals and guidelines	153	47.37	170	52.63	323	100
Emergency response equipment	158	48.92	165	51.08	323	100
Health and safety training programs	174	53.87	149	46.13	323	100
Occupational health clinic or medical facility	204	63.16	119	36.84	323	100
Safety signage and warning systems	214	66.25	109	33.75	323	100
What prompts you to use the OHS resources available at your workplace?						
Management reminders	124	38.39	199	61.61	323	100
Supervisor enforcement	170	52.63	153	47.37	323	100
Observed incidents or accidents	128	39.63	195	60.37	323	100
Regular training sessions	104	32.20	219	67.80	323	100
Personal awareness	245	75.85	78	24.15	323	100
Peer encouragement	79	24.46	244	75.54	323	100

Source: *Field Data, 2025*

The availability of medical and health services showed a favorable trend, with 59.44% of respondents reporting accessing these services whenever needed and 30.65% accessing them

sometimes. Notably, a combined 8.67% reported rarely or never accessing these services, suggesting a potential gap in resource availability or awareness. Regarding the adequacy of OHS resources, 60.68% of respondents considered them somewhat adequate, while 29.41% found them completely adequate. Only 9.91% of respondents viewed the resources as completely inadequate.

Awareness of existing OHS resources was high, with 84.21% of respondents acknowledging awareness of such resources. However, this leaves 15.79% of respondents who were unaware. The availability of specific OHS resources, such as PPE (91.95%) and safety signage (66.25%), was relatively high, whereas resources like first aid kits (60.37%) and safety manuals (47.37%) were less accessible. Furthermore, factors prompting the use of OHS resources indicated that personal awareness (75.85%) and supervisor enforcement (52.63%) were significant motivators, while regular training sessions (32.20%) and peer encouragement (24.46%) played lesser roles. Notably, management reminders, while present, motivated only 38.39% of respondents.

4.4.1 Overall Level of Utilization of Occupational Health and Safety Resources

With respect to the overall level of utilization of OHS resources among respondents, this survey found that one hundred and seventy-four (53.87 percent) of respondents had good utilization of OHS resources and 149 (46.13%) had poor utilization of OHS resources. This was measured by adding all responses and determining the median score between responses given per the utilization assessment (Good Utilization is scored as ≥ 200, Poor Utilization is a score of < 200). Figure 4.2 below represents the levels of utilization among respondents regarding occupational health and safety resources.

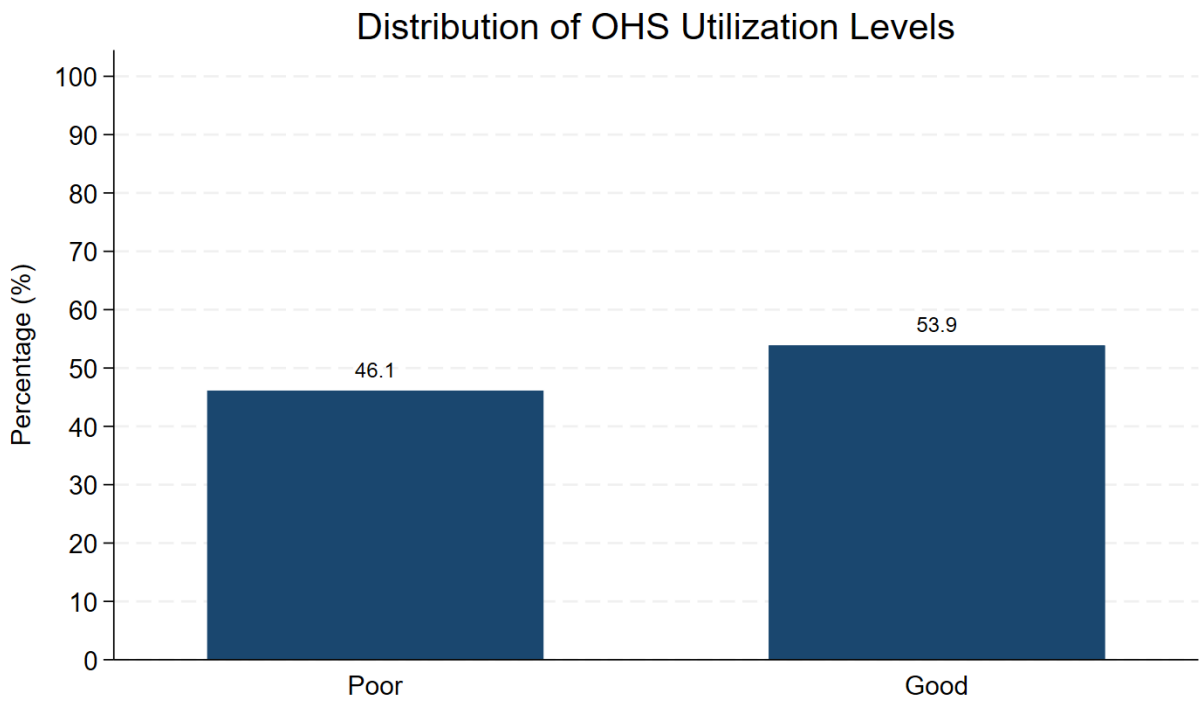

Figure 4.2: *Levels of utilization among respondents regarding occupational health and safety resources*

4.5 Factors Influencing Adherence to Occupational Health and Safety Practices Among Respondents

The adherence to occupational health and safety (OHS) practices among respondents is shaped by a range of factors as described in Table 4.6 and 4.7. A significant proportion of respondents (53.25%) reported that supervisors or management were very supportive in promoting adherence to OHS practices. However, 40.25% perceived management as not supportive, indicating a gap in leadership's ability to influence safety culture effectively. Additionally, while 54.18% of respondents stated that management "always" enforces safety regulations, a notable 34.98% indicated that enforcement occurs only "sometimes," which could diminish consistent adherence to safety protocols.

Peer influence emerged as a mixed determinant. While 42.11% of respondents admitted that their co-workers' behavior strongly influenced their commitment to safety practices, 18.89% reported no peer influence at all. Despite this variability, adherence to OHS practices remained high in the absence of supervisors, with 74.30% of respondents stating they "always" follow safety standards even when unsupervised.

Training and motivation were crucial factors in shaping adherence. While 45.82% of respondents rated the training programs as "very effective" in motivating them to follow safety practices, 6.81% found them ineffective, and 6.19% indicated that no training was provided. Furthermore, respondents were divided on the sufficiency of consequences for non-adherence, with 52.63% agreeing that sufficient consequences (e.g., warnings, penalties) were in place, while 47.37% disagreed.

Table 4.6: Responses to questions on factors influencing adherence to occupational health and safety practices among respondents

Questions	**Frequency (N=323)**	**Percentages (%)**
Supervisor/management supportiveness in promoting adherence to OHS practices		
Very supportive	172	53.25
Somewhat supportive	18	5.57
Not supportive	130	40.25
No support at all	3	0.93
Management's Frequency in Enforcement of safety Rules and Regulations		
Always	175	54.18
Never	6	1.86

Rarely	29	8.98
Sometimes	113	34.98
Does peer behaviour influence your own adherence to OHS practices		
No, not at all	61	18.89
Yes, a lot	136	42.11
Yes, somewhat	126	39.01
How often do you follow OHS practices when supervisors are not present?		
Always	240	74.30
Never	1	0.31
Rarely	11	3.41
Sometimes	71	21.98
Effectiveness of the training programs in motivating you to adhere to OHS practices		
No training provided	20	6.19
Not effective	22	6.81
Somewhat effective	133	41.18
Very effective	148	45.82
Do you feel there are sufficient consequences for not following safety procedures?		
No	153	47.37
Yes	170	52.63
Do you believe that safety practices are followed more consistently when rewards or recognition are provided for safe behaviour?		
No	51	15.79
Yes	272	84.21
Frequency of monitoring, inspection and evaluation		
Biannually	13	4.02
Monthly	102	31.58

No define time fixed	138	42.72
Quarterly	70	21.67
Satisfaction with management's efforts towards improvement of OHS		
Dissatisfied	41	12.69
Neutral	78	24.15
Satisfied	121	37.46
Very dissatisfied	11	3.41
Very satisfied	72	22.29
Suffered any accident/injury at the workplace		
No	250	77.40
Yes	73	22.60
What were the causes of the accident?		
Lack adequate of training on health and safety	43	13.31
Non provision of adequate protective clothing and equipment	28	8.67
Ignorance on health and safety matters	52	16.10
Not sure	200	61.92
Reported workplace accident/injury		
No	177	54.80
Yes	146	45.20

Source: *Field Data, 2025*

Although 84.21% of respondents believed that safety practices are followed more consistently when rewards are provided, only 16.72% identified rewards as a primary motivator, indicating that intrinsic factors, such as personal commitment (82.97%) and fear of accidents (70.28%), play a more significant role in adherence. Similarly, company policies and procedures (59.75%) and adequate training and knowledge (43.34%) were notable motivators, while supervisor expectations (0%) and peer pressure (18.89%) were less influential.

Barriers to adherence, however, were multifaceted. Insufficient training (55.42%), personal discomfort with protective equipment (47.37%), and forgetfulness (39.01%) were the most frequently cited obstacles. Additional barriers included unclear safety procedures (33.13%), work pressure (33.13%), and a lack of management support (30.65%).

Table 4.7: Responses to multiple-response questions on adherence to OHS practices

Questions	Yes		No		Total	
	N	%	N	%	N	%
Which of the following factors most influence your adherence to safety practices at work?						
Personal commitment to safety	268	82.97	55	17.03	323	100
Fear of accidents or injuries	227	70.28	96	29.72	323	100
Supervisor's expectations	0	0.00	323	100.00	323	100
Peer pressure from coworkers	61	18.89	262	81.11	323	100
Company policies and procedures	193	59.75	130	40.25	323	100
Potential disciplinary actions	125	38.70	198	61.30	323	100
Rewards or recognition for safe behaviour	54	16.72	269	83.28	323	100
Adequate training and knowledge	140	43.34	183	56.66	323	100
Availability of proper safety equipment	132	40.87	191	59.13	323	100
What would most motivate you to consistently follow safety practices?						
More comprehensive safety training	259	80.19	64	19.81	323	100
Regular safety reminders and communication	216	66.87	107	33.13	323	100
Stricter enforcement of safety rules	212	65.63	111	34.37	323	100
Recognition or rewards for safe behaviour	158	48.92	165	51.08	323	100
Improved safety equipment and resources	184	56.97	139	43.03	323	100
More visible management commitment to safety	160	49.54	163	50.46	323	100
Peer support for safety practices	95	29.41	228	70.59	323	100

What are the main barriers to consistently following OHS practices?						
Lack of time	100	30.96	223	69.04	323	100
Insufficient training	179	55.42	144	44.58	323	100
Inadequate resources or equipment	139	43.03	184	56.97	323	100
Unclear safety procedures	107	33.13	216	66.87	323	100
Lack of management support	99	30.65	224	69.35	323	100
Work pressure or deadlines	107	33.13	216	66.87	323	100
Personal discomfort (e.g., with PPE)	153	47.37	170	52.63	323	100
Belief that some safety measures are unnecessary	83	25.70	240	74.30	323	100
Forgetfulness	126	39.01	197	60.99	323	100

Source: *Field Data, 2025*

The causes of workplace accidents provided further insights into adherence challenges. A majority (61.92%) of respondents who experienced accidents reported being unsure of the cause, reflecting potential deficiencies in accident analysis and reporting systems. Among those who identified causes, 16.10% attributed accidents to ignorance of health and safety matters, 13.31% to a lack of adequate training, and 8.67% to the non-provision of adequate protective clothing and equipment.

In terms of motivators for adherence, respondents emphasized the importance of more comprehensive safety training (80.19%), regular safety reminders and communication (66.87%), and stricter enforcement of safety rules (65.63%). Improved safety equipment and resources (56.97%) and more visible management commitment to safety (49.54%) were also identified as key motivators. Peer support, although less significant (29.41%), was still noted as a factor that could enhance adherence.

4.5.1 Overall Level of Adherence to Occupational Health and Safety Practices

With respect to the overall level of adherence to OHS practices among respondents, this survey found that two hundred and forty (74.30 percent) of respondents had good adherence to OHS practices and 83 (25.70%) had poor adherence to OHS practices. This was measured by adding all responses and determining the median score between responses given per the adherence assessment (Good Utilization is scored as ≥ 1, Poor Utilization is a score of < 1). Figure 4.3 below represents the levels of adherence to OHS practices among respondents.

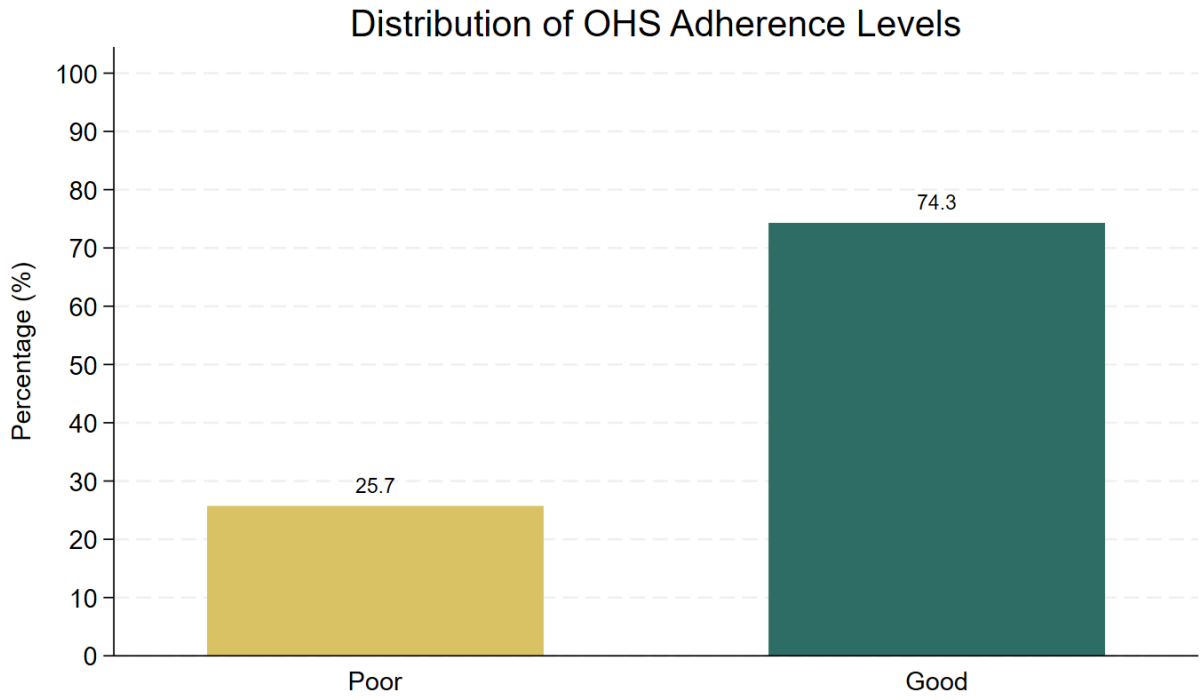

Figure 4.3: *Levels of adherence to OHS practices among respondents*

4.6 Bivariate Analysis of Knowledge of Occupational Health and Safety Measures Among Respondents on Adherence, Resource Utilization, and Covariates (Sociodemographic)

Table 4.8 presents bivariate analysis exploring the level of association between respondents' knowledge of OHS measures and their sociodemographic characteristics, adherence levels, and resource utilization. Age was an influential factor, with a marginally significant association with knowledge levels ($\chi^2 = 9.3149$, $p = 0.054$).

Gender differences in knowledge levels were minimal and statistically insignificant ($\chi^2 = 0.2301$, $p = 0.631$). Education level was positively associated with OHS knowledge, although the relationship was not statistically significant ($\chi^2 = 5.1678$, $p = 0.075$). Respondents with tertiary education exhibited the highest proportion of good knowledge (53.99%), while those with primary education had poor knowledge exclusively (100%).

Marital status showed no significant association with knowledge levels ($\chi^2 = 1.5384$, $p = 0.463$). However, married respondents demonstrated a slightly higher proportion of good knowledge (53.76%) compared to single respondents (48.09%).

The association between religion and OHS knowledge was also statistically insignificant ($\chi^2 = 2.1699$, $p = 0.338$). Nonetheless, Christianity was the most represented group, with 53.53% of Christian respondents showing good knowledge. In comparison, respondents practicing Islam and Traditionalist religions had lower proportions of good knowledge (42.22% and 44.44%, respectively).

Table 4.8: Bivariate analysis of knowledge of occupational health and safety measures among respondents on adherence, resource utilization, and covariates (sociodemographic).

Variables	Knowledge Levels (N=323)		χ^2 (p-Value)
	Poor **N** (%)	**Good** **N** (%)	

Age groups (years)			9.3149 (0.054)
18–25	19 (73.08)	7 (26.92)	
26–35	58 (48.33)	62 (51.67)	
36–45	50 (43.10)	66 (56.90)	
46–55	28 (50.00)	28 (50.00)	
Above 55	1 (20.00)	4 (80.00)	
Gender			0.2301 (0.631)
Male	103 (49.28)	106 50.72)	
Female	53 (46.49)	61 (53.51)	
Education level			5.1678 (0.075)
Primary	3 (100.00)	0 (0.00)	
Secondary	32 (56.14)	25 (43.86)	
Tertiary	121 (46.01)	142 (53.99)	
Marital status			1.5384 (0.463)
Single	68 (51.91)	63 (48.09)	
Married	86 (46.24)	100 (53.76)	
Co-habiting	2 (33.33)	4 (66.67)	
Religion			2.1699 (0.338)
Christianity	125 (46.47)	144 (53.53)	
Islam	26 (57.78)	19 (42.22)	
Traditionalist	5 (55.56)	4 (44.44)	
Department			23.8964 (0.000)**
Administrative	15 (44.12)	19 (55.88)	
Fire and Safety	15 (25.86)	43 (74.14)	
Health Services	6 (35.29)	11 (64.71)	
Logistics	19 (41.30)	27 (58.70)	
Port Operations	53 (57.61)	39 (42.39)	
Security	48 (63.16)	28 (36.84)	
Years of work experience			2.5333 (0.469)
1–5 years	77 (50.66)	75 (49.34)	

6–10 years	38 (50.67)	37 (49.33)	
11–15 years	24 (47.06)	27 (52.94)	
More than 15 years	17 (37.78)	28 (62.22)	
NHIS Status			3.2481 (0.197)
Active	82 (44.09)	104 (55.91)	
Never Registered	9 (50.00)	9 (50.00)	
Not Active	65 (54.62)	54 (45.38)	
Adherence Level			31.1812 (0.000)**
Poor	62 (74.70)	21 (25.30)	
Good	94 (39.17)	146 (60.83)	
Resource Utilization Level			31.0899 (0.000)**
Poor	109 (62.64)	65 (37.36)	
Good	47 (30.13)	109 (69.87)	

Source: *Field Data, 2025*

Departmental affiliation had a highly significant association with knowledge levels ($\chi^2 = 23.8964$, $p < 0.001$). The Fire and Safety Department had the highest proportion of respondents with good knowledge (74.14%), followed by Health Services (64.71%) and Logistics (58.70%). Conversely, the Security Department had the lowest proportion of good knowledge (36.84%). Work experience did not have a statistically significant association with knowledge levels ($\chi^2 = 2.5333$, $p = 0.469$). However, respondents with more than 15 years of experience exhibited the highest proportion of good knowledge (62.22%), while those with 1–5 years of experience had the lowest proportion of good knowledge (49.34%).

The association between NHIS (National Health Insurance Scheme) status and knowledge levels was not statistically significant ($\chi^2 = 3.2481$, $p = 0.197$). Respondents with active NHIS registrations had the highest proportion of good knowledge (55.91%), while those who had never

registered or whose registration was inactive showed lower levels of good knowledge (50.00% and 45.38%, respectively).

Adherence level was significantly associated with knowledge of OHS measures ($\chi^2 = 31.1812$, $p < 0.001$). Respondents with good adherence levels demonstrated a markedly higher proportion of good knowledge (60.83%) compared to those with poor adherence (25.30%). A significant association was also observed between resource utilization and knowledge levels ($\chi^2 = 31.0899$, $p < 0.001$). Respondents with good resource utilization were more likely to exhibit good knowledge (69.87%), whereas those with poor resource utilization had a higher proportion of poor knowledge (62.64%).

4.7 Bivariate Analysis of Utilization of Occupational Health and Safety Resources Among Respondents on Adherence, Resource Utilization, and Sociodemographic Covariates

Table 4.9 shows the bivariate analysis of the utilization of occupational health and safety (OHS) resources among respondents. Age groups showed no statistically significant association with resource utilization ($\chi^2 = 7.46$, $p = 0.114$). However, respondents aged 18–25 reported the highest proportion of good resource utilization (73.08%), while those aged above 55 had the lowest (20.00%).

Gender also exhibited no significant association with resource utilization ($\chi^2 = 0.70$, $p = 0.402$). Nonetheless, females showed a slightly higher proportion of good resource utilization (57.02%) compared to males (52.15%). The level of education was another variable that did not show significant associations with resource utilization ($\chi^2 = 2.80$, $p = 0.247$). Respondents with tertiary education had the highest proportion of good resource utilization (52.85%), followed by those with secondary education (56.14%). Interestingly, all respondents with only primary education utilized OHS resources effectively (100.00%), though their small number (n=3) limits generalizability.

Marital status did not significantly impact resource utilization ($\chi^2 = 0.56$, $p = 0.755$). Respondents who were cohabiting reported the highest proportion of good resource utilization (66.67%), followed by single (54.96%) and married individuals (52.69%). Religious affiliation showed no significant association with resource utilization ($\chi^2 = 1.00$, $p = 0.608$). However, traditionalists demonstrated the highest proportion of good resource utilization (66.67%), followed by Muslims (57.78%) and Christians (52.79%).

A significant association was observed between departmental affiliation and resource utilization ($\chi^2 = 25.88$, $p = 0.000$). Administrative staff exhibited the highest proportion of good resource utilization (82.35%), while those in fire and safety reported the lowest (29.31%).

Table 4.9: Bivariate analysis of utilization of occupational health and safety resources among respondents on adherence, resource utilization, and covariates (sociodemographic).

Variables	**Resource Utilization Levels (N=323)**		
	Poor	**Good**	
	N (%)	**N** (%)	**χ^2 (p-Value)**
Age groups (years)			7.46 (0.114)
18–25	7 (26.92)	19 (73.08)	
26–35	61 (50.83)	59 (49.17)	
36–45	51 (43.97)	65 (56.03)	
46–55	26 (46.43)	30 (53.57)	
Above 55	4 (80.00)	1 (20.00)	
Gender			0.70 (0.402)
Male	100 (47.85)	109 (52.15)	
Female	49 (42.98)	65 (57.02)	
Education level			2.80 (0.247)
Primary	0 (0.00)	3 (100.00)	

Variables	Resource Utilization Levels (N=323)		
	Poor	**Good**	
	N (%)	**N** (%)	**χ^2 (p-Value)**
Secondary	25 (43.86)	32 (56.14)	
Tertiary	124 (47.15)	139 (52.85)	
Marital status			0.56 (0.755)
Single	59 (45.04)	72 (54.96)	
Married	88 (47.31)	98 (52.69)	
Co-habiting	2 (33.33)	4 (66.67)	
Religion			1.00 (0.608)
Christianity	127 (47.21)	142 (52.79)	
Islam	19 (42.22)	26 (57.78)	
Traditionalist	3 (33.33)	6 (66.67)	
Department			25.88 (0.000)
Administrative	6 (17.65)	28 (82.35)	
Fire and Safety	41 (70.69)	17 (29.31)	
Health Services	8 (47.06)	9 (52.94)	
Logistics	19 (41.30)	27 (58.70)	
Port Operations	40 (43.48)	52 (56.52)	
Security	35 (46.05)	41 (53.95)	
Years of work experience			3.57 (0.312)
1–5 years	68 (44.74)	84 (55.26)	
6–10 years	35 (46.67)	40 (53.33)	
11–15 years	20 (39.22)	31 (60.78)	
More than 15 years	26 (57.78)	19 (42.22)	
NHIS status			3.58 (0.167)
Active	92 (49.46)	94 (50.54)	

Variables	Resource Utilization Levels (N=323)		
	Poor	Good	
	N (%)	N (%)	χ^2 (p-Value)
Never registered	10 (55.56)	8 (44.44)	
Not active	47 (39.50)	72 (60.50)	
Adherence level			35.39 (0.000)
Poor	15 (10.07)	134 (89.93)	
Good	68 (39.08)	106 (60.92)	
Knowledge level			31.09 (0.000)
Poor	102 (61.08)	65 (38.92)	
Good	47 (30.13)	109 (69.87)	

Source: *Field Data, 2025*

Years of work experience showed no statistically significant relationship with resource utilization ($\chi^2 = 3.57$, $p = 0.312$). Respondents with 11–15 years of experience reported the highest proportion of good resource utilization (60.78%), while those with more than 15 years showed the lowest (42.22%). NHIS status (National Health Insurance Scheme) was also not significantly related to resource utilization ($\chi^2 = 3.58$, $p = 0.167$). Respondents with active NHIS registrations reported slightly higher good resource utilization (50.54%) compared to those with inactive registrations (60.50%) or no registration at all (44.44%).

Adherence levels were strongly associated with resource utilization ($\chi^2 = 35.39$, $p = 0.000$). Respondents with good adherence levels reported significantly higher good resource utilization (89.93%) compared to those with poor adherence (10.07%). Similarly, knowledge levels showed a significant relationship with resource utilization ($\chi^2 = 31.09$, $p = 0.000$). Respondents with good

knowledge of OHS were more likely to demonstrate good resource utilization (69.87%), compared to those with poor knowledge (38.92%).

4.8 Bivariate Analysis of Factors Influencing Adherence to Occupational Health and Safety Practices Among Respondents

Table 4.10 presents the bivariate analysis of factors influencing adherence to occupational health and safety (OHS) practices among respondents. Age group demonstrated a near-significant relationship with adherence levels ($\chi^2 = 9.35$, $p = 0.053$). Respondents aged 26–35 years and 36–45 years exhibited higher proportions of good adherence (74.17% and 78.45%, respectively) compared to other age groups. Gender was significantly associated with adherence levels ($\chi^2 = 6.13$, $p = 0.013$), with females reporting a higher proportion of good adherence (82.46%) compared to males (69.86%).

Education level also showed a strong relationship with adherence ($\chi^2 = 17.32$, $p = 0.000$). Respondents with tertiary education exhibited the highest adherence rates (78.33%), while those with only primary education had no adherence (0%). Marital status did not show a statistically significant association with adherence levels ($\chi^2 = 4.33$, $p = 0.115$), although cohabiting respondents exhibited perfect adherence (100%).

Table 4.10: Bivariate analysis of factors influencing adherence to occupational health and safety practices among respondents

Variables	Adherence Levels (N=323)		χ^2 (p-Value)
	Poor	**Good**	
	N (%)	**N** (%)	
Age groups (years)			9.35 (0.053)
18–25	13 (50.00)	13 (50.00)	

26–35	31 (25.83)	89 (74.17)	
36–45	25 (21.55)	91 (78.45)	
46–55	13 (23.21)	43 (76.79)	
Above 55	1 (20.00)	4 (80.00)	
Gender			6.13 (0.013)
Male	63 (30.14)	146 (69.86)	
Female	20 (17.54)	94 (82.46)	
Education level			17.32 (0.000)
Primary	3 (100.00)	0 (0.00)	
Secondary	23 (40.35)	34 (59.65)	
Tertiary	57 (21.67)	206 (78.33)	
Marital status			4.33 (0.115)
Single	40 (30.53)	91 (69.47)	
Married	43 (23.12)	143 (76.88)	
Co-habiting	0 (0.00)	6 (100.00)	
Religion			8.93 (0.012)
Christianity	61 (22.68)	208 (77.32)	
Islam	17 (37.78)	28 (62.22)	
Traditionalist	5 (55.56)	4 (44.44)	
Department			12.97 (0.024)
Administrative	10 (29.41)	24 (70.59)	
Fire and safety	9 (15.52)	49 (84.48)	
Health services	5 (29.41)	12 (70.59)	
Logistics	19 (41.30)	27 (58.70)	
Port operations	27 (29.35)	65 (70.65)	
Security	13 (17.11)	63 (82.89)	
Years of work experience			2.25 (0.522)
1–5 years	41 (26.97)	111 (73.03)	
6–10 years	22 (29.33)	53 (70.67)	
11–15 years	12 (23.53)	39 (76.47)	

More than 15 years	8 (17.78)	37 (82.22)	
NHIS Status			0.96 (0.618)
Active	44 (23.66)	142 (76.34)	
Never registered	5 (27.78)	13 (72.22)	
Not active	34 (28.57)	85 (71.43)	
Knowledge Level			31.18 (0.000)
Poor	62 (39.74)	94 (60.26)	
Good	21 (12.57)	146 (87.43)	
Resource Utilization Level			35.39 (0.000)
Poor	15 (10.07)	134 (89.93)	
Good	68 (39.08)	106 (60.92)	

Source: *Field Data, 2025*

Religious beliefs were significantly associated with adherence ($\chi^2 = 8.93$, $p = 0.012$). Christians reported the highest adherence (77.32%), while traditionalists demonstrated the lowest (44.44%). Department was another significant factor ($\chi^2 = 12.97$, $p = 0.024$), with respondents from the Fire and Safety department showing the highest adherence (84.48%), followed closely by Security (82.89%).

Years of work experience, however, did not have a significant association with adherence ($\chi^2 = 2.25$, $p = 0.522$), although respondents with over 15 years of experience displayed higher adherence rates (82.22%) than those with fewer years of service. NHIS status also showed no significant association with adherence ($\chi^2 = 0.96$, $p = 0.618$), although active NHIS participants reported slightly higher adherence (76.34%) compared to other groups.

Knowledge levels were significantly associated with adherence to OHS practices ($\chi^2 = 31.18$, $p = 0.000$). Respondents with good knowledge of OHS practices exhibited the highest adherence

(87.43%), compared to those with poor knowledge (60.26%). Similarly, resource utilization was a critical determinant of adherence ($\chi^2 = 35.39$, $p = 0.000$). Respondents who reported good resource utilization were more likely to adhere to OHS practices (89.93%) than those with poor resource utilization (60.92%).

4.9 Multivariate Analysis: Factors Influencing Knowledge of Occupational Health and Safety Measures Among Respondents

Table 4.11 presents the multivariate analysis of factors associated with knowledge of occupational health and safety (OHS) measures among respondents. Age was not significantly associated with knowledge of OHS measures when compared to the reference category (18–25 years). However, respondents aged 36–45 years demonstrated a slight increase in the odds of good knowledge (AOR = 0.83, 95% CI: 0.22–3.09, p = 0.778), while those aged above 55 years showed a decreased likelihood, though this was not statistically significant (AOR = 0.31, 95% CI: 0.02–5.86, p = 0.433).

Gender also did not show a significant relationship with OHS knowledge. Female respondents had lower odds of good knowledge compared to their male counterparts, but this finding was not statistically significant (AOR = 0.64, 95% CI: 0.35–1.14, p = 0.129). In terms of education, respondents with secondary education had slightly lower odds of good knowledge compared to those with primary education (AOR = 0.89, 95% CI: 0.42–1.91, p = 0.770).

Marital status showed no significant association with OHS knowledge. Married respondents had marginally higher odds of good knowledge compared to single respondents (AOR = 1.14, 95% CI:

0.62–2.10, p = 0.672). Similarly, co-habiting respondents exhibited increased odds, though this finding also lacked statistical significance (AOR = 4.37, 95% CI: 0.61–31.06, p = 0.141).

Table 4.11: Multivariate Analysis: Factors influencing knowledge of occupational health and safety (OHS) measures among respondents

Variables	COR	(95% CI)	p-value	AOR	(95% CI)	p-value
Age groups (years)						
18–25	Ref	-	-	Ref	-	-
26–35	2.90	1.39 – 6.86	0.018	0.64	0.20 – 2.03	0.450
36–45	3.58	1.50 – 8.84	0.008	0.83	0.22 – 3.09	0.778
46–55	2.71	0.99 – 7.47	0.053	0.74	0.17 – 3.26	0.688
Above 55	10.86	1.03 – 114.58	0.047	0.31	0.02 – 5.86	0.433
Gender						
Male	Ref	-	-	Ref	-	-
Female	1.04	0.58 – 1.84	0.900	0.64	0.35 – 1.14	0.129
Education						
Primary	Ref	-	-	Ref	-	-
Secondary	0.67	0.37 – 1.18	0.167	0.89	0.42 – 1.91	0.770
Tertiary	Omitted	-	-	Omitted	-	-
Marital Status						
Single	Ref	-	-	Ref	-	-
Married	0.94	0.51 – 1.71	0.830	1.14	0.62 – 2.10	0.672
Co-habiting	2.61	0.40 – 17.06	0.316	4.37	0.61 – 31.06	0.141
Religion						
Christianity	Ref	-	-	Ref	-	-
Islam	0.82	0.37 – 1.79	0.612	0.91	0.42 – 1.97	0.812
Traditionalist	1.25	0.22 – 7.05	0.799	1.90	0.32 – 11.31	0.482
Department						

Administrative	Ref	-	-	Ref	-	-
Fire and safety	1.37	0.48 – 3.96	0.559	0.09	0.03 – 0.29	0.000
Health services	1.51	0.38 – 5.96	0.557	0.19	0.04 – 0.83	0.027
Logistics	1.33	0.45 – 3.95	0.603	0.19	0.05 – 0.64	0.008
Port operations	0.40	0.16 – 1.00	0.050	0.18	0.06 – 0.53	0.002
Security	0.25	0.09 – 0.66	0.005	0.18	0.06 – 0.56	0.003
Work Experience						
Less than 1 year	Ref	-	-	Ref	-	-
6–10 years	0.91	0.45 – 1.85	0.798	0.81	0.39 – 1.66	0.558
11–15 years	1.13	0.45 – 2.84	0.796	1.12	0.44 – 2.88	0.810
More than 15 years	1.68	0.56 – 5.05	0.353	0.49	0.16 – 1.49	0.207
NHIS Status						
Never registered	Ref	-	-	Ref	-	-
Not active	0.72	0.42 – 1.24	0.238	1.45	0.84 – 2.52	0.186
Active	0.38	0.12 – 1.20	0.099	0.47	0.15 – 1.50	0.204
Knowledge Level						
Poor	Ref	-	-	Ref	-	-
Good	0.37	0.22 – 0.64	0.000	0.36	0.21 – 0.63	0.000
Adherence Level						
Poor	Ref	-	-	Ref	-	-
Good	3.84	1.97 – 7.49	0.000	0.20	0.10 – 0.41	0.000
Resource Level						
Poor	Ref	-	-	Ref	-	-
Good	0.37	0.22 – 0.64	0.000	0.22	0.11 – 0.46	0.000

Note: Ref: Reference category, COR: Crude Odds Ratio, AOR: Adjusted Odds Ratio, CI: Confidence Interval, Omissions are due to collinearity.

The role of religion in influencing OHS knowledge was inconclusive. Respondents identifying as traditionalists showed higher odds of good knowledge compared to Christians, although this relationship was not statistically significant (AOR = 1.90, 95% CI: 0.32–11.31, p = 0.482).

Similarly, respondents practicing Islam exhibited no significant difference in knowledge levels compared to Christians (AOR = 0.91, 95% CI: 0.42–1.97, p = 0.812).

Departmental affiliation emerged as a significant predictor of knowledge. Respondents from departments such as fire and safety (AOR = 0.09, 95% CI: 0.03–0.29, p < 0.001), health services (AOR = 0.19, 95% CI: 0.04–0.83, p = 0.027), logistics (AOR = 0.19, 95% CI: 0.05–0.64, p = 0.008), port operations (AOR = 0.18, 95% CI: 0.06–0.53, p = 0.002), and security (AOR = 0.18, 95% CI: 0.06–0.56, p = 0.003) were significantly less likely to have good knowledge of OHS compared to those in administrative roles.

Work experience did not exhibit a significant association with OHS knowledge. Respondents with more than 15 years of experience had lower odds of good knowledge compared to those with less than one year of experience, but this was not statistically significant (AOR = 0.49, 95% CI: 0.16–1.49, p = 0.207).

The NHIS status variable showed no statistically significant relationship with knowledge. Respondents who had never registered for NHIS were the reference category, and those who were not actively registered had slightly higher odds of good knowledge (AOR = 1.45, 95% CI: 0.84–2.52, p = 0.186). Adherence levels and resource utilization levels were found to be significant predictors of OHS knowledge. Respondents with good adherence levels were significantly less likely to have poor knowledge compared to those with poor adherence (AOR = 0.20, 95% CI: 0.10–0.41, p < 0.001). Similarly, respondents with good resource utilization levels had significantly higher odds of good knowledge (AOR = 0.22, 95% CI: 0.11–0.46, p < 0.001).

4.10 Multivariate Analysis: Factors Influencing Adherence to Occupational Health and Safety Practices Among Respondents

Table 4.12 presents multivariate analysis of several factors influencing adherence to occupational health and safety (OHS) practices among respondents. These factors were assessed using crude odds ratios (COR) and adjusted odds ratios (AOR). Age was a significant determinant of adherence to OHS practices. Respondents aged 36–45 years were approximately three times more likely to adhere to OHS practices compared to those aged 18–25 years (AOR: 3.13, 95% CI: 0.73–13.49), though this result lacked statistical significance (p = 0.126). Similarly, individuals aged 46–55 years demonstrated higher odds of adherence (AOR: 3.54, 95% CI: 0.67–18.65), but this relationship was also not statistically significant (p = 0.137). Gender emerged as a significant predictor, with females showing lower odds of adherence compared to males (AOR: 0.35, 95% CI: 0.17–0.74, p = 0.006).

Educational attainment showed a mixed influence on adherence. Respondents with secondary education were less likely to adhere to OHS practices compared to those with primary education (AOR: 0.50, 95% CI: 0.21–1.23), though this was not statistically significant (p = 0.134). Tertiary education data were omitted due to collinearity. Marital status, on the other hand, did not significantly influence adherence. Married individuals had slightly higher odds of adherence compared to single respondents (AOR: 1.31, 95% CI: 0.62–2.75, p = 0.476), but the relationship was not statistically significant.

Religion also showed varying influences. Traditionalists had lower odds of adherence compared to Christians (AOR: 0.28, 95% CI: 0.06–1.38, p = 0.118), though this finding was not statistically significant. The Department of employment had a more notable influence on adherence. Respondents working in the security department were significantly more likely to adhere to OHS

practices compared to those in administrative roles (AOR: 5.54, 95% CI: 1.61–19.03, p = 0.007). In contrast, employees in logistics and health services had reduced odds of adherence (AOR for logistics: 0.80, 95% CI: 0.24–2.64, p = 0.710; AOR for health services: 0.43, 95% CI: 0.09–1.95, p = 0.272).

Table 4.12: Multivariate Analysis: Factors influencing adherence to occupational health and safety practices among respondents

Variables	COR	(95% CI)	p-value	AOR	(95% CI)	p-value
Age groups (years)						
18–25 (Ref)	Ref	-	-	Ref	-	-
26–35	2.87	1.28 – 6.86	0.018	1.54	0.47 – 5.05	0.473
36–45	3.64	1.50 – 8.84	0.004	3.13	0.73 – 13.49	0.126
46–55	3.31	1.23 – 8.88	0.018	3.54	0.67 – 18.65	0.137
Above 55	4.00	0.39 – 40.79	0.242	1.60	0.04 – 58.93	0.798
Gender						
Male (Ref)	Ref	-	-	Ref	-	-
Female	0.49	0.28 – 0.87	0.014	0.35	0.17 – 0.74	0.006
Education						
Primary (Ref)	Ref	-	-	Ref	-	-
Secondary	0.41	0.22 – 0.75	0.004	0.50	0.21 – 1.23	0.134
Tertiary	1	-	-	1	-	-

Marital status						
Single (Ref)	Ref	-	-	Ref	-	-
Married	1.46	0.88 – 2.42	0.140	1.31	0.62 – 2.75	0.476
Co-habiting	1	-	-	1	-	-
Religion						
Christianity (Ref)	Ref	-	-	Ref	-	-
Islam	0.48	0.24 – 1.42	0.237	0.59	0.24 – 1.42	0.237
Traditionalist	0.23	0.06 – 0.90	0.035	0.28	0.06 – 1.38	0.118
Department						
Administrative	Ref	-	-	Ref	-	-
Fire and safety	2.27	0.81 – 6.32	0.117	1.91	0.54 – 6.75	0.314
Health services	1.00	0.28 – 3.59	1.000	0.43	0.09 – 1.95	0.272
Logistics	0.59	0.23 – 1.52	0.276	0.80	0.24 – 2.64	0.710
Port operations	1.00	0.42 – 2.38	0.994	1.32	0.47 – 3.67	0.597
Security	2.02	1.15 – 5.02	0.020	5.54	1.61 – 19.03	0.007
Work experience						
Less than 1 year	Ref	-	-	Ref	-	-
6–10 years	0.89	0.23 – 1.52	0.276	0.80	0.34 – 1.88	0.613
11–15 years	1.20	0.66 – 2.11	0.489	0.66	0.21 – 2.11	0.489
More than 15 years	1.71	1.14 – 5.02	0.020	0.74	0.18 – 3.10	0.685

NHIS status						
Never registered	Ref	-	-	Ref	-	-
Not active	0.77	0.46 – 1.30	0.338	1.06	0.55 – 2.06	0.853
Active	1 (Omitted)	-	-	1 (Omitted)	-	-
Knowledge level						
Poor	Ref	-	-	Ref	-	-
Good	4.59	2.62 – 8.02	0.000	3.91	1.96 – 7.81	0.000
Resource						
Utilization level						
Poor	Ref	-	-	Ref	-	-
Good	0.17	0.09 – 0.32	0.000	0.22	0.11 – 0.46	0.000

Note: Ref: Reference category, COR: Crude Odds Ratio, AOR: Adjusted Odds Ratio, CI: Confidence Interval, Omissions are due to collinearity.

Additionally, work experience did not emerge as a significant predictor of adherence. For instance, respondents with more than 15 years of experience had reduced odds of adherence compared to those with less than one year (AOR: 0.74, 95% CI: 0.18–3.10, p = 0.685), but this result was not statistically significant. Similarly, NHIS (National Health Insurance Scheme) registration status did not show a significant influence on adherence. Respondents who were not actively registered with NHIS had slightly higher odds of adherence compared to those who had never registered (AOR: 1.06, 95% CI: 0.55–2.06, p = 0.853), but this relationship was not statistically significant.

Levels of knowledge and resource utilization were strong predictors of adherence to OHS practices. Respondents with good knowledge of OHS practices were almost four times more likely to adhere compared to those with poor knowledge (AOR: 3.91, 95% CI: 1.96–7.81, p < 0.001).

Similarly, resource utilization had a significant positive impact on adherence. Those with good resource levels were less likely to report poor adherence levels (AOR: 0.22, 95% CI: 0.11–0.46, $p < 0.001$).

4.11 Multivariate Analysis: Factors Influencing Resource Utilization of Occupational Health and Safety Resources Among Respondents

Table 4.13 shows the multivariate analysis of critical factors associated with the utilization of occupational health and safety (OHS) resources among respondents. Adjusted odds ratios (AOR) and corresponding confidence intervals (CI) were calculated to identify significant predictors while controlling for potential confounders. Age groups demonstrated no statistically significant association with resource utilization in the adjusted model. Although respondents aged 26–35 years (AOR: 0.64, 95% CI: 0.20–2.03, p=0.450) and those aged 36–45 years (AOR: 0.83, 95% CI: 0.22–3.09, p=0.778) showed reduced odds of utilizing OHS resources compared to the reference category (18–25 years), these results did not achieve statistical significance. Similar trends were observed for individuals aged 46–55 and above 55 years, where confidence intervals included the null value.

Gender was not significantly associated with resource utilization. Female respondents exhibited reduced odds of utilizing OHS resources compared to males (AOR: 0.64, 95% CI: 0.35–1.14, p=0.129), but this finding did not reach statistical significance. Education indicated no significant differences in resource utilization across educational levels. Respondents with secondary education demonstrated slightly lower odds of utilizing resources compared to those with primary education (AOR: 0.89, 95% CI: 0.42–1.91, p=0.770). However, tertiary education was omitted from the model due to collinearity, limiting further interpretation of this variable.

The role of marital status was similarly non-significant. Married respondents had slightly higher odds of utilizing OHS resources compared to single individuals (AOR: 1.14, 95% CI: 0.62–2.10, p=0.672). Although co-habiting respondents exhibited a notable increase in odds (AOR: 4.37, 95% CI: 0.61–31.06, p=0.141), the wide confidence interval and lack of statistical significance suggest uncertainty in this relationship. Religion did not emerge as a significant predictor of resource utilization. Comparing respondents practicing Islam (AOR: 0.91, 95% CI: 0.42–1.97, p=0.812) or traditionalist beliefs (AOR: 1.90, 95% CI: 0.32–11.31, p=0.482) to Christians, the observed effects were not statistically meaningful.

Table 4.13: Multivariate Analysis: Factors influencing resource utilization of occupational health and safety measures among respondents

Variables	CRUDE			ADJUSTED		
	COR	(95% CI)	p-value	AOR	(95% CI)	p-value
Age groups (in years)						
18–25 (Ref)	-	-	-	-	-	-
26–35	0.36	0.17 – 0.91	0.031	0.64	0.20 – 2.03	0.450
36–45	0.47	0.18 – 1.20	0.115	0.83	0.22 – 3.09	0.778
46–55	0.43	0.15 – 1.17	0.098	0.74	0.17 – 3.26	0.688
Above 55	0.09	0.01 – 0.97	0.047	0.31	0.02 – 5.86	0.433
Gender						
Male (Ref)	-	-	-	-	-	-
Female	0.82	0.52 – 1.30	0.402	0.64	0.35 – 1.14	0.129
Education						
Primary (Ref)	-	-	-	-	-	-
Secondary	1.14	0.64 – 2.03	0.652	0.89	0.42 – 1.91	0.770
Tertiary	(omitted)			(omitted)		
Marital status						
Single (Ref)	-	-	-	-	-	-

Married	0.91	0.62 – 2.42	0.140	1.14	0.62 – 2.10	0.672
Co-habiting	1.64	0.29 – 9.26	0.576	4.37	0.61 – 31.06	0.141
Religion						
Christianity (Ref)	-	-	-	-	-	-
Islam	1.22	0.58 – 1.43	0.689	0.91	0.42 – 1.97	0.812
Traditionalist	1.79	0.29 – 9.26	0.418	1.90	0.32 – 11.31	0.482
Department						
Administrative (Ref)	-	-	-	-	-	-
Fire and Safety	0.09	0.03 – 0.25	0.000	0.09	0.03 – 0.29	0.000
Health Services	0.24	0.07 – 0.88	0.032	0.19	0.04 – 0.83	0.027
Logistics	0.30	0.11 – 0.88	0.028	0.19	0.05 – 0.64	0.008
Port Operations	0.28	0.11 – 0.74	0.010	0.18	0.06 – 0.53	0.002
Security	0.25	0.09 – 0.68	0.006	0.18	0.06 – 0.56	0.003
Work Experience						
Less than 1 year (Ref)	-	-	-	-	-	-
6–10 years	0.93	0.53 – 1.61	0.784	0.81	0.39 – 1.66	0.558
11–15 years	1.25	0.66 – 2.40	0.492	1.12	0.44 – 2.88	0.810
More than 15 years	0.59	0.30 – 1.16	0.126	0.49	0.16 – 1.49	0.207
NHIS Status						
Never registered (Ref)	-	-	-	-	-	-
Not active	1.50	0.94 – 2.39	0.089	1.45	0.84 – 2.52	0.186
Active	0.78	0.30 – 2.07	0.622	0.47	0.15 – 1.50	0.204
Knowledge Level						
Poor (Ref)	-	-	-	-	-	-
Good	0.27	0.17 – 0.44	0.000	0.36	0.21 – 0.63	0.000
Adherence Level						
Poor (Ref)	-	-	-	-	-	-
Good	0.17	0.09 – 0.32	0.000	0.20	0.10 – 0.41	0.000

Note: Ref: Reference category, COR: Crude Odds Ratio, AOR: Adjusted Odds Ratio, CI: Confidence Interval, Omissions are due to collinearity.

Department was a strong determinant of resource utilization. Respondents from departments such as Fire and Safety (AOR: 0.09, 95% CI: 0.03–0.29, p<0.001), Health Services (AOR: 0.19, 95% CI: 0.04–0.83, p=0.027), Logistics (AOR: 0.19, 95% CI: 0.05–0.64, p=0.008), Port Operations (AOR: 0.18, 95% CI: 0.06–0.53, p=0.002), and Security (AOR: 0.18, 95% CI: 0.06–0.56, p=0.003) all showed significantly reduced odds of utilizing OHS resources compared to the Administrative department.

Work experience did not significantly influence resource utilization. For instance, respondents with more than 15 years of experience had lower odds (AOR: 0.49, 95% CI: 0.16–1.49, p=0.207) compared to those with less than one year of experience, but this was not statistically significant. NHIS status was also non-significant. Respondents not actively registered with the National Health Insurance Scheme (NHIS) had slightly elevated odds of resource utilization (AOR: 1.45, 95% CI: 0.84–2.52, p=0.186) compared to those never registered, but the association was not statistically meaningful.

In contrast, knowledge level and adherence level emerged as significant predictors. Respondents with good knowledge of OHS exhibited significantly lower odds of resource utilization compared to those with poor knowledge (AOR: 0.3

6, 95% CI: 0.21–0.63, p<0.001). Similarly, respondents with good adherence levels demonstrated markedly reduced odds of resource utilization (AOR: 0.20, 95% CI: 0.10–0.41, p<0.001).

CHAPTER FIVE

5.0 DISCUSSION

5.1 Introduction

This chapter discusses the findings presented in Chapter 4, focusing on the specific objectives of the study. The discussion is organized into three subsections corresponding to the specific objectives: knowledge of occupational health and safety (OHS) measures, utilization of OHS resources, and factors influencing adherence to OHS practices among workers at the Ghana Ports and Harbours Authority (GPHA) in Tema.

5.2 Knowledge of Occupational Health and Safety Measures

This study found that 51.7% of workers had "good" overall OHS knowledge, while 48.3% scored poorly. Additionally, 96.90% affirmed knowledge of the proper use of personal protective equipment (PPE). This high level of awareness suggests that OHS policies are well-communicated within the organization. This high rate of awareness aligns with the study by Odonkor and Sallar, (2024) which shows that the respondents had high knowledge (97 %) of occupational health and safety as well as cross infection prevention.

In addition, 60.68% of respondents had received formal OHS training, underscoring the importance of structured programs in enhancing knowledge. This compares with a similar study in Ghana which revealed that more than 2 out of 3 respondents (69.9 %) got their knowledge of occupational health and safety from training courses (Odonkor and Sallar, 2024).

However, the study found that 26.32% of respondents believed they lacked sufficient knowledge to protect themselves from workplace hazards. This is consistent with findings by Atakora and Stenberg (2020) assessing the knowledge and views of workers about occupational health hazards

in the Obuasi Municipality which found that most workers (63.3%) had low knowledge of occupational health and safety regulations.

Interestingly, knowledge levels varied significantly across departments at GPHA, with employees in the Fire and Safety Department reporting the highest levels of good knowledge (74.14%) compared to the Security Department (36.84%). Similar trends have been observed in studies such as the one conducted by Siabi *et al.* (2022), which identified departmental roles as key determinants of OHS knowledge in high-risk occupations. Their research in the artisanal and small-scale gold mining sector of Ghana revealed that workers assigned to specific roles, such as drilling or blasting, exhibited higher levels of OHS knowledge, attributed to the nature of their tasks and the associated training received.

5.3 Utilization of Occupational Health and Safety Resources

Despite this, 53.87% of workers had "good" resource utilization, driven by departmental differences. This finding reflects with the observations of (Debela *et al.*, 2023), who noted that similarly the usage of occupational health services was reported as being poor by 59.6% of workers in Ethiopia. This study also revealed that 84.83% of respondents reported using PPE daily, indicating high levels of resource utilization. These findings are contrary to a research conducted among informal woodworkers at the Sokoban Wood Village in Ghana which revealed that, despite being aware of personal protective equipment (PPE) and the injuries they are exposed to, the frequency of PPE usage was low (Bentum *et al.*, 2022).

In this study, access to safety manuals and guidelines showed variability, with only 41.49% of respondents accessing them daily and 25.39% accessing them rarely. This inconsistency in utilizing safety manuals could undermine their effectiveness as a reference tool for workers. Similarly, a study conducted in Windhoek, Namibia by Nghitanwa (2018), found that many

construction sites lacked occupational health and safety (OHS) related documents, indicating poor compliance with national and international OHS legislation. The absence of these documents negatively affected the implementation of OHS measures on construction sites, highlighting the critical role of accessible safety documentation in effective hazard management.

Ease of access to OHS resources was another critical finding, with 77.71% of respondents reporting that resources were "easy" or "very easy" to access. However, 22.29% of respondents reported difficulty or significant difficulty in accessing these resources. These difficulties may stem from logistical challenges or insufficient OHS resources, thereby compromising their ability to effectively address workplace hazards. A stud conducted in four Southern African Development Community (SADC) countries by Masekameni *et al.* (2020) assessed the availability of OHS at primary health care (PHC) facilities and the organization of OHS services. The study found that only 5% of employees working in major establishments had access to occupational health services. This limited access was attributed to factors such as inadequate integration of OHS into PHC services, shortage of trained occupational health practitioners, and poor regulation of OHS provision.

Participation in OHS training programs was uneven, with only 29.72% of respondents attending such programs regularly. This low participation rate may explain the gaps in resource utilization observed in some departments, particularly Fire and Safety, where only 29.31% of employees reported good resource utilization. These findings are consistent with a study conducted by (Yosef and Shifera (2023) among construction workers in Bure Industrial Park, Northwest Ethiopia, which found that workers who received occupational safety training were significantly more likely to utilize personal protective equipment (PPE). Specifically, the study reported that having

occupational safety training was associated with a sixfold increase in PPE utilization (Adjusted Odds Ratio [AOR] = 6.01, 95% Confidence Interval [CI]: 2.05–17.6).

Interestingly, personal awareness (75.85%) and supervisor enforcement (52.63%) were the most significant motivators for resource utilization, while peer encouragement (24.46%) and management reminders (38.39%) were less impactful. This finding aligns with research by Haas (2020), who emphasized the pivotal role of supervisory support in influencing workers' health and safety performance. The study highlighted that informational support from supervisors such as clear communication of safety procedures and expectations had the most substantial impact on promoting safety behaviors among workers. In contrast, peer encouragement and general management reminders were found to be less effective motivators.

5.4 Factors Influencing Adherence to Occupational Health and Safety Practices

Adherence to OHS practices among workers at GPHA was generally high, with 74.30% of respondents reporting good adherence. Factors such as management enforcement of safety regulations (54.18%) and personal commitment to safety (82.97%) were significant contributors to adherence. However, inconsistent enforcement, with 34.98% of respondents indicating that safety regulations were enforced only "sometimes," highlights a potential gap in leadership's role in promoting consistent adherence. These findings align with Amponsah-Tawiah and Mensah (2016) who found a positive and significant relationship between effective OHS management and employees' affective, normative, and continuance commitment. Notably, the study emphasizes that management's role in enforcing safety regulations and demonstrating commitment to employee well-being significantly influences workers' adherence to safety practices.

This study found that 53.25% of respondents perceived supervisors or management as very supportive in promoting adherence to OHS practices. However, 40.25% perceived management as

not supportive, indicating a significant gap in leadership's influence on safety culture. This finding is consistent with Debela *et al.* (2023)**,** who argued that management support is a key determinant of worker adherence to safety protocols. And that there the detrimental impacts of inadequate managerial support on workers' good safety habits.

Peer influence also played a role, with 42.11% of respondents admitting that their co-workers' behavior strongly influenced their adherence to OHS practices. However, 18.89% reported no peer influence at all. Liang *et al.* (2018) similarly noted that both situational and routine safety violations by coworkers were significantly related to individuals' own safety violations. The study highlights the role of social learning and information processing theories in understanding how peer behaviors can shape safety norms and compliance.

Training emerged as a key tool for enhancing OHS knowledge, with 60.68% of respondents indicating they had received formal training on occupational health and safety. However, 39.32% reported not having received such training, suggesting that training programs are not sufficiently inclusive. Formal training is essential for improving worker competence in identifying and mitigating workplace hazards, as emphasized by Donkoh *et al.* (2023) who found that formal training significantly enhanced workers' knowledge and use of personal protective equipment (PPE), as well as their ability to identify and mitigate workplace hazards. The authors emphasized that comprehensive training programs are essential for improving worker competence and fostering a culture of safety.

Training effectiveness was another significant factor influencing adherence, with 45.82% of respondents rating training programs as "very effective." However, 12% of respondents found training ineffective or reported that no training was provided. This aligns with a Tanzanian study by Kisinza (2023) which revealed that training programs had a significant positive effect on

employees' knowledge, attitudes, and practices related to occupational health and safety, with an R-squared value of 84.6%. The study emphasized that well-structured training enhances workers' understanding of safety protocols and empowers them to apply this knowledge effectively in their work environment (Kisinza, 2023).

Barriers to adherence included insufficient training (55.42%), personal discomfort with PPE (47.37%), and forgetfulness (39.01%). These barriers reflect findings by George *et al.* (2023), who identified insufficient education on the correct usage and disposal of PPE, discomfort, and behavioral factors such as forgetfulness as significant obstacles to PPE compliance among healthcare workers.

Additionally, intrinsic motivators, such as fear of accidents (70.28%), were more influential than extrinsic factors like rewards (16.72%), reinforcing the findings of Debela *et al.* (2023) who revealed that workers who had not received financial or non-incentives had a 31% drop in the odds of being reported the good practices of occupational health and safety measures compared with workers who had received incentives. These factors highlight the need for targeted interventions to address specific challenges faced by workers.

This study also revealed that knowledge and resource utilization were critical predictors of adherence to OHS practices. Workers with good knowledge of OHS measures were significantly more likely to adhere to safety protocols (AOR = 3.91, $p < 0.001$). Similarly, respondents with good resource utilization levels demonstrated higher adherence (AOR = 0.22, $p < 0.001$). These findings are comparable to those of Odonkor and Sallar (2024), who reported that while healthcare workers in Accra, Ghana, demonstrated high levels of knowledge regarding occupational health and safety (OHS), this knowledge did not consistently translate into practice. These discrepancies

emphasize the critical role of resource utilization and the need for ongoing training and supervision to ensure that knowledge effectively translates into adherence to safety protocols.

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

This study assessed occupational health and safety (OHS) practices among workers at the Ghana Ports and Harbours Authority (GPHA), Tema, focusing on knowledge, resource utilization, and adherence to safety protocols. The findings indicate a generally high level of awareness of OHS policies and procedures, with over half of the respondents demonstrating good knowledge. Nonetheless, nearly half still exhibited knowledge gaps, particularly in recognizing less visible hazards such as biological and psychosocial risks.

While the majority of workers regularly utilized personal protective equipment (PPE), other critical resources like safety manuals and emergency response equipment were underutilized or inconsistently accessed. Notably, fewer than 30% of respondents reported participating in safety training on a regular basis, and over a quarter lacked confidence in using available resources effectively.

Adherence to OHS practices was relatively high, particularly driven by intrinsic motivators such as personal commitment and fear of accidents. However, inconsistent enforcement by management, insufficient training, and a lack of supportive supervision were cited as key barriers to adherence. Multivariate analysis confirmed that knowledge and resource utilization significantly predicted adherence, emphasizing the need for targeted interventions in these areas.

In summary, while GPHA has made commendable efforts in promoting OHS awareness and resourcing, notable deficiencies in training frequency, resource accessibility, and enforcement

mechanisms hinder optimal adherence. These gaps, if addressed, could significantly enhance the safety culture at the port.

6.2 Recommendations

Based on the findings, the following targeted recommendations are proposed:

1. GPHA management must establish mandatory quarterly OHS training programs with department-specific modules, prioritizing Port Operations and Security departments that showed the lowest safety knowledge scores.
2. The OHS Department must conduct monthly audits of safety equipment availability and immediately redistribute first aid kits, safety manuals, and emergency equipment to under-resourced departments like Logistics and Fire & Safety.
3. All supervisors must be trained within 60 days to conduct daily safety walkthroughs with documented findings and immediate corrective actions for non-compliance.
4. The HR Department must launch a monthly safety recognition program that rewards employees and teams with perfect safety records through gift boxes, extra days off, or public commendations.

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APPENDIX I

SURVEY QUESTIONNAIRE

ENSIGN GLOBAL COLLEGE OF PUBLIC HEALTH

DEPARTMENT OF COMMUNITY HEALTH

MASTER OF PUBLIC HEALTH

Dear Respondent,

This questionnaire is part of a research study titled "Occupational Health and Safety Practices Among Workers at Ghana Ports and Harbours Authority (GPHA), Tema." The study seeks to assess the knowledge and practices of occupational health and safety measures, evaluate the availability and utilization of occupational health and safety resources, and identify factors influencing adherence to occupational health and safety practices among workers at GPHA, Tema.

Your participation in this study is entirely voluntary, and your responses will be kept confidential. The information you provide will be used solely for academic purposes and to inform potential improvements in occupational health and safety practices at GPHA.

Please answer all questions as honestly and accurately as possible. Your input is invaluable and will contribute significantly to enhancing workplace safety and health in your organization.

Thank you for your time and cooperation.

Section A: Sociodemographic Information

1. **Age:**
    - 18-25 years
    - 26-35 years
    - 36-45 years
    - 46-55 years
    - Above 55 years

2. **Gender:**
    - Male

- Female

3. **Highest level of education:**
    - Primary
    - Secondary
    - Tertiary

4. Marital status
    - Single
    - Married
    - Cohabiting

5. Religious Belief
    - Christianity
    - Islamic
    - Traditional

6. **Department:**
    - Health Services
    - Port Operations
    - Fire and Safety
    - Security
    - Logistics
    - Administrative
7. **Years of work experience at GPHA:**
    - 1-5 years
    - 6-10 years
    - 11-15 years
    - More than 15 years
8. NHIS status
    - Active
    - Not Active
    - Never registered

Section B: Knowledge level of Occupational Health and Safety Measures

Knowledge Questions

1. Are you aware of the occupational health policies implemented by GPHA?

    - Yes
    - No

2. How do you receive information about occupational health practices at your workplace? (Select all that apply)

    - Training sessions
    - Written manuals
    - Posters and notices
    - Meetings and briefings
    - I don't receive any information
    - Other (please specify): _____

3. How would you rate your awareness of occupational health risks associated with your job?

    - High
    - Moderate
    - Low

4. **How serious do you think the consequences would be if occupational health and safety measures are not followed in your work environment?**

    - Very serious
    - Moderately serious
    - Not serious
    - Unsure

5. **How familiar are you with the procedures for reporting work-related injuries or accidents?**

    - Very familiar
    - Somewhat familiar
    - Not familiar

6. **Do you know the proper use of personal protective equipment (PPE) in your workplace?**

- Yes
- No
- Not sure

7. **Which of the following hazards are you aware of in your work environment? (Select all that apply)**
    - Physical hazards (e.g., machinery, noise)
    - Chemical hazards (e.g., exposure to harmful substances)
    - Biological hazards (e.g., infections)
    - Psychosocial hazards (e.g., stress, workplace violence)
    - Other (please specify): _____

8. **Are you aware of the emergency procedures in case of an accident or hazard exposure?**
    - Yes
    - No

9. **Have you received any formal occupational health and safety training in the past year?**
    - Yes
    - No

10. **How confident are you in your ability to identify potential OHS risks in your workplace?**
    - Very confident
    - Somewhat confident
    - Not confident

11. **Do you believe that you have enough knowledge to protect yourself from workplace hazards?**
    - Yes
    - No
    - Not sure

12. **Do you believe that following OHS guidelines can significantly reduce your chances of getting injured at work?**
    - Strongly agree
    - Agree
    - Neutral
    - Disagree
    - Strongly disagree

Section C: Utilization of Occupational Health and Safety Resources

1. **Are you aware of the occupational health and safety resources available at GPHA?**
    - Yes
    - No

2. **Which of the following OHS resources are available to you at work? (Select all that apply)**
    - Personal Protective Equipment (PPE)
    - First aid kits
    - Safety manuals and guidelines
    - Emergency response equipment
    - Health and safety training programs
    - Occupational health clinic or medical facility
    - Safety signage and warning systems
    - Other (please specify): _____

3. **How often do you use Personal Protective Equipment (PPE) while performing your tasks?**
    - Daily
    - Weekly
    - Monthly
    - Rarely
    - Never
    - Not available

4. **What prompts you to use the OHS resources available at your workplace? (Select all that apply)**

- Management reminders
- Supervisor enforcement
- Observed incidents or accidents
- Regular training sessions
- Personal awareness
- Peer encouragement
- Other (please specify): _____

5. **How frequently do you access safety manuals or guidelines for your tasks?**
   - Daily
   - Weekly
   - Monthly
   - Rarely
   - Never
   - Not available

6. **How often do you participate in OHS training programs provided by GPHA?**
   - Regularly (at least once a quarter)
   - Occasionally (once or twice a year)
   - Rarely (less than once a year)
   - Never
   - No training programs are offered

7. **How easy is it for you to access OHS resources when you need them?**
   - Very easy
   - Easy
   - Difficult
   - Very difficult

8. **Have you ever reported a lack of necessary OHS resources to your supervisor or management?**
   - Yes
   - No
   - Never needed to

9. **If you've reported a lack of OHS resources, how satisfied were you with the response?**
    - Very satisfied
    - Satisfied
    - Dissatisfied
    - Very dissatisfied
    - Not applicable

10. **Do you believe the available OHS resources at GPHA are adequate to address the risks in your job?**
    - Yes, completely adequate
    - Somewhat adequate
    - No, completely inadequate

11. **Have you received proper training on how to use the available OHS resources (e.g., PPE, first aid kits)?**
    - Yes
    - No
    - Partially

12. **How confident are you in your ability to use the OHS resources provided by GPHA effectively?**

    - Very confident
    - Somewhat confident
    - Not confident

13. **How frequently do you access medical or health services (e.g., occupational health clinic) when needed?**
    - Always when needed
    - Sometimes when needed
    - Rarely
    - Never
    - Not available

Section D: Factors Influencing Adherence to Occupational Health and Safety Practices

1. **Which of the following factors most influence your adherence to safety practices at work? (Select all that apply)**
    - Personal commitment to safety
    - Fear of accidents or injuries
    - Supervisor's expectations
    - Peer pressure from coworkers
    - Company policies and procedures
    - Potential disciplinary actions
    - Rewards or recognition for safe behaviour
    - Adequate training and knowledge
    - Availability of proper safety equipment
    - Other (please specify): _____

2. **How supportive is your supervisor or management in promoting adherence to OHS practices?**
    - Very supportive
    - Somewhat supportive
    - Not supportive
    - No support at all

3. **How frequently does management enforce safety rules and regulations at your workplace?**
    - Always
    - Sometimes
    - Rarely
    - Never

4. **Does peer behaviour (e.g., how your coworkers follow safety rules) influence your own adherence to OHS practices?**
    - Yes, a lot
    - Yes, somewhat
    - No, not at all

5. **How often do you follow OHS practices when supervisors are not present?**
    - Always
    - Sometimes
    - Rarely
    - Never

6. **What are the main barriers to consistently following OHS practices at GPHA? (Select all that apply)**
    - Lack of time
    - Insufficient training
    - Inadequate resources or equipment
    - Unclear safety procedures
    - Lack of management support
    - Work pressure or deadlines
    - Personal discomfort (e.g., with PPE)
    - Belief that some safety measures are unnecessary
    - Forgetfulness
    - Other (please specify): _____

7. **How would you rate the effectiveness of the training programs in motivating you to adhere to OHS practices?**
    - Very effective
    - Somewhat effective
    - Not effective
    - No training provided

8. **Do you feel there are sufficient consequences (e.g., warnings, penalties) for not following safety procedures?**
    - Yes
    - No

9. **Do you believe that safety practices are followed more consistently when rewards or recognition are provided for safe behaviour?**
    - Yes
    - No

10. **What would most motivate you to consistently follow safety practices? (Select your top three)**
    - More comprehensive safety training
    - Regular safety reminders and communication
    - Stricter enforcement of safety rules
    - Recognition or rewards for safe behaviour
    - Improved safety equipment and resources
    - More visible management commitment to safety

- Peer support for safety practices
- Other (please specify): _____

11. Have you suffered any accident or injury at your work place since you were engaged?
    - Yes
    - No

12. What were the causes of the accident?
    - Lack adequate of training on health and safety
    - Non provision of adequate protective clothing and equipment
    - Ignorance on health and safety matters
    - Not sure

13. Yes, did you report the accident to the appropriate authorities? Yes [ ] No [ ]

14. How often is monitoring, inspection and evaluation conducted?
    - Monthly
    - Quarterly
    - Biannually
    - No definite time fixed

15. Are you satisfied with what management is doing currently to improve upon occupational health and safety in your Department?
    - Very Satisfied
    - Satisfied
    - Neutral
    - Dissatisfied
    - Very Dissatisfied

Thank you

APPENDIX II

INFORMED CONSENT FORM

TOPIC: OCCUPATIONAL HEALTH AND SAFETY PRACTICES AMONG WORKERS AT GHANA PORTS AND HARBOURS AUTHORITY (GPHA) IN TEMA IN THE GREATER ACCRA REGION OF GHANA

Principal Investigator: Kissi Dompreh-Ofori

Contact : 0244770776

Institution: Ensign Global College

1. PURPOSE OF THE STUDY: You are invited to participate in a research study about occupational health and safety practices at GPHA, Tema. This study aims to assess knowledge levels, resource utilization, and factors influencing adherence to safety practices.
2. STUDY PROCEDURES: If you agree to participate, you will:
    - Complete a questionnaire (approximately 30-45 minutes)
    - Answer questions about your knowledge and use of safety practices
    - Provide information about factors affecting your adherence to safety measures
3. RISKS AND BENEFITS Risks: This study poses no risk.
4. Benefits: While there are no direct benefits, your participation will help improve workplace safety at GPHA.
5. CONFIDENTIALITY
    - Your responses will remain strictly confidential
    - Your name will not appear on any research documents
    - All data will be stored securely for 5 years and then destroyed
    - Only aggregated results will be published
6. VOLUNTARY PARTICIPATION
    - Your participation is entirely voluntary

- You can skip any questions you don't want to answer
- You can withdraw at any time without consequences
- Your employment status will not be affected by your decision

7. CONTACT INFORMATION: For questions about the study, contact:

   Kissi Dompreh-Ofori: 0244770776; kissi.ofori@st.ensign.edu.gh

For questions about your rights as a research participant, contact:

Mr Patrick Kuma: Registrar/IRB Administrator (0245762229)

7. PARTICIPANT'S CONSENT

I have read (or someone has read to me) this document and understand its contents. I have had the opportunity to ask questions and received satisfactory answers. I understand that I can withdraw at any time.

Participant's Name (print): _____

Signature/Thumbprint: _____

Date: _____

Witness Name (if applicable): _____

Witness Signature: _____

Date: _____

Researcher's Signature: _____

Date: _____

APPENDIX III

ETHICAL CLEARANCE

ENSIGN GLOBAL
COLLEGE

POUR REF: ENSIGN/IRB/EL/SN-276/01
YOUR REF:

January 8, 2025

INSTITUTIONAL REVIEW BOARD SECRETARIAT

Kissi Dompreh-Ofori
Ensign Global College
Kpong.

Dear Kissi,

ETHICAL CLEARANCE TO UNDERTAKE POSTGRADUATE RESEARCH

At the General Research Proposals Review Meeting of the *INSTITUTIONAL REVIEW BOARD (IRB)* of Ensign Global College held on Wednesday, January 8, 2025, your research proposal entitled **"Occupational Health and Safety Practices among Workers at Ghana Ports and Harbours Authority (GPHA) in Tema in the Greater Accra Region of Ghana"** was considered.

You have been granted Ethical Clearance to collect data for the said research under academic supervision within the IRB's frameworks and guidelines.

We wish you all the best.

Sincerely,

Dr. (Mrs.) Rebecca Acquaah-Arhin
IRB Chairperson

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