ENSIGN GLOBAL COLLEGE

OCCUPATIONAL HAZARDS, SAFETY CULTURE AND BEHAVIOUR AMONG FISHERMEN IN ACCRA - GHANA

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OCCUPATIONAL HAZARDS, SAFETY CULTURE AND BEHAVIOUR AMONG FISHERMEN IN ACCRA METROPOLITAN ASSEMBLY, GREATER ACCRA - GHANA

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DECLARATION

I hereby certify that except for references duly cited for other people's work, this project submitted to the Department of Community Health, Ensign Global College, Kpong is the result of my investigation under the supervision of Dr Sandra Kushitor and has not been presented for any other degree elsewhere.

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(Head of Academics Program)	Signature	Date

DEDICATION

I sincerely dedicate my study to my mother, who has supported me throughout this journey and served as my source of inspiration.

To my Boss, Lecturers, classmates and Friends who gave me words of wisdom and motivation to complete this research.

Finally, I thank the All-Almighty God for giving me a healthy life, for his strength, mental power, protection, and skills, and I dedicate this work to him.

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ABBREVIATION/ACRONYMS

OHS	OCCUPATIONAL HEALTH AND SAFETY
HSC	HEALTH AND SAFETY COMMISSION
ILO	INTERNATIONAL SAFETY COMMISSION
DEFENS	DRUGS EXPOSURE FEEDBACK AND EDUCATION FOR NURSES' STUDY
AMA	ACCRA METROPOLITAN ASSEMBLY
MMDAs	METROPOLITAN, MUNICIPAL AND DISTRICT ASSEMBLIES
MCD	METRO COORDINATING COUNCIL
GNA	GHANA NEWS AGENCY
STMA	SEKONDI TAKORADI METROPOLITAN ASSEMBLY AREA
DFI	DEPARTMENT OF FACTORIES INSPECTION
PPE	PERSONAL PROTECTIVE EQUIPMENT
SADC	SOUTHERN AFRICAN DEVELOPMENT COMMUNITY
FAO	FOOD AND AGRICULTURAL ORGANIZATION
NGO	NON-GOVERNMENTAL ORGANIZATION
PHT	PATRIOTIC HEALTH TEAM

ABSTRACT

Introduction: The fishing industry is inherently risky, and understanding the specific hazards and the attitudes towards safety within this community is crucial for developing effective strategies to improve the well-being of fishermen. By examining the safety culture and behaviour of these fishermen, this study aims to shed light on the underlying factors that contribute to occupational hazards and identify potential areas for intervention. The findings of this research will not only contribute to the existing literature on occupational safety in the fishing industry but also provide valuable insights for policymakers, researchers, and stakeholders involved in promoting the well-being of fishermen in Jamestown, Accra, Ghana.

Aim: The study's aim is to investigate the occupational hazards, safety culture and behaviour of fishermen in Accra Metropolitan Assembly, Ghana.

Methodology: The study utilized a cross-sectional survey approach to collect opinions from artisanal fishermen in the James Town fishing community, Accra Metropolitan Assembly, Ghana. The target population consisted of registered fishermen aged 30 to 50 years. The researcher employed a sampling technique by selecting the fishermen association, and within this association, a simple random sampling method was adopted. This approach, specifically using a table of random numbers, was chosen to ensure a fair representation of the target population. The sample for the study comprised of 200 respondents, determined through the application of the Yamen (1967) formula. Data was collected via questionnaires that included Likert scale responses, with strict measures taken to ensure confidentiality. Furthermore, the collected data was securely stored, and the analysis involved descriptive statistics using SPSS version 25.

Result: The study found that physical, environmental, and psychological hazards are identified as key contributors to accidents among fishermen. Also, fishermen face significant risks, such as drowning, environmental hazards, and psychological stressors.

Conclusion: In conclusion, the research findings offer valuable insights into the reasons and factors contributing to accidents at fishing sites, as well as the measures that can be taken to improve safety behaviour among fishermen. These findings also reveal that fishermen face significant hazards, particularly drowning, environmental hazards, and psychological hazards. The prevalence of drowning as a major concern highlights the necessity for targeted safety measures and interventions to address water-related accidents. Additionally, the presence of environmental hazards emphasizes the importance of implementing strategies to mitigate risks associated with the challenging and unpredictable work environment. Overall, these findings emphasize the need for proactive measures to ensure the safety and well-being of fishermen in their line of work.

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CHAPTER 1

1.0 INTRODUCTION

1.1 Background of the Study

Occupational Health and Safety is a critical consideration in the fishing industry, as it poses various hazards and risks to the well-being of fishermen. The natural environment in Jamestown, Accra, Ghana provides a conducive habitat for diverse marine life (Berleant & Carlson, 2017). However, the occupational activities of fishermen can have detrimental effects on both the environment and human beings (Mariano & Rovere, 2017). The fishing industry's activities use and emit into the environment several harmful chemical substances such as cyanide during their operations. The industry is no doubt a very crucial industry to the economic development and growth of every country.

One of the top issues for the majority of organisations worldwide is safety habits. According to Neal, Gryphon, and Hart (2020), these safety behaviours can be categorised into two groups: safety participation behaviour and safety-compliant behaviour. While Safety-compliant behaviours can be defined as the essential safety actions that employees must perform to guarantee workplace safety. Safety participation conduct can be understood as behaviours that may not directly contribute to workplace safety but help establish a working environment that supports safety (Neal, Gryphon, & Hart, 2020).

The risk of occupational illnesses and accidents, as well as workplace hazards and safety concerns, exists in the well-known sector of fishing. Fishermen may be vulnerable to catastrophic injuries and occupational risks due to the type of activity, which has a substantial influence on public health. Nearly 2.78 million fatalities globally are due to occupational wellness concerns. Up to 50% of the workforce in underdeveloped nations is at risk for health problems. The International Labour Organisation (ILO) reports that the fishing industry has

one of the highest worker mortality rates due to its vulnerability, and that when a death happens at sea, there is typically no access to emergency care.

According to Mansi et al, (2019), The fishing business is said to be one of the most dangerous industries with around 120 million accidents and 200 000 fatalities annually at a global level due to the numerous dangers and health risks documented from the ancient occupation. Olapade et al. (2021) stated that studies have shown that industrialised nations frequently have fatality rates above 100 per 100,000 active fishermen when accounting for incidents involving fisheries. According to Udolisa, Akinyemi, and Olaoye (2013), Arguably the riskiest occupation in the world, fishing is one of the oldest.

In the words of Udolisa, Akinyemi, and Olaoye (2018), among the oldest and possibly riskiest vocations in the world is fishing. Employees, workers, governments, and the general public have all expressed a great deal of worry over the years about the protection of workers against work-related illnesses and accidents (Monney, Dwumfour-Asare, Owusu-Mensah, & Amankwah-Kuffour, 2020). This is due to the fact that a safe workplace not only encourages employees' physical, mental, and social well-being, but also reduces costs associated with medical expenses, compensation, lost productivity, experienced staff replacement, and other expenses resulting from workplace accidents (Hughes & Phil, 2021). Fishing has always been and continues to be a risky occupation; according to all estimates, there is a high risk of risk-taking, injuries, and fatalities associated with fishing (Abraham, 2018). This poses a severe problem for the commercial fishing industry as well as artisanal fishing.

Nevertheless, Ghanaian fisherman continue to experience issues with maritime safety, which is a significant burden for both them and the nation as a whole. Fishermen and regulatory organisations like fisheries agencies in underdeveloped nations like Ghana's output is impacted by their lack of attention to safety behaviours and safety culture (Aggrey-Fynn & Sackey-Mensah, 2020). In the fishing sector, safety and a good working environment at sea are crucial.

This study was therefore necessary. The purpose of the study is to look into the safety practises, occupational risks, and behaviour of fisherman in Ghana's Accra Metropolitan Assembly.

1.2 Statement of the Problem

The role of a fisherman is time and energy consuming and very essential to the economic growth of a country. Their place of work could make them uncomfortable and inconducive at many times due to congested work areas. They need to stay on the ship for prolonged sea voyages. They also have to cooperate with their crew due to the nature of the work even if they have a strained relationship, which makes a fisherman's task more challenging (El-Saadawy, 2014). Some variables that may compromise worker safety in this sector are remote locations, extended workdays, and inadequate rest periods.

Additionally, they have significant demands at work, which might interfere with regular family life. incidents similar to the MV Comforter II disaster, which occurred on Friday, May 6, 2022, and resulted in the deaths of 11 persons, including the ship's captain, have been attributed to the widespread lack of safety among most fishing vessels (Daily Graphic 2022). These factors could make fisherman more susceptible to experiencing stress-related symptoms (Jeebhay 2014).

Parallel to this, a fishing boat's deck in Ghana has a cramped workspace that is overrun with fishing equipment, offering insufficient safety features for the fishermen. An estimated 2 million workers per year pass away from accidents and illnesses brought on by their professions. Additionally, according to estimates from the International Labour Organisation (ILO), At least 335 000 people are fatally injured in industrial accidents each year, which total 270 million.

Despite these developments in Ghana, concerns about workplace health and safety have gotten barely any attention (Asumeng, Asamani, Afful, & Agyemang, 2020). A few studies conducted in the formal sector have focused on the quality of work life and safety concerns in the banking industry (Asumeng, Coleman, & Dadzie, 2020) and the mining sector (Froko, Asumeng, & Nyarko, 2021). Other studies have examined occupational safety practices in various sectors of the informal industry, including spray-painting, small-scale sawmilling, and auto repair companies (Monney et al., 2020). However, there is a noticeable gap in research regarding fishing practises and safety issues in Ghana. This is particularly concerning given the prevalence of illegal, unreported, and unregulated fishing practices in Ghana's coastal waters, which not only pose a significant threat to the health and safety of fishermen but also result in substantial economic losses for coastal communities and the nation as a whole. Therefore, it is crucial to investigate the safety practices and challenges faced by fishermen in order to protect their well-being and livelihoods and promote sustainable fishing practices.

1.3 Rationale of Study

The essence, importance, use, and vast and vital role of the fishing industry play in our societies and around the world today, justifies studies into any aspects of the industry's operations. Fishing industry products play a significant part in people's lives as a source of protein for our diets and as a raw material for several consumer goods. Nonetheless, the fishing industry poses significant occupational hazards, safety culture and behaviour.

Considering these dangers and the health hazards the fishing industry activities pose to mankind and the environment; a study that seeks to unearth the occupational hazards, safety culture and behaviour associated with the fishing industry business, as well as the identification of occupational health hazards that face this noble industry; as well as factors that may mitigate

some of these safety shortfalls in the fishing industry, is undoubtedly a good piece of work that will be most vital to serving societal interest.

The importance of occupational hazards, safety culture and behaviour in the fishing industry in Ghana are pivotal to the evolution of the informal business and economic expansion in Ghana. The situations surrounding occupational hazards, safety culture and behaviour in the fishing industry in Ghana are subjects of extensive research in both developed and developing nations. However, In Ghana's case, policies have been less successful. Therefore, the current study aims to make an empirical contribution to previous research on the subject with a focus on Ghana. Policymakers, stakeholders from the public and private sectors, and other industry-related development organisations will find value in the study's conclusions.

More creative approaches to improving the industry can be adopted by public institutions like the Ministry of Fisheries and Aquaculture, the Ministry of Trade and Industry, businesses, people, and non-governmental organisations engaged in the sector. The current study will add to the literature and provoke further research in this area. Lastly, this research will act as a roadmap. to researchers and fishermen in Accra Metropolitan Assembly.

In this sense, the study will utilise the following objective; Examine the causes of incidents at fishing locations in the Accra Metropolitan Assembly, assess the types of hazards fishermen experience at locations for fishing in Accra Metropolitan Assembly, assess the nature of injuries fishermen experience at fishing sites in Accra Metropolitan Assembly, identify the measures to improve the fishermen's safety practises in the fishing business in Accra Metropolitan Assembly.

1.4 Conceptual Framework

The conceptual framework of the Drug Exposure Feedback and Education for Nurses Study (DEFENS) study was altered to include factors pertinent to the current investigation. The

orientation and When responders were hired for an apprenticeship, they were given instruction on workplace safety. constitute the educational intervention in the modified framework, and the WTP for occupational health and safety (OHS) services and safety practises constitutes the outcome of interests.

In the conceptual framework employed for the current study, personal factors include age, education level, employment status, income, membership in associations, and experience; in the DEFENS study framework, personal factors include certification, experience, and education level. The workload, practise setting, and safety planning from Friese et al. (2015)'s first framework have been replaced by variables under organisational aspects in the framework for the current study.

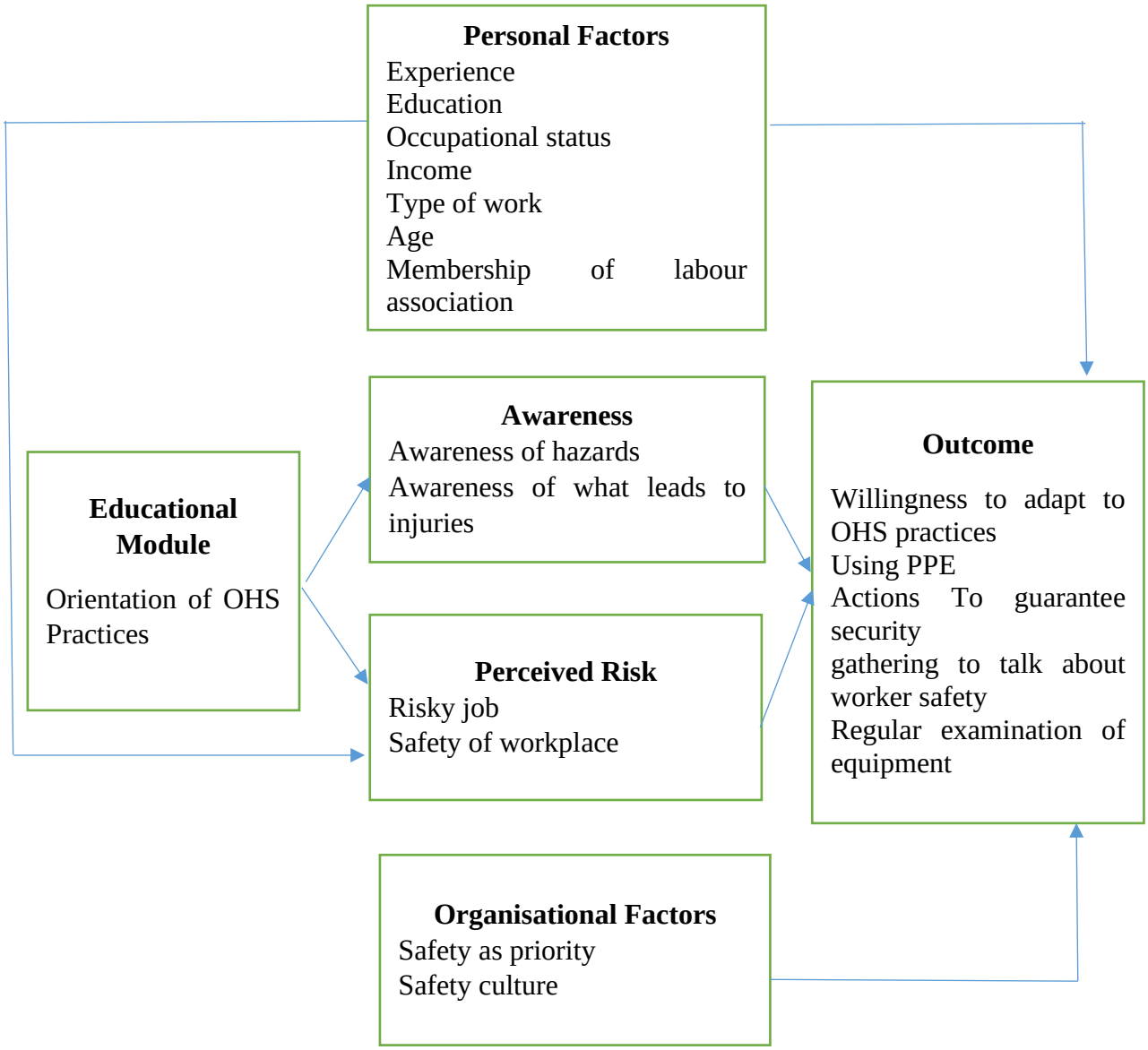

Figure 1: *Conceptual framework for the study of Occupational Health and Safety among fishermen*

Source: Friese et al. (2015), adapted from the DEFENS Study Conceptual Framework.

1.5 Research Questions

The study was guided by the following research questions.:

1. What factors contribute to fishing accidents at fishing sites in Accra Metropolitan Assembly?
2. What are the types of hazards fishermen experience at fishing sites in the Accra Metropolitan Assembly?
3. What is the nature of injuries fishermen experience at fishing sites in Accra Metropolitan Assembly?
4. What are the measures to improve the fishermen's safety practises in the fishing business in the Accra Metropolitan Assembly?

1.6 General Objective

The main objective of the study will be to investigate the occupational hazards, safety culture and behaviour of fishermen in Accra Metropolitan Assembly, Ghana.

1.7 Specific Objectives

Specifically, this research aimed to:

1. Investigate the factors that contribute to accidents at fishing sites in Accra Metropolitan Assembly.
2. Assess the types of hazards fishermen experience at fishing sites in Accra Metropolitan Assembly.
3. Assess the nature of injuries fishermen experienced at fishing sites in Accra Metropolitan Assembly.
4. Identify the measures to improve the fishermen's safety practises in the fishing business in Accra Metropolitan Assembly.

1.8 Scope of the Study

The study is delimited to focus on investigating the occupational hazards, fishermen's safety culture and behaviour. The study considered the Accra Metropolitan Assembly as the geographical scope of the study but limited its respondents to fishermen in Jamestown. The Fishermen Association plays a crucial role in representing the interests of local fishermen and promoting sustainable fishing practices. This collective body serves as a platform for fishermen to voice their concerns, share knowledge and collaborate on initiatives that benefit both their livelihood and the marine ecosystem. Through the association, fishermen can advocate for safety measures, pricing, access to resources and government policies that support responsible fishing methods.

However, the fishermen association faces several challenges within their area. Overfishing due to increasing demands coupled with illegal, unreported, and unregulated fishing practices. Climate change also impacts the fishing industry, causing unpredictable weather patterns and disrupting traditional fishing seasons. Pollution, often stemming from improper waste disposal and industrial activities, further destroys aquatic habitats.

1.9 Profile of Study Area

One of Ghana's two hundred and sixty-one (261) Metropolitan, Municipal, and District Assemblies (MMDAs) is the Accra Metropolitan Assembly (AMA), one of twenty-nine (29) MMDAs in the Greater Accra Region. Despite being founded in 1898, it has undergone numerous names, size, and Sub-Meter changes. The legislative basis was the Local Government Act, 1993 (Act 462), which is currently reformed as the Local Governance Act, 2016 (ACT 936), and was made possible by Legislative Instrument (L.I) 2034 for Ghana's return to constitutional governance in 1993.

Pursuant to the 2010 Population and Housing Census, the Metropolis had a total population of 1,665,086 people, with females forming up 51.9 percent and males accounting for 48.1 percent. The population of Accra is projected to be 2,036,889 in 2018 using the Greater Accra Population Growth Rate of 3.1%. More than 2 million individuals commute to Accra every day for a variety of socioeconomic activities. As a result, it is believed that Accra has a daily population of roughly 4 million, which includes both locals and tourists.

1.10 Organisation of the Study

Six chapters made up the organisation of the study. The backdrop of the study, the explanation of the problem, the justification for the investigation, the conceptual framework, the research questions, the general and particular objectives, the profile of the study area, the scope of the study, and the organisation of the study were all covered in Chapter One's general introduction. Chapter Two covered a review of the literature, which included a theoretical analysis, the conceptual framework, and the empirical foundation of the study. The methodology components, including research methodologies and design, data collection instruments and techniques, study population, study variables, sampling, pre-testing, data handling, and data analysis, as well as ethical considerations, study limitations, and assumptions, were covered in Chapter 3. The outcomes are in Chapter 4. While Chapter Six covered the results and recommendations, Chapter Five offers debates.

CHAPTER 2

2.0 LITERATURE REVIEW

2.1 Overview

This chapter reviewed literature related to the topic under study as documented by authorities, educationists, and researchers. The conceptual review, the theoretical review, and the empirical review were the three categories used to group the literature review.

2.2: Conceptual Review

2.2.1: The History of Occupational Health and Safety Policy

As long as there have been structured workplaces, there has been a need for the study of occupational safety and health. For instance, Caesar (100–40 BC) reportedly had an official in charge of the safety of his armies, while Hippocrates (460–377 BC) wrote about the detrimental consequences of a terrible workplace on slaves (Weaver, 1980). This section recounts the development of numerous workplace safety interventions. The father of occupational safety and health, Bernadino Ramazzini (1633–1714), as well wrote on the safety precautions of fishing and glass working, painting, grinding, and weaving in the middle of the Middle Ages.

George Bauer (1492-1555) wrote several books on mining/metallurgy describing several innovative approaches for improving ventilation for workers in mining shafts (Raouf & Dhillon, 1994). Ramazzini (1713) was the first to record the detrimental effects of work conditions on workers' health and examined the death and injury rates of numerous occupations in De Morbis Artificum, or the Disease of Employees. Ramazzini reviewed and offered numerous preventive techniques for decreasing occupational disease and injury in recognition of the social significance of the advancement and economic growth of these occupations (Raouf & Dhillon, 1994). These early safety engineers undoubtedly created the groundwork for

modern methods to lower occupational disease and injury, even though they did not concentrate their efforts on executing intervention procedures in the workplace.

Employers accepted workplace accidents and fatalities as a normal part of working life without considering their impact on the economy as the era of the machine age began with James Watt and Eli Whitney in the late 1700s. Workers were viewed as plentiful volunteers who could be easily replaced (Leigh, 2018). Individuals risked disease, dismemberment, and mortality for employment and a way to feed their families despite the appalling working conditions in the early factories, where two-thirds of the workers were women and children who worked 12-hour days.

Even if a worker became sick or hurt, they would rarely disclose it because serious or persistent illnesses were grounds for firing (Heinrich, 2019). A thorough review of the history of workplace safety and health would go beyond the scope of this study because it is so large and varied. As a result, the main factors (such as the government, insurance, engineering, and psychology) and related legislation that have influenced occupational safety and health intervention research will be the emphasis of this section of the literature review.

2.2.2: The Concept of Occupational Health and Hazards

More focus is placed on fishing industry revenues in the southern and coastal parts of Ghana (Oppong, 2018). The industry's potential risks to the environment and human safety, as well as Ghana's readiness to handle them, are hardly ever discussed. Moreover, a few of the major operational risks in the business has been identified as worker safety (Powell, 2014). Powell (2014) asserts that the industry faces considerable risk in preventing serious accidents and that industrial organizations must comprehend the concept and evolution of various risks to one's health during work.

The issue of job-related health and hazards has been described by (Oppong 2018) to include work-related accidents (Valentic et al, 2015) as occupational injuries and diseases among workers. Comparable to this, (Epstein & Selber, 2019) found several effects on the environment linked to the various technical activities of the fishing industry's entire lifecycle as components of occupational health hazards in the fishing industry.

According to the researchers, the activities and operations of the fishing industry led to habitat disruption, disturbance of aquatic ecosystems, environmental deterioration, and oil spills. For example, in October 1998, a pipeline in the town of Warri in the Nigerian Delta ruptured and caught fire, killing over 700 people (Epstein & Selber, 2019). The issue of fishing industry injuries in Ghana and the subsequent detrimental impact on the property and life of the affected persons, as well as on the Ghanaian economy in general (GNA, 2019), has suddenly brought to the fore the importance and practice of occupational health and safety in the industry in the country (Achaw & Boateng, 2017).

A healthy work environment is one in which employers and employees take into consideration the following based on identified needs in order to apply a continuous improvement approach to safeguard and promote employee health, safety, and well-being as well as the sustainability of the workplace, according to the World Health Organization (2019):

i. issues with health and safety in the actual workplace;
ii. concerns of health, safety, and well-being in the psychosocial workplace, including work organization and culture of the organization;
iii. workplace personal health resources; and
iv. ways to become involved in the community to promote the well-being of the workforce, their families, and other community members.

The World Health Organization (2019) maintains that since the industry lacks the requisite technological, administrative, and legislative safeguards for health and safety at work, increasing the danger of exposure, particularly more occupational injuries and diseases, employees are constantly subjected to unfavorable working conditions, including inadequate workspaces, outdated equipment, and subpar sanitation facilities, which negatively impact their overall well-being, health, and standard of living.

Well, it is commonly known that workplace dangers and dangers have a negative impact on employees' wellness, productivity levels, and the country as a whole. As a result, it can be challenging to quantify the various effects that occupational health risks can have. Concerning the vocation diseases and injuries indicated according to official data, particularly those from the World Bank and the ILO, some estimates have been made. However, many diseases and injuries brought on by workplace hazards go unreported (Joubert, 2018).

Several nations have seen a transition from the risks associated with labour in the manufacturing industries vs those in the fishing, farming, mining, and other primary sectors as a result of changes in occupational distribution with development (Debraj,1998). Reviewing the available studies on the scope and character of workplace accidents and illnesses is vital when considering the risky working conditions in the fishing industry.

While analyzing the performance of the various fishing industry segments, Manning (2016) paid little regard for OHS-related concerns. However, she pointed out that The results of the research indicated very inadequate workplace health and safety. Health and safety in Kenya's informal economy were also a major concern for Karanja, Muchiri, and Muraka (2013). 100 employees from each of the four cities of Mombasa, Nairobi, Kisumu, and Nakuru were surveyed.

The main hazards at the oil refinery production identified by Achew & Boateng, (2017) were four types of occupational injuries which included: physical, respiratory, musculoskeletal and eye and ear injuries included. Additionally, it includes Physical risks include noise, burns, etc.; biological risks include parasite infestations and malaria; mechanical risks include cuts and amputations; chemical risks include paint exposure; and psychological risks include excessive work hours and lack of sleep. According to the study, 75% of participants experienced loud noises, 72% had injuries, 60% faced psychological risks, and 90% encountered chemical threats.

A further finding from the survey was:

i. due to an excess of both people as well as products in the workplaces, several workers experienced repeated exposures to various hazards, specifically in cluster zones;
ii. there was frequently a lack of clothes and personal protective equipment;
iii. the employees' posture at work caused them stress;
iv. there was a lot of noise that was much louder than what was recommended;
v. the workplaces lacked welfare services and facilities;
vi. the absence of firefighting equipment suggested that there were many fire outbreaks.

Oppong (2018) concentrated more intently on OHS issues affecting workers in key industries who are employed in the informal sector. He gave close attention to the industries of textiles, metal fabrication, vehicle repairs, and panel beating. Due to the easily ignitable materials used in the textile industry, his analysis showed the existence of a significant a fire risk for those who work in textiles. It further mentioned that metal employees are exposed to heated metal handles, adverse weather, welding sparks, gases, as well as welding arcs while performing their jobs. He revealed that in the oil refinery company; the operational refinery section is more prone to hazards due to the presence of various chemicals and substances. He pointed out the

fact that the issue is added to exacerbated by an absence of firefighting tools and the absence of personal safety gear. In their explanation of inherent hazard complexities, they revealed that musculoskeletal occupational injuries are associated with inherent risk levels (Edjekumhene, Atta-Owusu & Ampong, 2017).

The health and safety conditions in this sector were also disclosed by a study done by Ametepeh (2016) on the unofficial services industry in the territory of the Sekondi Takoradi Metropolitan Assembly (STMA). The study specifically examined porters, drivers, beauticians, and mechanics. Following is a discussion of the study's key findings. The survey demonstrated that men predominate in STMA's informal service sector. Particularly, all of the drivers, 96% of the technicians, and 70% of the porters were men.

Just 5% of beauticians were men. Workers as young as 17 and as old as 73 were engaged in the sector. However, the majority of respondents (43.3%) were within the 30-to-49 age range. Workers as young as 17 and as old as 73 were engaged in the sector. However, the majority of respondents (43.3%) were within the 30-to-49 age range. Although most respondents had at least a basic level of education and 13.5% of the respondents had never attended school, it was realized that education was not a requirement in the industry.

According to the study, there were differences across the 29 different employment groups within the unofficial service industries that were assessed in terms of the major occupational health and safety hazards that affected STMA workers. The study found that beauticians were the ones most at risk from chemical dangers. Even though almost all of the raw materials beauticians employed are chemicals., the majority (62%) of them don't check the labelling on substances prior to using them as a result of their low educational levels. 42 % of mechanics ignore the warning labels on the chemicals they employ, even though a considerable majority of them (86 per cent) are aware that they are harmful.

Their working postures had an impact on almost all workers across all job categories. All workers have waist, knee, foot, and general body pain as a result of the standing, bending, as well as seating positions used while working. The survey also showed that OHS institutions in the nation lack resources and have a limited capacity to provide services. For example, there are just five in the Department of Factories Inspectorate (DFI). offices spread throughout just five areas. The Takoradi office has no vehicles, compared to the national office's one vehicle for inspection. Just formal sector organizations and other corporate private entities were subject to inspections and oversight.

Kadafa and Ayuba, (2015), opined that occupational hazards in the oil refinery and storage companies affect several employees including managers and supervisors, technical and machine operators, and clerical and administrative staff. According to the International Labour Organization, there are two million work-related fatalities and 270 million occupational accidents annually (Takala, 2017). Julie (2018) opined that observation of safety protocols at the mining site is the best way to prevent accidents and fatalities. The highest prevalence of occupational injuries per worker appears to be in Sub-Saharan Africa, Afterward, Asia.

There is widespread speculation the elevated numbers can be somewhat accounted for by the recent transfer of risky industries like mining, logging, and agriculture focused on exports from industrialized to underdeveloped nations where there are fewer materials to protect employees or where, in certain instances, employers may be excluded from labour laws (Barten, Fustukian & Haan, 2016). However, owing to a variety of shortcomings in the methods used to collect national OHS data, it is unknown how widespread the issue of job-related disease and injuries is in developing countries, particularly in relation to informal work.

Achew & Boateng, (2017) asserted that occupational hazards particularly caused by oil spills in the industry end up affecting humans and the community/societies in which they operate. The International Labor Organization (ILO) releases global accident rates, however, these are derived from data presented by the participant nations, who's reporting and recording systems differ greatly perhaps even don't exist, and which frequently deliberately Leave out the informal economy. Low reporting of injuries is common in developing nations, but it's even more prevalent and a global issue when it comes to occupational illnesses (Takala, 2017).

Oppong (2018), indicates that, at the construction site, the frequent use of PPEs must be made mandatory to reduce the risk of injuries and accidents. He continued by saying that true occupational disease rates are probably underestimated by stated disease rates in Southern African Development Community (SADC) nations. OHS is now given a low priority in both national government policies and development discussions due to the severe absence of large-scale, accurate data on OHS dangers in developing nations, particularly for informal employees.

It is crucial to move on to investigating the broad and sectoral perspective in which those employees' function, including the oversight and encouraging organisations that influence their means of subsistence and their eligibility for social and labour protection, to consider the potential for providing "decent work" to all employees, such as those employed in Cape Coast's informal manufacturing sector.

2.2.3 Concept of Occupational Health in Fishing Industry

The well-known industry of fishing includes some risks for Occupational diseases and injuries in addition to for workplace dangers and safety difficulties. Fishermen may be susceptible to serious injuries and occupational risks depending on the type of activity, which has a substantial

influence on public health. Nearly 2.78 million fatalities globally are due to occupational health concerns. Between 20% and 50% of the workforce in developing countries faces health concerns.

Due to its vulnerability, the fishing industry has one of the highest workplace mortality rates, according to the International Labour Organisation (ILO), and when a death happens at sea, there is typically no access to emergency care, according to Mansi et al. (2019). The fishing business is reportedly one of the most dangerous industries with around 120 million accidents and 200 000 fatalities annually at the global level, according to Olapade et al (2021), due to the multiple hazards and health concerns recorded from the ancient occupation.

In line with reports, industrialised nations frequently have fatality rates over 100 per 100,000 active fishermen when accounting for incidents involving fisheries, according to FAO (2021). At the 96th International Labour Conference of the ILO in 2007, the Fishing Convention was adopted after extensive preparation. The convention specifies that fishers have acceptable working circumstances connected to fundamental criteria, such as work health & safety protection, health care, and social security, onboard fishing vessels. The Convention becomes effective on November 16, 2017. States, including Senegal, the only neighbour of the Gambia, have ratified the accord as of 23 March 2020, as reported by Garrone et al. (2015). In general, according to FAO (2021), fisheries are crucial to achieving SDGs 1, 2, and 3 of the United Nations Sustainable Development Goals (SDGs), which are to reduce poverty, end hunger, and ensure healthy lives. This is because fish is a source of food and provides the body with essential nutrients for growth.

The International Maritime Organisation (IMO), the Food and Agricultural Organisation (FAO), and the International Labour Organisation (ILO) have all made reporting fishing accidents and fatalities a priority during the past 40 years, according to WHO (2016). However,

many nations still don't have a reliable method for reporting, analysing injuries, and fatalities. More than 15 million people are working on board vessels, according to FAO (2021), which has updated its global estimate for the number of fisheries-related fatalities in 2019 to 32 000 each year. Between 2000 and 2016, there were an estimated 40 million fishing-related deaths worldwide; this served as the inspiration for the FAO (2021) amendment**.**

2.2.4 Concept of Safety Behaviour and Safety Culture

Eklöf and Toèrner (2012) state that attempting to raise risk awareness while encouraging safety conduct is a popular tactic. One issue with this is that such attempts might fail if current activity is more or less necessary, as it often is in the fishing industry, or if the subjective benefit of the dangerous behaviour outweighs the hazards.

Safety culture is "the product of the individual and group values, attitudes, competencies, and patterns of behaviour that determine commitment to, and the style and proficiency of, an organization's health and safety programme," according to the UK Health and Safety Commission (HSC; 2013, p. 4). According to Turner, Pidgeonn, Blockledy, and Tom (2019), this definition is reaffirmed. is the body of ideas, rules, attitudes, roles, and social as well as technical practises aimed at reducing the exposure of workers, management, clients, and the general public to conditions deemed hazardous or harmful. In conclusion, safety culture is all about promoting safety via prevention as a fundamental business value, organisational value, or industrial value. It is concerned with the dedication of both individuals and groups to an organization's health and safety programmes by both individual workers and management

The successful implementation and maintenance of a safety culture depends on three factors: expertise, dedication, and understanding of occupational safety issues (Millward, 2015). According to Redmill (2017), safety culture in the context of artisanal fishing refers to the

degree to which fishermen, including their supervisors and team leaders, are knowledgeable, aware of, and devoted to their safety programmes to promote safety and prevent maritime accidents. According to studies, organisations with poor safety cultures have higher accident rates than those with strong safety cultures, which have lower accident rates. Additionally, according to Clarke (2018), safety culture is viewed as a leading indication of safety conduct.

2.2.5 Nature of Injuries and Hazards Associated with the Fishing Industry

Eye swelling, sunburns, falls, mechanical and electrical accidents, among other common risks and injuries, are frequently recorded in the fishing sector. According to Olapade et al. (2021), without planned and successful interventions, noise-induced loss, allergic respiratory diseases, and work-related stress concerns are projected to significantly worsen with time. Studies conducted in Africa have documented injuries and risks such as wounds from sharp blades, eye redness, and pricks from fish spines.

In accordance with Ngaruiya et al. (2019), there have been cases of eye diseases among fishermen in Ghana as a result of smoke and sunlight. A different study conducted in India found that fishermen there do not seek medical attention and are unwilling to recover from their wounds. According to Neethiselvan et al. (2021), some of the upsetting elements for fishermen are exposure to the cold, wind, rough seas, significant physical effort, frequent injuries sustained while working, noise, poor hygiene, unexpected threats, equipment failure, psychological stress, and economic stress pressure.

Alabi et al. (2015), Major physical risks in handling facilities include trips, falls, and exposure to loud noises, whereas common chemical risks include chemical accidents, solvents, vapours, fumes, and unburned hydrocarbons. Biological hazards are brought on by parasite infestation, germs, viruses, or injuries from animals like shark or crocodile attacks, while occupational dangers are brought on by mechanical elements that affect the musculoskeletal system.

Alabi et al. (2015), Fishing-related fatalities are a persistent, unresolved issue. According to Julius et al. (2021) and Jensen (2016), fish processing is a range of activities that cover the full handling of fish and fish products, from harvesting to client delivery.

Artisanal fishing is a sort of fishery system with an open beach that uses very simple fishing techniques including the use of dug-out boats or canoes that are frequently powered by outboard motors, in contrast to heavy machinery and highly mechanised fishing/large vessel fisheries. Nearly all 300 landing locations in 200 fishing settlements along Ghana's coast are accessed by canoes. Since it only uses local resources, it is typically regarded as small-scale fishing (Mensah, 2012).

The 11,219 traditional canoes that make up the artisanal fishing sub-sector use a variety of fishing gear, such as purse seines, beach seines, drift gill nets (DGN), and surface set nets. Bottom set-nets, hooks, and lines come in a variety of forms, too, for use by artisanal fishermen. Beyond the 50-meter depth range, the lagas and the DGN fleet are in operation. However, the legs are well-stocked with ice, food, and fishing equipment including fish finders and a Geographical Positioning System (GPS).

About 70–80 percent of the total yearly volume of marine fish caught is produced by the artisanal fishing subsector, which mostly catches tiny pelagic fish species and some valuable demersal fish species (Mensah, 2012). Regardless of the degree of modernization, the statistics for nations with sizable commercial fisheries show that the rate of occupational deaths and injuries in the fishing industry is significantly higher than the national average (FAO, 2021).

The industry's intrinsically hazardous working environment can be partly blamed for the high incidence of fatalities and injuries. These include a marine environment that is unpredictable and frequently hostile, unstable work platforms, mobile, variable, and diverse resources that

are frequently dangerous (due to bites, poison, and allergies), and are often found in remote offshore areas, as well as moveable and frequently heavy equipment and a reliance on ships for survival and shelter (Ben-Yami, 2021).

Additionally, weariness, a prevalent element in many fishing-related events, can be brought on by shift work and the intense and prolonged working activity normally associated with fishing (ILO, 2019). Although fisheries are inherently dangerous, different fisheries and time periods exhibit different levels and types of safety culture and behaviour, highlighting the influence of social, economic, cultural, and regulatory elements on safety within the industry (Kwei & Ofori-Adu, 2015).

Similar to this, the hazards involved in fishing from small boats tend to be different from those involved in fishing from large vessels, with the former being more susceptible to foundering and the latter occasionally being more susceptible to the risk of industrial-type mishaps, including getting stuck in machinery. The sorts of fishing activities, the location of operation, the state of the vessel, and the crew's expertise can all affect the risks (Windle, Neis, Bornstein, & Navarro 2015).

As contrast to large mechanised fishing vessels, small-scale and artisanal fisheries have the poorest maritime safety safeguards, making them the most susceptible industries. The navigational, communicational, and safety capabilities of traditionally constructed fishing vessels are subpar (Chakravarty, Venkata, and Ganesh 2016). There will be minimal to no marine safety training for the personnel. Since the primary purpose of motorised fishing vessel is to organise remote water fishing, the introduction of motorization has proven useful for greater revenues while also increasing the risk involved (SIFFS 2018).

Additionally, there is every chance that the risk will rise as fishermen spend more time and travel farther out to sea than non-motorized vessels that just fish for a few hours close to shore. Although the fishermen may take certain precautions utilising their knowledge and expertise, the same conventional non-motorized craft is motorised and used for deep-water fishing without any checks on seaworthiness or other safety measures.

The findings of Chakravarty et al. (2016), because the current marine fisheries management act does not specifically address this issue, there are no real sea safety measures for sea-going fishermen that have been enacted into law. A functional legal framework is a requirement for concerted measures for enhanced safety, which has been a long-standing key issue for a variety of institutions, national authorities, non-governmental organisations, and people.

Several international organisations have already offered a blueprint for this type of regulation (Chakravarty et al. 2016). Studies (Rodrigues & Udaya, 2013; Ansuya et al., 2014) concluded that the understanding and practise of safety precautions in the fishing industry are insufficient. These studies emphasise the need to encourage fisherman to increase workplace safety and adopt a positive attitude towards the use of safety equipment.

2.2.6 Causes of Occupational Injuries and Illnesses

According to ILO projections, 2.2 million workers pass away from illnesses and injuries sustained at work each year. Three thousand five hundred (3500) of these fatalities are the consequence of accidents, and the remaining fatalities are brought on by illnesses and diseases contracted at work (Pearson, 2019). The literature has a variety of viewpoints on the reasons for workplace accidents, diseases, and injuries. According to Muchemedzi and Charamba (2016), accidents don't have a single cause but rather are the result of several factors working at once. According to them, an accident doesn't happen unless someone is exposed to a

potentially hazardous condition. Therefore, unsafe conditions, exposure, and human actions or practises are what lead to accidents.

Referencing additional writers (Hymel et al., 2011; Girard et al., 2019; Choi et al., 2015; Crawford et al., 2018), it is suggested that impaired vision and hearing loss are the two main disorders linked to workplace injuries. However, Cheng, Leu, Lin, and Fan (2010) believe that factors such as a lack of appreciation for the significance of safety precautions implemented in places of work, inadequate safety instruction for lately hired Employees and management's failure to appoint qualified safety and health staff to enforce workplace safety measures are elements that increase the risk of workplace accidents. They concluded that the two employees and management are conscious of possible risks and safety concerns based on a statistical analysis of 1,347 fatalities and accidents at work.

The majority of workplace injuries, however, were determined to be caused by Incapacity of management to put necessary and suitable safety precautions in place to safeguard employees from possible risks in the workplace and harmful acts perpetrated by employees.

Stress, which frequently arises from job pressures, is another significant factor in workplace accidents that result in injuries (Kodom-Wiredu, 2019). Burton (2010) believes that stress is a significant component in occupational injuries that result in fatalities and lost workdays. He bases his case on the Stress Institute of America and Trauma theory,

Burton, (2010) draws the conclusion that tension at work, or stress brought on by other causes, impacts a person's performance at work, resulting in performance impairment and errors. Accidents caused by the error will result in harm or death. Johnson (2008) claims that disorders at work are more prevalent more than the total of all other non-fatal injuries and that the most frequent non-fatal injuries are caused by anxiety, stress, and neurotic illnesses.

Yamasue, Hayashi, Ohshige, Tochikubo, and Souma (2018) and Cifuentes et al. (2018) have also noted that employees in professions that frequently involve strict and erratic schedules, together with the accompanying heavy workloads are generally associated with high blood pressure, stress, and mental health disorders, and that a reduction employee mental health can be enhanced by overtime work hours (Hino, Inoue, Mafune & Hiro, 2019). An indicator that a comprehensive study on the causes of occupational injuries and illnesses has not been conducted throughout the world's formal and informal economies, at all employment levels is the variety of opinions voiced on the causes of workplace injuries.

2.2.7 Measures to Improve Safety Behavior

Theoretical and intervention OHS concerns various academics who have devised a variety of strategies for monitoring and enhancing occupational health and safety in the workplace. The ones created by Gustaven (2017) and Heinrich (2018) stand out among them. The three groups of enhancing OHS conditions are listed by Gustavsen (2016). The specification model, which refers to a situation where laws and regulations are central and various types of specialists serve as the primary actors, is the first of Gustavsen's categories. For example, OHS regulations are provided for all business owners and workers in the nation by the Ghanaian Labour Act (Act 651).

An employer's obligation to guarantee that every employee they hire works in comfortable, safe and healthy conditions is one of the laws in the Labour Act. Every employee has a responsibility to use the safety devices, firefighting gear, and personal protective equipment that the employer has provided by the employer's instructions. Additionally, all workplace illnesses and accidents must be reported by the employer to the relevant government agency as soon as reasonably possible and no later than seven days from the date of the incident.

In the same faith, Valentic et al (2015), explained that employers are to organize seminars, workshops and conferences abreast and equip employees with new and current information about the nature of the job they do. The following model is referred to as a "procedure-based model," and it is a mechanism for establishing corrective action and monitoring the work environment that has a remarkable similarity to contemporary quality control systems. The goal is to discover mistakes and rely on the regular line of business to fix them. The goal is to integrate health and safety into routine managerial decisions and activities.

The Environmental Protection Agency's third strategy, which calls for a culture of continuous improvement, proposes a model for organizational development that places the idea of continuous improvement and maintaining compliance at its foundation.

Applying health promotion strategies at work (particularly among craftsmen) is a crucial first step in creating a healthy workplace, especially in underdeveloped nations where such strategies are frequently underappreciated. Although there are laws and regulations requiring people to follow safety precautions in wealthy countries, the same cannot be stated for many developing nations (Kumar, Dharanipriya, & Kar, 2013).

Nevertheless, artisan workers' understanding of workplace dangers and safety precautions is a significant health concern that requires attention, particularly in developing nations (Kumar et al., 2013). Injuries and illnesses at work can be prevented in large part by raising awareness of occupational safety and health (Manuel, Daphnie, D'cunha & Suresh 2015). All persons who are exposed should understand occupational exposure; nevertheless, many workers are unaware of potential risks at work, leaving them more susceptible to illnesses and injuries (Pui et al., 2017; Tam & Fung, 2008).

Due to research findings, there exist information gaps about potentially dangerous workplace exposures, and levels of awareness vary greatly depending on the occupation and the exposure (Pui et al., 2017). While other research showed otherwise, some indicated a high level of knowledge and awareness. Some workers in the informal economy frequently have a high level of awareness of occupational health risks. For instance, Budhathoki et al. (2014) discovered that welders had a high awareness of occupational dangers and the adoption of safety measures, with 90.7% of welders knowing about at least one welding hazard.

Similarly, Kumar et al. (2013) hypothesised that craftspeople (mostly welders) are more aware of workplace dangers than safety precautions and practises. A study by Diwe et al. (2016) in South Eastern Nigeria likewise found that there was a high degree of awareness of occupational dangers among woodworkers, which they attributed to the respondents' levels of education and length of employment.

In a similar vein, Tadesse et al. (2016) discovered that welders had a high awareness level (86.5%) of occupational dangers and their associated factors. Additionally, they concluded that the level of awareness was substantially correlated with work experience, the availability of clear work regulations, job happiness, marital status, and higher education.

Similar to this, Awosan et al. (2017) noted that nearly all of the study participants had knowledge about OHS. Their results were consistent with those by Pui et al. (2017), who found that study participants were aware of and concerned about their exposure to diesel exhaust but had a limited and occasionally inaccurate understanding of the pathways of exposure, the health effects, and practical methods to reduce that exposure.

In a study on awareness of risks in the laundry department of a hospital in Karnataka, India, Manuel et al. (2015:42) discovered that 53.3% of respondents were aware of the falls that could happen as a result of their profession, 93.3% were aware of hearing issues, and 20% displayed

awareness of headaches. When it came to chemical dangers, 93.3% of them were aware that latex allergy was a risk, while 26.6% highlighted dermatitis and 13.3% knew that respiratory issues were an occupational risk associated with their line of work.

Despite the high levels of knowledge discovered in certain studies, other studies have indicated that workers had low levels of awareness and knowledge. Isah and Okojie (2016), for instance, discovered that welders in Nigeria had less knowledge and awareness than welders in the other research they analysed. Welders in Pakistan frequently lack awareness of the health risks and safety dangers related to their line of work, according to Hassan, Nasir, Anwar, and Talib (2018). According to the survey, up to 45.7% of the respondents claimed that working as a welder posed no significant health risks.

The study by Budhathoki et al. (2014), there is a discrepancy between the use of PPE at work (47%) and awareness of workplace dangers (90%). In terms of socio-demographic traits, Budhathoki et al. (2014) discovered a correlation between education level and awareness of dangers among Nepalese welders, indicating that awareness rises with more education. The conclusion of Tadesse et al. (2016), which suggests a significantly positive relationship between work experience and awareness of workplace hazards, does not support their finding that the number of years spent as an artisan was negatively associated with awareness of hazards.

Marital status and educational attainment were similarly observed by Tadesse et al. (2016) to be substantially correlated with occupational hazard awareness. Among Indian sand and stone miners, awareness of job dangers was correlated with age (Ahmad, 2017). According to Onowhakpor, Abusu, Adebayo, Esene, and Okojie's (2017) findings, knowledge of occupational hazards rises with age among Nigerian sawmill workers who responded to their survey. The differences in the study populations, definitions of hazard awareness, data

collection techniques, workplace conditions, and the times the studies were conducted are some of the plausible explanations for the discrepancies between the findings of the various studies.

In order to reduce exposure to workplace accidents and health issues, PPE use and acceptance are extremely important (Johnson & Motilewa, 2016). PPE uptake and use have been the subject of numerous researches. Some of these data showed low PPE usage, while others showed high PPE usage. For instance, just 15.6% of respondents in an Izudi, Ninsiima, and Alege (2017) study in Uganda reported using personal protective equipment.

Similarly, Johnson and Motilewa (2016) noted a low level of utilisation in Nigeria. They discovered that PPE was used by 27.8% of the respondents, with dungarees being the most often worn PPE (78.8%). Marahatta, Gautam, Paudel, and Yadav (2018) conducted research in Nepal on the knowledge of occupational hazards and related factors among car mechanics in the Kathmandu Metropolitan City. It was discovered that 44.3% of craftspeople used PPE. Budhathoki et al. (2014) evaluated the awareness of occupational dangers and the application of safety measures among craftspeople and found comparable results in Nepal. Eye goggles (60.9%), hand gloves (50.3%), and boots (34.5%) were the most often worn protective gear by responders (34.2%), followed by boots.

Low levels of personal protective equipment (PPE) use were observed among welders, spray painters, and metal workers in Dar es Salaam, Tanzania (Rongo, Barten, Msamanga, Heederik & Dolmans, 2004). In Port Harcourt, Fiebai and Awoyesuku (2011) also found that 15.3% of welders wore safety glasses. Similar findings were found in a research conducted in Al Khobar, Saudi Arabia (Taha, 2010). Johnson and Motilewa (2016) discovered that just 27.1% of auto technicians in Nigeria used PPE.

In a comparable manner, Ihekaire and Oji (2017) discovered that only 2% of respondents reported using eyeglasses consistently, 14% reported using it frequently, and 41% reported using it occasionally. Less than a third (27%) of the craftspeople surveyed in Asante Mampong, Ghana, were found to be using personal protective equipment (PPE), according to research by Monney et al. (2014). In addition, a comparable survey that was conducted in Kumasi to evaluate perceptions of occupational chemical dangers, safety practises, and their enforcement revealed that just 0.7% of respondents said they always used the proper PPE during the spray-painting procedure.

Similarly, Abraham, Megbelayi, and Akpan (2015) discovered that 95 of the subjects in Nigeria (or 95.0%) did not use any type of eye protection while at work. However, several studies revealed a high level of PPE usage. As an illustration, Amani, Bahadoram, and Hazrati (2017) found that 86% of welders wore safety eyewear. In India, the majority (95.7%) of the welders who were surveyed used at least one preventive measure in the week before, according to Kumar et al.'s (2013) research. In a study by Megbele, Lam, and Sadhra (2012) on the risks of cataracts in Nigerian metal arc welders, it was discovered that 60% of the workers wore eye protection. Adei, Braimah, and Mensah (2019) also discovered that few fishmongers in the Subin Sub-Metro used PPE**.**

2.3 Theoretical Review

2.3.1: The Theory of Domino

The "domino theory," which Heinrich developed in 1941, is another method for boosting health and safety that has generated a lot of interest since its debut. According to Herbert William Heinrich's view, various events and circumstances lead to an injury. He likens this chain of occurrences to a row of dominoes falling (a tiny rectangular box used in the domino game). In

the sense that when one falls, the others do too. Heinrich claims that these five "metaphorical" dominoes represent the factors that contribute to workplace accidents.

Social environment and ancestry, personal error, unsafe behaviour or physical hazard (unsafe situation), accident, and injury are the dominoes in chronological order. Each of these "dominoes" is carefully defined by Heinrich, who also offers suggestions on how to reduce or get rid of them from the sequence altogether. He clarifies that the first and second dominoes relate to the personality of the employee.

While the first domino is characterized by negative personality traits like stubbornness, selfishness, and recklessness, the second domino is marked by inherited or acquired character faults including a short fuse, insensitivity, and ignorance. The 3rd domino, an unsafe deed or a dangerous circumstance, relates to Heinrich's primary reason for the occurrences. These elements, according to Heinrich, include things like sudden machinery starts and the absence of rail guards. Heinrich claims that the fourth domino was an accident.

According to Heinrich, an accident is when an avoidable injury occurs. The 5th domino in this chain includes situations where people fall or are struck by flying items and usually sustain injuries. Injury is the final domino in Heinrich's safety chain for the workplace. Heinrich indicated that wounds and fractured bones are a few forms of accident-related ailments. Heinrich underlined that managers and employers must make sure that workplace safety regulations are followed to promote workplace safety.

Among the five main events of the domino theory, Heinrich recognised the third domino, unsafe working circumstances or harmful behaviour, as a key contributor to occupational injuries. Heinrich looked studied a wide range of workplace accidents and discovered that 88% of them were brought on by dangerous behaviour and only 10% by unsafe conditions. Vincoli

and Bird modified Heinrich's domino theory in 1994, and Bird and Germain updated it again in 1985. According to Sabet, Aadal, Jamshidi, and Rad (2013), Bird and Germain updated the "Domino theory" to emphasise the role of management in the Heinrich-described chain of accident causes.

2.4: Empirical Review

Mputhia et al. (2018) looked at the compliance of micro and small businesses in the industrial sector of Nairobi, Kenya, with regard to awareness of environmental legislation. The Environmental Management and Coordination Act (EMCA) was known to a sizable number of micros, small, and medium-sized firms. There were different levels of awareness among diverse groups, including those producing rubber and plastic, tobacco, footwear, beverages, and leather goods.

Although some SMEs were found to be conscious of environmental standards, it was discovered that those who weren't as well as those who couldn't comply with them were harmful to the environment. Manufacturing enterprises in the chemical and related sectors are not yet entirely covered by NEMA. Inadequacies in the exchange of knowledge about environmental legislation were found, making it difficult to fulfil environmental roles effectively. This suggests that organizations should be involved in spreading information about environmental regulating practices. This implies that organizations that spread knowledge about environmental regulations need to have enough resources to carry out their functions.

To ensure occupational health and safety, Idirimanna and Jayawardena (2018) performed a study to examine the factors influencing the health and safety behaviours of fruit and vegetable processors. Idirimanna and Jayawardena (2018) once more emphasized that safety and health are cooperative efforts between employers and employees. Although the interests of the two

sides are different, they work together to make health and safety measures in businesses more successful and definite.

It is undeniable that implementing health and safety procedures presents both companies and employees with several difficulties. The main sources of worry from both parties are the workplace's health and safety, the company's focus, as well as the way that workers respond to their safety, as well as the job requirements and descriptions. There are three levels of staff; the supervisory and clerical staff, the industrial staff and the executive staff and the influence of the executive staff means a lot in safety and health practices.

The working environment has a variety of safety measures, and jobs that demand long hours of work ultimately have fewer employees contributing to assuring safety and health procedures. The much more frequent dangers in industrial organizations are ergonomic hazards. Because manual labour has been replaced by automation, workplace postures are uncomfortable.

Poor working conditions of any kind have a significant impact on a worker's safety and health, according to a Danso (2015) study. Whether the workplace is indoors or outdoors, there are always going to be unhealthy or harmful working conditions. Poor working conditions of any kind have a significant impact on a worker's safety and health, according to a Danso (2015) study. Whether the workplace is indoors or outdoors, there are always going to be unhealthy or harmful working conditions.

Occupational health and safety address a wide range of workplace problems, from accident prevention to threats including toxic gases, dust, noise, heat, stress, etc. Initiatives for occupational health and safety must put more of an emphasis on prevention than on resolving problems after they have already occurred.

Anaman and Osei Asamoah (2017) further assert that poor working conditions may have an effect on the environment in which workers reside because many workers' home and working environments are comparable. This indicates that occupational risks can negatively affect workers, their families, and other members of the community in addition to the immediate physical environment around the business. One well-known example is the use of heavy machines for construction operations.

When applying and clearing bitumen, workers can be exposed to dust and chemicals in a variety of ways. They can breathe in the chemicals while spraying and afterwards, they can absorb the chemicals through their skin, and they can ingest the chemicals if they eat, drink, or smoke without first washing their hands or if they drink water that has become contaminated with the chemical substances.

Additionally, according to Kheni (2018), families of workers may be exposed in a number of ways, including through contact with residues that may be on the workers' clothing. The same exposure methods can also be used to expose other members of the community. Overall, occupational health and safety initiatives should focus on preventing industrial accidents and illnesses while also acknowledging the link between employee health and safety, the workplace, and the surrounding environment**.**

2.5: Limitations and Gaps in the Literature

Mputhia et al. (2018) investigated the awareness of environmental legislation among micro and small firms in Nairobi, Kenya's industrial sector. However, the study's findings are limited in their generalizability as they focus solely on a specific region and smaller businesses. The study does not explore the level of awareness and compliance among medium-sized firms, leaving a gap in understanding the behaviour of this category. Additionally, while the study highlights

inadequacies in the exchange of knowledge about environmental legislation, it does not delve into the specific reasons or barriers for this lack of knowledge sharing, limiting the understanding of underlying factors. Furthermore, the study does not provide a clear understanding of the magnitude of the harm caused by firms lacking awareness or compliance with environmental standards, hindering a comprehensive assessment of the environmental impact (Mputhia et al., 2018).

Also, Idirimanna and Jayawardena (2018) focus on examining the factors influencing the health and safety behaviours of fruit and vegetable processors. However, the study's applicability is limited as it narrows its scope to a specific industry, potentially overlooking variations in health and safety challenges across different sectors. While the study emphasizes the importance of cooperation between employers and employees, it lacks specific insights into the factors that influence these behaviours, leaving a gap in understanding the determinants affecting health and safety practices. Furthermore, the study briefly mentions the influence of executive staff on safety and health practices without exploring this aspect further, missing an opportunity to provide a comprehensive understanding of the role and impact of executive staff in shaping safety culture within organizations (Idirimanna & Jayawardena, 2018).

Danso (2015) presents a study that highlights the significant impact of poor working conditions on worker safety and health. However, the study's shortcomings are clear because there aren't enough specifics or the right citations, which makes it difficult to assess the validity and dependability of the results. The study also does not provide an in-depth discussion on the specific types of poor working conditions and their implications, leaving a gap in understanding the factors contributing to negative outcomes. The absence of information on the study's scope, methodology, and sample characteristics further limits the assessment of its limitations and potential biases (Danso, 2015).

Anaman and Osei Asamoah (2017) assert that unfavourable working conditions may have an impact on both the environment surrounding the workplace and the well-being of workers, their families, and the community. However, the limitations of the study are evident as it lacks specific details and proper citations, making it difficult to assess the reliability and validity of the findings. The study's focus on the example of large machinery in construction work narrows its perspective, as it does not thoroughly examine other potential occupational risks and their effects on the environment and individuals. This limitation restricts the comprehensiveness of the analysis (Anaman & Osei Asamoah, 2017).

Kheni (2018) notes the potential exposure of workers' families and the community to residues and chemicals present in the workplace. However, the limitations of the study arise from the lack of specific details and proper citations, which hinder the evaluation of the reliability and validity of the findings. The study briefly mentions the extent of exposure but does not provide a comprehensive discussion, leaving a gap in understanding the potential risks and necessary interventions (Kheni, 2018).

These limitations highlight the need for further research that addresses the gaps in knowledge and provides a more comprehensive understanding of the relationships between environmental compliance, health and safety behaviours, and their impact on workers, workplaces, and the surrounding environment.

2.6 Summary of the Review of Related Literature

The literature reviews highlighted issues that border on issues relating to the study under review. One theory was considered in the literature for this study and that was the theory of domino**.** Several studies have been conducted about the area of the study. It is reviewed these studies several scholars have tried to investigate occupational hazards, safety culture and

behaviour. The related literature has enabled me to accomplish the current status of the study by giving me more knowledge about the study.

CHAPTER 3

METHODOLOGY

3.1 Research Methods and Design

This study's primary objective was to look into the safety practises, work environment risks, and behaviour of fisherman in Ghana's Accra Metropolitan Assembly. The phrase "research design" describes the process by which a researcher constructs a research study to address a number of research topics. In his work, Wills (2003) asserts that research design functions as a systematic strategy defining the study, the researchers' techniques of data collection, specifics on how the study would reach its results, and the research's limits. The strategy aids researchers in gathering and utilising data to provide the needed knowledge.

The quantitative method is used in the investigation. As a result, the study makes use of a descriptive survey, namely a cross-sectional survey in which respondents' ideas and opinions were sampled. The purpose of the survey design is to gather accurate and pertinent information about the status of phenomena. In other words, the researcher first does quantitative research, examines the findings, and then builds on the findings to quantitatively research to further explain them. The quantitative information provides a broad knowledge of the issue**.**

3.2 Study Area

The study area encompasses the Accra Metropolitan Assembly, situated within the larger region of Greater Accra. This urban setting, characterized by its bustling cityscape and proximity to the coast, holds particular relevance to fishermen. It serves as a hub for various fishing communities and activities due to its coastal location along the Gulf of Guinea. The Accra Metropolitan Assembly's maritime connection has led to a significant presence of fishermen who rely on its waters for their livelihoods, making it a critical focal point for

examining the challenges and dynamics of the fishing industry in this region. The town of James Town, which is under the jurisdiction of the busy Accra Metropolitan Assembly (AMA), one of the many Metropolitan, Municipal, and District Assemblies (MMDAs) in Ghana, offers a distinctive viewpoint on Occupational Health (OH). The fishermen who have lived in James Town since its establishment in 1898 face unique OH problems in the middle of the region's urban dynamics and demographic shifts. Their line of work, which is firmly anchored in the fishing sector, exposes them to a variety of risks. These devoted fisherman struggle with physical strain, long hours at sea, erratic weather patterns, and the dangers associated with managing fishing gear. In the constantly changing Accra Metropolis, this study aims to explore the occupational health concerns of these fishermen, acknowledging

3.3 Data Collection Techniques and Tools

A letter of introduction was obtained from the Department of Community Health and submitted to the Chairman of Jamestown Fishing Association, which sought approval from the Assembly. The letter described the purpose of the study and described the researcher. Oral consent was obtained from the respondents by explaining the process of the study carefully in the language the respondents understand and are conversant with. Respondents were made aware that they had the choice to opt out of the study or decline an answer to a question if they found it uncomfortable.

The instrument used for this study was a questionnaire. This study used a questionnaire because the researcher may approach more readily and it can be finished at the respondent's convenience, it promised a greater coverage. A questionnaire is less expensive as compared to the other methods. The close-ended questions were used to design the questionnaires. The close-ended questions will have four Likert scale responses (SA, A, D, SD) depicting strongly agree, agree, disagree and strongly disagree. However, for less bulkiness and easy reading of

the table, the researcher combined the results for strongly agree and agree to agree, also merged strongly disagree and disagree to disagree and maintained the results for neutral. It is worth knowing that the merging does not affect the results in any way since they have an equal impression as the former.

A through E made up the five main components of the questionnaire. As the subsequent sections sought information on the precise goals of the study, Section A sought information on the demographics of the respondents. Though the questionnaire did not give room for other methods when it was employed and it did not offer motivation to respondents.

3.4 Study Population

Artisanal fisherman in the Accra Metropolitan Assembly's James Town fishing village make up the study's population. There were 400 registered canoe fishermen in James Town, according to the Ghana National Council for Canoe fisherman (2022), who obtained their information from the Marine Canoe Register of the Accra Metropolitan Assembly. 400 fishermen made up the study's whole population.

3.5 Study Variables

The study variables in this study included independent and dependent variables. The dependent variable was occupational hazards; safety culture as the independent variable in this study was behaviour among fishermen, which included factors that contribute to fishing accidents at fishing sites, types of hazards fishermen experience at fishing sites, nature of injuries fishermen experience at the fishing site and measures to improve safety behaviour of fishermen in the fishing industry.

3.6 Sampling

The participant selection process for this study utilized a specific sampling technique. Initially, the Fishermen Association was chosen as the target population. To ensure equitable representation of this population, a simple random sampling technique was implemented. By using a table of random numbers, potential bias was minimized, and every member of the association had an equal opportunity to be included in the sample. This approach was chosen due to the considerable size of the association's population. The objective was to obtain a subset of participants that would accurately mirror the characteristics and experiences of the entire population.

Due to the large population size of the association, the simple random technique was used to select the samples for the study.

The sample size for this was 200 respondents. In determining the sample, the Yamen (1967) formula was adopted

$$\boldsymbol{n = \frac{N}{1 + Ne^2}}$$

Where n= sample size, N=population size e= error margin,

$$\boldsymbol{n} = \frac{400}{1 + 400(0.05)^{\ 2}}$$

n= 200

3.7 Pre-testing

The pretesting phase of the data collection was conducted at Jamestown, using a sample size of 10% (n=20) of the intended participants (N=200). Based on the insights gained from the pilot study, revisions were made to the questionnaires, specifically incorporating the fishing experience of the fishermen and the hazards they encountered. The findings derived from the pretest played a crucial role in enhancing the validity of the data collection tools and ensuring

the reliability of the research outcomes. It is important to note that the pretesting was conducted on a separate sample, distinct from the participants involved in the main study.

3.8 Data Handling

Data (hard copies) were securely kept in a locked filing cabinet. Soft copies were stored on a pen drive that was securely protected with a password. All data were kept confidential for 5 years after which will be destroyed.

3.9 Data Analysis

The study considered descriptive analysis, specifically, measures of central tendencies, thus, mean, and standard deviation. The study used a computer program known as SPSS version 25, which is software for research analysis.

3.10 Ethical Consideration

Ethical approval for this study was sought from the Ensign Global College Research Ethical Committee. Permission was obtained from the Jamestown Fishermen Association. In addition, the researcher ensured all the following ethical guidelines in conducting research are duly followed:

3.11 Assumptions

In this study, it was assumed that the participants would be completely honest in their responses, allowing for an accurate assessment of the study's goals, and that the respondents would not be biased. The researcher made the supposition that he had no influence over the

respondents' answers. The sample population being sufficiently representative of the overall population in the research area was another presumption.

CHAPTER 4

4.0 RESULTS

4.1 Demographic Characteristics of the Respondents

The study's fourth chapter includes the findings and analyses from the study region in accordance with the stated goals. The study specifically aims to: investigate the nature of human resource outsourcing strategies in the study area, evaluate the operational performance of the banking industries, identify outsourcing challenges faced by various Banks, and examine the impact of human resource outsourcing strategies on the organisational performance of the banking industries. All 200 sampled respondents who were given the questionnaire replied.

Table 1: *Demographic Characteristics of the Respondents*

Demographics	**Frequency**	**Percent**
Age	**N=200**	
30-35	2	1.0
36-40	109	54.5
41-45	39	19.5
46+	50	25.0
Education		
Junior High School	91	45.5
No formal education	21	10.5
Primary	83	41.5

Senior High School	5	2.5
Years of Fishing Experience		
1-5	0	0.0
6-10	113	56.5
10+	87	43.5
Smoking Status		
Yes	183	91.5
No	17	8.3
Alcohol Status		
Yes	198	99.0
No	2	1.0

Source: Field data (2023)

The results presented indicate that the majority of the respondents are within the ages of 36-40 which constitute 54.5% and the minority were those within 30-35 years which represented just 1.0%. Also, the results revealed that most of the respondents were JHS leavers representing 45.5%; however, just 2.5% were SHS leavers representing the minority. similarly, the results show that the majority of the fishermen have worked in the fishing business for 6 to 10 years whilst the minority have been with the fishing business for above 10 years. similarly, the results show that the majority of the respondents do smoke which represents 91.5% however, just 8.5% do not smoke. it was again revealed that majority of the respondents do drink alcohol which constitutes 99.0% however, just 1.0% do not drink alcohol.

4.2 Nature of Injuries Fishermen Experience

Fishermen can sustain various types of injuries due to the nature of their work.

Table 2: *Nature of Injuries Fishermen Experience*

Variables	A		N		D	
	F	%	F	%	F	%
Drowning	200	100.0	0	0.0	0	0.0
Cuts and lacerations	198	99.0	0	0.0	2	1.0
Stings from fish spines	192	96.0	0	0.0	8	4.0
Foreign objects in the eye	27	13.5	0	0.0	173	86.5
Slips and falls	196	98.0	3	1.5	1	0.5
Bruises	194	97.0	5	2.5	1	0.5
Puncture wound	195	97.0	5	2.5	0	0.0

Source: Field data (2023)

Based on the results provided, it appears that the fishermen had a diverse level of opinions on different aspects of the nature of injuries experienced by them.

In regard, the results revealed that all (100.0%) of the respondents strongly agree or agree that drowning is a major injury. Cuts and lacerations (99.0%) , Slips and falls (98.0%) and injuries from contact with fish appendages such as spines, and stings (96.0%) were among the major injuries sustained by fishermen.

4.3 Reasons that Contribute to Accidents at Fishing Sites

Several reasons can lead to accidents at fishing sites. These reasons are presented in the Table below. The Table indicates that from the several factors that contribute to accidents at the fishing sites, on average, the majority of the fishermen strongly agree or agree that believing

in supernatural protection (invincible from accidents), being a victim of some curse/spell/witchcraft, and professional pride which constitutes 99.5%, 98.5, and 97.5% respectively.

Table 3: *Reasons that Contribute to Accidents at Fishing Sites*

Variables	**A**		**N**		**D**	
	F	**%**	**F**	**%**	**F**	**%**
Tiredness/fatigue and reduced alertness	78	39.0	1	0.5	121	60.5
Overload of your boat or canoe (too much catch)	40	20.0	0	0.0	118	80.0
Inadequate training, orientation, and supervision	13	6.5	1	0.5	186	93.0
Believe in supernatural protection (invincible from accidents)	199	99.5	0	0.0	0	0.0
Unsafe or defective equipment and facilities	162	81.0	2	1.0	36	18.0
Professional pride (underestimated situation)	195	97.5	0	0.0	1	0.5
Lack of skill and knowledge in fishing	21	10.5	0	0.0	179	89.5
Operational procedures (work and production schedule)	21	10.5	0	0.0	179	89.5
Ignorance (lack of awareness of hazards involved)	33	16.5	1	0.5	166	82.5
Loss of concentration	118	59.0	1	0.5	81	40.0
Lack of right protective equipment and gear	195	97.5	0	0.0	5	2.5
Being a victim of some curse/spell/witchcraft	198	98.5	0	0.0	2	1.0
A bad day	166	83.5	0	0.0	33	16.5

Source: Field data (2023)

The Table indicates that from the several factors that contribute to accidents at the fishing sites, on average, the majority of the fishermen strongly agree or agree that believing in supernatural protection (invincible from accidents), being a victim of some curse/spell/witchcraft, and professional pride which constitutes 99.5%, 98.5, and 97.5% respectively.

4.4 Types of Hazards Fishermen Experience

Fishermen are exposed to various hazards while carrying out their activities.

Table 4: *Types of Hazards Fishermen Experience*

Types of Hazards	A		N		D	
	F	%	F	%	F	%
Physical hazards	199	99.5	1	0.5	0	0.0
Chemical hazards	4	2.0	0	0.0	196	98.0
Environmental hazards	196	98.0	4	0.0	0	0.0
Psychological hazards	196	98.0	5	2.5	0	0.0

Source: Field data (2023)

The results presented show that the majority of the fishermen experience physical hazards, environmental hazards and psychological hazards which constituted 99.5%, 98.0% and 97.5% respectively. The dataset's lack of diversity or variations stems from the uniformity of the sample. When the study focuses on a specific group, it restricts the range of collected data. Similarly, narrowing the study's scope to one community might ignore broader influences, limiting variation in outcomes. Moreover, participant bias could also explain limited variation, as respondents might respond based on personal preferences. Given their homogeneity, their feedback could be similar.

4.5 Measures to Improve Safety Behaviour

Improving safety behaviour is essential to enhance workplace safety and prevent accidents. implementing these measures, organizations can foster a safety-conscious environment and reduce the risk of accidents and injuries.

Table 4: *Measures to Improve Safety Behaviour*

Variables	A		N		D	
	F	%	F	%	F	%
Provision of PPEs	200	100.0	0	0.0	0	0.0
Provision of first aid kits	200	100.0	0	0.0	0	0.0
Effective supervision and monitoring of safety measures compliant	129	64.5	0	0.0	71	35.5
Frequent organisation of safety culture seminar	61	30.5	3	1.5	136	68.0
Ensuring every fisherman to be a registered and active member of NHIS	196	98.0	4	2.0	0	0.0

Source: Field data (2023)

Regards to the measures taken by the fishermen to improve safety behaviour was presented in the Table 5. All the respondents strongly agree or agree that (100.0%) provision of PPEs and (100.0%) provision of first aid kits is the best measure to improve safety among themselves. Based on the results provided, it appears that 98% of respondents strongly agree or agree that having active NHIS is the best measure to improve safety among themselves.

CHAPTER 5

DISCUSSION

5.1 Introduction

This chapter discusses the study's final findings while considering several special objectives.

5.2 Nature of Injuries Fishermen Experience

The findings indicate that 100.0% of the respondents strongly agree or agree that drowning is their major injury. It highlights a unanimous consensus among the fishermen surveyed regarding the severity and prevalence of drowning incidents in their line of work. Drowning is a particularly serious and life-threatening hazard for fishermen, given the nature of their profession often involves working near or on water bodies. However, the response rate for the other variables under the nature of injuries fishermen face was very surprising since they recorded a significant proportion of agreement statements. Regardless of the degree of modernization, the statistics for nations with sizable commercial fisheries show that the rate of occupational deaths and injuries in the fishing industry is significantly higher than the national average (FAO, 2021).

Nonetheless, the unanimous agreement suggests that drowning is a critical concern and a primary injury faced by fishermen. This finding emphasizes the need for targeted safety measures and interventions to address the risks associated with drowning. It highlights the importance of implementing comprehensive safety protocols, such as providing proper training on water safety, promoting the use of life jackets or personal flotation devices (PFDs), and ensuring that fishermen have access to emergency response measures, including rescue equipment and procedures.

Stakeholders in the fishing business may minimize the risks associated with water-related accidents by identifying drowning as a significant harm and adopting proactive measures to

avoid such incidences. The significance of water safety education, the implementation of efficient preventative measures, and the promotion of a safety-conscious culture may help to the reduction of drowning events and the protection of fishermen. The results of Alabi et al. (2015), who indicated that exposure to loud noises, trips, and falls are the main physical threats in the fishing industry, are in conflict with the findings of the current study.

5.3 Types of Hazards Fishermen Experience

The findings presented in the study shed light on the significant prevalence of various hazards experienced by fishermen during their line of work. The data reveals that an overwhelming majority of fishermen encounter physical hazards. This statistic highlights the arduous and physically demanding nature of their profession. These hazards likely encompass a range of risks such as heavy lifting, operation of equipment, and potential accidents that can lead to injuries. The pervasive nature of these physical hazards underscores the pressing need for robust safety measures, proper training, and ergonomic practices within the fishing industry.

Equally noteworthy is the revelation that fishermen are exposed to environmental hazards. This statistic underlines the challenges inherent in working within the unpredictable and often harsh marine environment. The array of environmental hazards faced by fishermen includes adverse weather conditions, rough seas, and potential encounters with hazardous marine life. The high percentage indicates that these dangers are a significant aspect of the fishing profession, necessitating the implementation of advanced weather forecasting systems, comprehensive safety protocols, and swift emergency response mechanisms.

Additionally, the study brings to light the psychological hazards encountered by fishermen. This finding draws attention to the mental well-being of individuals engaged in fishing. The factors contributing to these psychological hazards may include long periods of isolation,

economic uncertainties linked to unpredictable catches, and the constant stress of dealing with the inherent risks of their occupation. Given the potential consequences of these psychological strains on mental health, there is an urgent call for tailored mental health support services, peer counselling, and resources to address the unique challenges faced by fishermen in maintaining their psychological well-being.

Collectively, these results paint a comprehensive picture of the multifaceted challenges that fishermen confront daily. The high percentages associated with physical, environmental, and psychological hazards indicate a clear need for an integrated approach to risk mitigation. Such an approach should encompass stringent safety regulations, improved equipment design, training programs, mental health initiatives, and proactive measures to manage the environmental risks tied to fishing activities. Addressing these concerns holistically, the fishing industry can work towards creating safer and healthier working conditions, fostering greater resilience among fishermen, and ensuring the sustainability of the profession in the face of these pervasive hazards.

In support of the current study, (Kodom-Wiredu, 2019) indicated that stress, which most frequently originates from work pressures, is another significant factor in workplace accidents resulting to injuries. In a similar line, Burton (2010) holds that stress is an important component that contributes to occupational injuries that result in fatalities and lost workdays.

In recognizing and mitigating these environmental and psychological hazards, the fishing industry can enhance the safety and quality of life for fishermen. Implementing measures to address environmental hazards and prioritizing mental health support are crucial steps toward fostering a safer and healthier working environment for fishermen.

5.4 Reasons and Factors that Contribute to Accidents at Fishing Sites

The findings presented under this objective highlight the perspectives of fishermen regarding certain reasons or factors that contribute to accidents at fishing sites. Specifically, the majority of the respondents strongly agree on three factors: believing in supernatural protection, being a victim of curses/spells/witchcraft, and professional pride.

The high percentage (99.5%) of fishermen who strongly agree or agree with the belief in supernatural protection suggests the presence of strong cultural or religious beliefs within the fishing community. This belief may instil a sense of invincibility from accidents, leading some fishermen to underestimate or neglect the importance of following safety protocols and taking necessary precautions. It is crucial to address these beliefs in a culturally sensitive manner while emphasizing the significance of practical safety measures and personal responsibility.

Similarly, the significant percentage (98.5%) of fishermen who believe they could be victims of curses, spells, or witchcraft reflects the influence of superstitions and folklore on their perception of accidents. Such beliefs may contribute to a fatalistic mindset, where accidents are attributed to external forces beyond their control. This mindset can potentially lead to complacency in safety practices and a reduced sense of personal responsibility for accident prevention. It is important to educate fishermen about the true causes of accidents and empower them with evidence-based safety practices.

Also, the high percentage (97.5%) of fishermen exhibiting professional pride is a positive finding. It indicates that a majority of fishermen take pride in their work and the fishing profession. This sense of professional pride can contribute to a higher level of dedication and attention to detail in their work. However, it is crucial to ensure that this professional pride does not lead to overconfidence or a dismissive attitude towards safety measures. Balancing pride with a proactive approach to safety is important to minimize the risk of accidents.

Consequently, these findings highlight the importance of understanding and addressing the cultural and psychological factors that influence safety behaviour among fishermen. It is essential to provide culturally sensitive safety education and training, debunk misconceptions, and emphasize the role of practical safety measures and personal responsibility. By promoting a balanced approach that respects cultural beliefs while prioritizing evidence-based safety practices, fishing communities can work towards reducing accidents and ensuring the well-being of fishermen.

According to Cheng, Leu, Lin, and Fan (2010), inadequate safety education for newly hired employees, a lack of value placed on the importance of safety measures employed at workplaces, and management failure to hire well-trained safety and health personnel to implement safety measures are all factors that contribute to workplace accidents. Burton (2010), on the other hand, draws the conclusion that stress at work or stress brought on by other variables impacts a person's performance at work, resulting in performance impairment and errors at work. Accidents caused by the mistake will result in harm or death.

According to Johnson (2008), workplace disorders are more common than all other non-fatal injuries combined and account for more non-fatal injuries than anxiety, stress, and neurotic disorders.

The majority of workplace injuries, however, were determined to be caused by management's failure to put necessary and suitable safety measures in place to safeguard employees from possible risks in the workplace and harmful acts perpetrated by employees**.**

5.5 Measures to Improve Safety Behaviour

The results indicate that 100.0% and 98.0% of the respondents strongly agree or agree that the provision of personal protective equipment (PPEs), first aid kits and having active NHIS is the best measure to improve safety among themselves is a significant finding. It highlights a

unanimous consensus among the surveyed fishermen regarding the importance of these safety measures in promoting a safer working environment.

The unanimous agreement emphasizes the critical role that PPEs, first aid kits and active NHIS play in safeguarding the well-being of fishermen. PPEs, such as life jackets, personal floatation devices, gloves, and protective clothing, are essential in providing physical protection and reducing the risk of injuries. First aid kits, on the other hand, ensure that immediate medical assistance can be provided in case of accidents or injuries, potentially preventing further harm and improving the chances of recovery. Again, the presence of an active National Health Insurance Scheme for fishermen has significant implications for improving safety behaviour in their profession. With access to healthcare and timely treatment, fishermen can promptly address injuries and illnesses, reducing potential complications. The insurance scheme alleviates financial burdens by covering medical expenses, providing a safety net for fishermen and their families. Moreover, the insurance scheme incentivizes preventive measures and safety practices through regular check-ups and training programs, leading to a safer working environment.

The corresponding agreement suggests a shared understanding among the fishermen that these measures are crucial for their safety. It highlights the importance of providing adequate resources and support to ensure the availability and proper utilization of PPEs, first aid kits and active NHSI in the fishing industry.

Prioritizing the supply of PPEs and first aid kits, the fishing sector may reduce the probability and degree of injuries and accidents significantly. It reflects the significance of proactive actions and readiness in ensuring a safe working environment.

Johnson & Motilewa (2016) stated that the use and acceptance of PPE play a very essential role in reducing exposure to workplace accidents and health issues, which is consistent with the findings of the current study. Despite the importance of PPEs in boosting fishermen's safety,

Izudi, Ninsiima, and Alege's (2017) study in Uganda found that only 15.6% of the respondents actually utilised PPE.

Applying health promotion strategies at work (particularly among craftsmen) is a crucial first step in creating a healthy workplace, especially in underdeveloped nations where such strategies are frequently underappreciated. Although there are laws and regulations requiring people to follow safety precautions in wealthy countries, the same cannot be stated for many developing nations (Kumar, Dharanipriya, & Kar, 2013).

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

On the basis of the many research questions, the chapter delivers the study's conclusions and recommendations.

6.2 Key Findings

i. Research findings reveal causes and measures for enhancing safety behaviour among fishermen.
ii. Cultural and psychological factors, like beliefs in supernatural protection, impact safety behaviour.
iii. Physical, environmental, and psychological hazards shape safety practices in the fishing industry.
iv. Fishing site hazards include drowning, environmental risks, and psychological stress.
v. Targeted safety measures are essential to address water-related accidents like drowning.
vi. Strategies are needed to mitigate risks in the challenging work environment.
vii. Psychological well-being gains significance for fishermen's safety.
viii. Common consensus among fishermen on the importance of personal protective equipment (PPE), first aid kits, and active National Health Insurance Scheme (NHIS).
ix. PPE, first aid kits, and NHIS crucial for accident prevention and response.
x. Recommended strategies include addressing cultural beliefs and promoting a safety culture.
xi. Practical safety measures, risk assessment, and adherence to safety protocols are vital.

xii. Recognizing hazards, providing resources, and addressing psychological well-being contribute to improved safety.

xiii. Collective efforts can lead to reduced accidents, enhanced safety, and better well-being for fishermen.

6.3 Conclusion

In conclusion, the research findings provide valuable insights into the reasons and factors contributing to accidents at fishing sites and the measures that can be taken to improve safety behaviour among fishermen. The findings highlight the influence of cultural and psychological factors on safety behaviour, including beliefs in supernatural protection and superstitions, as well as the presence of Physical, environmental and psychological hazards.

Regarding accidents at fishing sites, the research findings reveal that fishermen face significant hazards, including drowning, environmental hazards, and psychological hazards. Drowning emerges as a major concern, underlining the need for targeted safety measures and interventions to address water-related accidents. The presence of environmental hazards emphasizes the importance of implementing strategies to mitigate risks associated with the challenging and unpredictable work environment. Additionally, the prevalence of psychological hazards highlights the significance of mental health support and resources within the fishing industry.

To improve safety behaviour, the research findings indicate common agreement among fishermen regarding the importance of providing personal protective equipment (PPEs), first aid kits and active NHIS. These measures are recognized as essential in promoting a safer working environment. The common consensus emphasizes the critical role that PPEs, first aid

kits and active NHIS play in safeguarding the well-being of fishermen, indicating a shared understanding of their importance in accident prevention and response.

To improve safety behaviour among fishermen, there should be appropriate approaches to adopt. How these approaches should address cultural beliefs and superstitions while promoting a safety culture that prioritizes practical safety measures, risk assessment, and adherence to safety protocols. By recognizing the hazards faced by fishermen, providing necessary resources such as PPEs, first aid kits, and active NHIS, and addressing psychological well-being, the fishing industry can work towards reducing accidents, improving safety, and ensuring the well-being of fishermen.

6.4 Recommendations

The chapter presents the study's findings and suggestions in light of the numerous research questions.

i. Ministry of Fisheries and Aquaculture Development, Coastal Development Authority (CODA), NGOs Such as PHT, stakeholders and concerned bodies should implement comprehensive safety education and training programs specifically tailored to fishermen.

ii. Various fishermen/fishing associations such as the Ghana National Canoe Fishermen Council (GNCFC) should ensure that all members have NHIS, and are equipped with proper safety equipment to improve the safety of fishermen as well as ensure they are insured in case of any hazard.

iii. Collaboration between Ministry of Fisheries and Aquaculture Development, various fishing associations, the Ghana Navy and Coastal Security to encourage fishermen to adhere safety culture precautions through implementation of education and training on safety practices, safety gear incentives as well as educate them on consequences that comes with violation of safety protocols.

iv. The fishermen should conduct frequent safety meetings, possess knowledge about work-related risks, understand the reasons behind accidents, and comprehend how to practice safety measures while engaged in sea fishing.

6.5 Limitation of Study

Funding and timing were major hindrances for this study. However, the study was limited to fishermen in the Jamestown community, which reduced the challenges of both funding and timing. The sensitivity of the research problem understudied and the possible legal implications that come with it, maybe the reasons why most respondents were not willing to avail themselves to provide answers to the questions but respondents were assured of confidentiality and anonymity and that, the work is solely for academic purpose and for that matter, respondents were encouraged to provide honest and genuine information as answers to the questions.

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APPENDIX

STROBE Statement—Checklist of items that should be included in reports of ***cross-sectional studies***

	Item No	Recommendation	Page No	Respected?	Comments and Quotes
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	V	Yes	The study methodology is outlined in the Methods/Findings section of the abstract, stating that it involved a cross-sectional study conducted in Accra Metropolitan Assembly through Primary data collection.
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	V	Yes	The study abstract encompasses these details (study background, aim explained, methodology and outcomes outlined).
Introduction					
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	1	Yes	Existing literature and rationale are stated in the introduction section
Objectives	3	State specific objectives, including any prespecified hypotheses	3	Yes	Concluding the introduction, there is a statement that delineates the precise aims and objectives. 1.Investigate the factors that contribute to accidents at fishing sites in Accra Metropolitan Assembly. 2.Assess the types of hazards fishermen experience at fishing sites in Accra Metropolitan Assembly. 3.Assess the nature of injuries fishermen experience at fishing sites in Accra Metropolitan Assembly. 4.Identify the measures to improve the safety behaviour of fishermen in the fishing industry in Accra Metropolitan Assembly.
Methods					

Study design	4	Present key elements of study design early in the paper	41	Yes	The study's design is presented in the initial section of the Methods, with all essential components detailed within the methods. This encompassed a cross-sectional study employing quantitative data collected from fishermen.
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	41	Yes	The method section provides comprehensive descriptions of the study's setting, contextual details, and the specific time frame of inclusion, elaborated within the subsections titled "Study Area" and "Study Population."
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	43	Yes	The population of the study is artisanal fishermen in the James Town fishing community in the Accra Metropolitan Assembly. All individual who felt reluctant to answer the questionnaire were willingly allowed to disassociate themselves without forcing them.
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	43	Yes	The study encompassed both independent and dependent variables. The dependent variable was occupational hazards, while safety culture served as the independent variable, influencing behaviour among fishermen. The factors contributing to fishing accidents, types of hazards experienced, injuries sustained, and measures to enhance safety behaviour were also explored.
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	42	Yes	Uniform data collection and measurement methods were employed for all variables, with detailed explanations provided in the methods section. Data collection was conducted in the Accra Metropolitan Assembly from fishermen
Bias	9	Describe any efforts to address potential sources of bias	43	Yes	Conscious efforts were made to mitigate bias by excluding questionable cases. Additionally, the analysis section elucidates that a specific aspect of the analysis was adjusted based on type and context to minimize the

					anticipated bias from that aspect. Also, the data was not analysed independently. It was done collectively without personal interest.
Study size	10	Explain how the study size was arrived at	44	Yes	The method was described in line with different procedures. However, in doing so the researcher used Yamen formular in calculating the sample size. The population was all registered fishermen in the study area which constituted 400 fishermen. For further explanation, refer to page: 44 under the methodology.
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	44	Yes	The study considered descriptive analysis, specifically, measures of central tendencies, thus, mean, and standard deviation. The study used a computer program known as SPSS version 25, which is software for research analysis. Also, for less bulkiness, the 5-likert scale was reduced to a 3-likerts scale.
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	44	Yes	The study considered descriptive analysis, specifically, measures of central tendencies, thus, mean, and standard deviation
		(*b*) Describe any methods used to examine subgroups and interactions	44	Yes	This procedure is explained in the methodology. Interaction analysis was not possible.
		(*c*) Explain how missing data were addressed	44	Yes	This process is detailed within the methodology. "I did not estimate missing values."
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	44	N/A	Not applicable
		(*e*) Describe any sensitivity analyses	44	N/A	Not applicable
Results					
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed	46	Yes	This was described at the introduction part of the chapter four. Out of the 200 respondents sampled, all of them responded to the questionnaire. In this study only males

		eligible, included in the study, completing follow-up, and analysed			were included due to the nature of the study. The study involved fishermen.
		(b) Give reasons for non-participation at each stage		N/A	Not applicable
		(c) Consider use of a flow diagram		N/A	Flow diagram was not necessary
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	46	Yes	Table 1 described the characteristics of the fishermen in the study.
		(b) Indicate number of participants with missing data for each variable of interest		N/A	There was no missing value in this regard
Outcome data	15*	Report numbers of outcome events or summary measures	46	N/A	Categorical variables in this regard were not deemed relevant.
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included		N/A	All the results were analysed based on descriptive analysis. However, the 95% confidence interval was catered for in estimating the various statistical methods.
		(*b*) Report category boundaries when continuous variables were categorized		N/A	Not applicable
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period		N/A	Not applicable
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses		N/A	Not applicable
Discussion					

Key results	18	Summarise key results with reference to study objectives	61	Yes	Key findings were described at the beginning of the sixth chapter thus on page 61.
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	62	Yes	The limitation to the study was duly acknowledged.
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence			References were strategically incorporated where applicable and subsequently examined for contextual relevance. The limitations inherent in the study were thoughtfully addressed in the ensuing discussion.
Generalisability	21	Discuss the generalisability (external validity) of the study results		Yes	The study results were deemed generalisable across the entire Accra metropolitan and Ghana at large specifically at the coastal site
Other information					
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based		Yes	The study was funded by myself

*Give information separately for exposed and unexposed groups.

QUESTIONNAIRE

This questionnaire is to seek for information on the study to investigate the occupational hazards, safety culture and behaviour of fishermen in Accra Metropolitan Assembly, Ghana. Your participation in the exercise is very much needed. Responses will be clearly used for academic purposes and so any information given by respondent will be treated as confidential as possible. Your anonymity is also assured. Thank You.

SECTION A

Demographic Data

Instruction: (Tick [√] the applicable option)

1. Age
   a. 30-35years [ ]
   b.36-40 years [ ]
   c. 41-45 years [ ]
   d. 46 and above years [ ]

2. Education
   a. No formal education [ ]
   b. Primary [ ]
   c. Junior High School [ ]
   d. Senior High School [ ]
   e. Tertiary [ ]

3. Fishing experience
   a. 1-5 years [ ]
   b. 6-10 years [ ]

c. 10 years and above [ ]

3. Do you smoke?

a. yes [ ]

b. No [ ]

4. Do you drink alcohol?

a. yes [ ]

b. No [ ]

5. What are the activities during the closed Season

6. What impact does the closed Season have on you during and after the closed season

SECTION B

FACTORS CONTRIBUTE TO FISHING ACCIDENTS AT FISHING SITE

Instruction: Please tick (√) in the appropriate column to indicate whether you Strongly Disagree (SD), Disagree (D), Agree (A) or Strongly Agree (SA).

Each of the following statement is about the factors contribute to fishing accidents at fishing site.

	Variables	**SD**	**D**	**A**	**SA**
1	Tiredness/fatigue and reduced alertness				
2	Overload of your boat or canoe (too much catch)				
3	Inadequate training, orientation, and supervision				
4	Believe in supernatural protection (invincible from accidents)				
5	Unsafe or defective equipment and facilities				
6	Professional pride (underestimated situation)				
7	Lack of skill and knowledge in fishing				
8	Operational procedures (work and production schedule)				
9	Ignorance (lack of awareness of hazards involved)				
10	Loss of concentration				
11	Lack of right protective equipment and gear				
12	Being a victim of some curse/spell/witchcraft				
13	A bad day				

SECTION C

SAFETY CULTURE AND SAFETY BEHAVIOURS EXHIBITED AMONG FISHERMEN

Instruction: Please tick (√) in the appropriate column to indicate whether you Strongly Disagree (SD), Disagree (D), Agree (A) or Strongly Agree (SA).

Each of the following statement is about the safety culture and safety behaviours exhibited among fishermen.

	Variables	**SD**	**D**	**A**	**SA**
1	Availability of PPE's				
2	Availability of first aid kits				
3	Adequate supervision and monitoring of safety measures compliant by superior's				
4	Continuous education on safety culture				
5	Limited working hours				
6	No drowsy working				
7	Availability of off duties				
8	Registered member of NHIS and active member				

SECTION D

MEASURES TO IMPROVE SAFETY BEHAVIOUR OF FISHERMEN

Instruction: Please tick (√) in the appropriate column to indicate whether you Strongly Disagree (SD), Disagree (D), Agree (A) or Strongly Agree (SA).

Each of the following statement is about the measures to improve safety behaviour of fishermen.

	Variables	**SD**	**D**	**A**	**SA**
1	Provision of PPE's				
2	Provision of first aid kits				
3	Effective supervision and monitoring of safety measures compliant				
4	Frequent organisation of safety culture seminar				
5	Ensuring every fisherman to be a registered and active member of NHIS				

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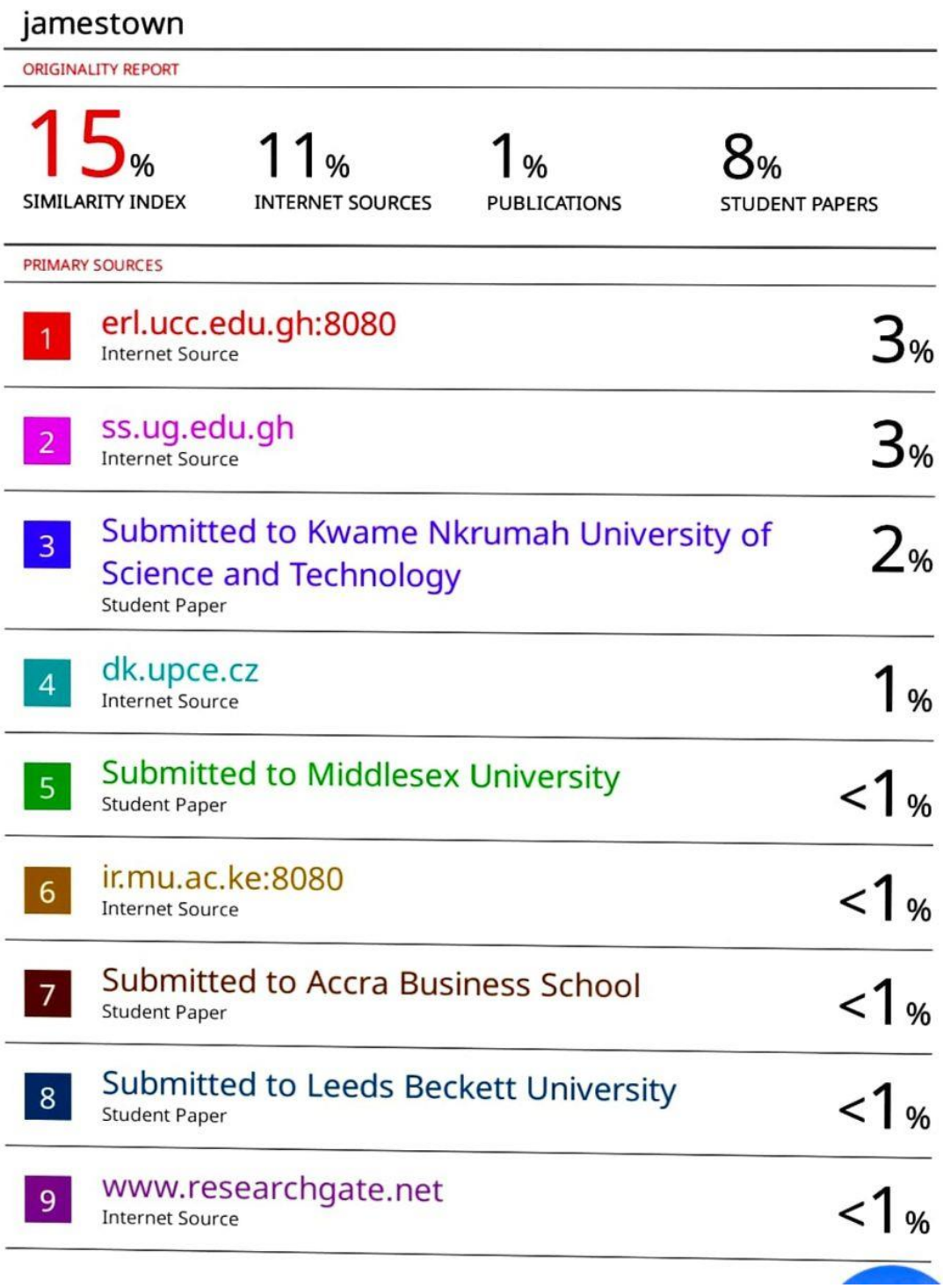

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