UNIVERSITY OF CAPE COAST

EMERGENCY PREPAREDNESS IN TRAUMA MANAGEMENT IN THE CENTRAL REGION

MONICA MENSAH

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BY

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Thesis submitted to the Department of Adult Health Nursing of the School of Nursing and Midwifery, College of Allied Health Sciences, University of Cape Coast, in partial fulfilment for the award of Master of Nursing Degree in Nursing

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DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's signature……. Date …….

Name: Ms Monica Mensah

Supervisor's Declaration

I hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast

Supervisor's Signature …… Date ……..

Name: Dr. (Mrs) Christiana Asiedu

ABSTRACT

Globally, road accidents claim the lives of over 1.3 million people annually; low- and middle-income countries account for 93% of these deaths. This puts the health of the world at grave risk. Assessing Ghana's Central Region's trauma management emergency readiness is the primary objective of this study. Data for the study were obtained by a cross-sectional questionnaire using a quantitative research approach. A census-style technique was used to include all 65 nurses who worked in the emergency departments of three public health institutions in the Central Region that were carefully selected. A systematic questionnaire comprising checklists, true/false questions, and multiple-choice questions (MCQs) was used to gather data. Ethics council permission was obtained, guaranteeing voluntary and private participation. Chi-square, binary logistic regression, and descriptive approaches were used to examine the data. According to the results, all three hospitals showed a moderate level of readiness for the treatment of trauma patients. Unique protocols and policies tailored to each facility were observed, influenced by organizational structures and resource availability.

In conclusion, the study revealed a significant association observed between respondents' sex (male or female) and their knowledge of resuscitation. There was a significantly higher probability of female healthcare staff possessing sufficient knowledge regarding resuscitation. The study also revealed deficiencies in the CPR proficiency of the emergency department nurses, which should serve to guard against complacency and ensure that their knowledge remains up to date throughout their careers. It recommends frequent refresher courses and opportunities for practical instruction.

KEY WORDS

Central

Emergency

Management

Preparedness

Region

Trauma

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DEDICATION

To my children: Norine, Adelyn and Maximus.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER ONE

INTRODUCTION

Over one million three hundred thousand people die in traffic accidents every year, according to the World Health Organisation (WHO) in 2021. Though these nations own over 60% of the world's cars, 93% of these fatalities occur in low- and middle-income countries (WHO, 2021). 2018 data from the World Health Statistics (WHS) also revealed that the death rate from traffic-related causes was 2.4.1 deaths per 100,000 people in low-income countries, which was 2.6 times higher than the 9.2 fatalities per 100,000 population in high-income countries. Road accidents disproportionately impact children and young adults aged 5 to 29 years (WHO, 2021). The primary objective of this study was to evaluate the level of preparedness exhibited by health facilities in the Central Region concerning trauma management. This chapter covers the background, the problem statement, purpose statement, significance of the study, scope and limitations, definition of terms, and organization of the study.

Background to the Study

Physical trauma may take many different forms, such as burns, falls, automobile crashes, and physical assaults (Blankson, Amoako, Asah-Opoku, Odei-Ansong, & Lartey, 2019). There is a chance that traffic accidents may result in a large number of casualties, placing strain on the healthcare system. Road traffic injuries are the 10th most common cause of mortality worldwide, according to the WHO (2016), and they are expected to account for 40% more deaths by 2030. Between 2007 and 2015, road traffic fatalities stabilized at an estimated 1.25 million lives lost annually, reaching 1.35 million deaths each year from road traffic clashes (WHO, 2016), equating to one person

succumbing to road accidents every 24 seconds globally (Gloria, 2019). Regional patterns show that during the past three decades, road traffic fatalities and injuries have consistently increased across Africa (Gloria, 2019In 2013, the WHO African Region has the highest global rate of road traffic injury mortality (26.6 deaths per 100,000 people), according to the Global Status Report on Road Safety (2015). The Global Road Safety Facility (2021) made a comparison involving Ghana, Mauritius, Nigeria, Switzerland, Norway, Singapore, and Sweden which revealed Ghana's estimated road fatalities in 2016 at 7,018, the second-highest after Nigeria (39,802). Ghana reported the highest estimated road fatalities per 100,000 population (24.9) compared to Nigeria (21.4). Ghana had the greatest death rate per 100,000 people, even though it had fewer registered cars (7,328) than Nigeria, Mauritius, and Norway (Global Road Safety Facility, 2021).

To address this alarming situation, countries aligned their efforts with the Sustainable Development Goals (SDGs), particularly SDG 3, which underscores the commitment to "ensuring healthy lives and promoting well-being for all at all ages." SDG 3.6 specifically targets a 50% reduction in road traffic accident deaths and injuries globally by 2020, with the overall SDG objectives anticipated to be achieved by 2030 (WHO, 2016). In Ghana, Sasu (2021) reported approximately 12,100 road accidents involving 20,400 vehicles from January to October 2020, resulting in 2,080 fatalities and 12,380 injuries. Ghana had a 15.65% rise in road collision deaths within the SDGs over a year, rising from 1,802 in 2015 to 2,084 in 2016. Subsequently, in 2017, road crash mortality plateaued with a marginal 0.38% decrease, followed by a 12.76% increase in deaths in 2018 (Gloria, 2019). Statistics

from the National Road Safety Commission (2019) for the first two months of 2019 showed 411 fatalities and 2,440 injuries from 2,126 crashes.

Ensuring hospitals are adequately equipped to handle trauma patients is of utmost priority. Road traffic accidents (RTAs) can occur unpredictably, emphasizing the necessity for all healthcare facilities to implement effective measures in managing RTA victims, thereby mitigating associated mortality and morbidity. Given the potential involvement of multiple individuals in RTAs, especially in mass casualty scenarios, the preparedness of facilities becomes crucial. Emergency Department (ED) nurses, as frontline workers, play a pivotal role in the management of RTA victims. Their swift response significantly influences the outcomes, potentially determining life or death for the individuals involved. Hence, it is imperative that these nurses are well-prepared to deliver optimal care to RTA victims. The level of their readiness depends on the information they learned in their training and on recurring in-service training sessions that are arranged by their facility or other pertinent organisations. Furthermore, facility managers bear the responsibility of ensuring that the necessary logistics essential for caring for RTA victims are readily available, aligning with their duty to both staff and the community they serve.

Statement of the Problem

With an estimated road traffic mortality incidence of 26.2% per 100,000 people, according to the World Development Indicator (WDI), traffic accidents pose a serious threat to public health in Ghana (WHO, 2018; Coleman, 2014). Most of these accidents, especially the fatal ones, take place in the economically productive age range of 15 to 64 years old. There is a

noticeable gender disparity in these instances, with three men and one female impacted for every one affected (Global Road Safety Facility, 2021). This gender-skewed impact has broader implications for the economic productivity of the country.

Even though the Ministry of Health has issued extensive recommendations (MOH) for managing accidents and emergencies in health facilities, there is a concerning lack of strict adherence by many healthcare institutions. Various factors, including managerial, political, or technological issues, contribute to the deviation from these guidelines (Radwan, 2018). This non-compliance hampers the efficiency of Accident and Emergency (A&E) services, affecting hospital frontline workers.

Research by Norman et al. (2012) that included 22 district and regional health institutions including teaching hospitals across all regions of Ghana revealed serious deficiencies in the capacity of healthcare facilities to manage large-scale RTAs. The study underlined that many hospitals across the nation were underprepared for emergencies and did not have the necessary emergency action plans in place, as seen by the spike in demand following significant RTAs. Their ability to oversee such extensive RTAs was further hampered by a lack of resources and a scarcity of trained medical and allied health personnel (Norman et al., 2012). This underscores the urgency for improved emergency preparedness and resource allocation within healthcare facilities to effectively address the impact of RTAs on the healthcare system. They also made a statement that;

> "*Emergency preparedness and efficiency constitute a vital aspect of a government's service to its citizens. Government*

> *agencies must possess the ability to expand rather than scale back emergency services in times of crisis"* (Norman, et al., page 35).

This further confirmed that; the state ultimately has a responsibility to ensure that emergency and disaster services run smoothly in health all facilities for its citizens.

Blankson et al. (2019) reported that a significant proportion of deaths at the Korle-Bu Teaching Hospital's casualty unit in Accra, specifically 62%, were attributed to RTAs. Further analysis of fatalities resulting from these accidents revealed that 31% involved passengers, 50% involved pedestrians, and 18.7% involved drivers. The burden of RTAs on the healthcare system was evident, with RTAs being reported as the major cause of injuries (55%) at a local maxillofacial centre (Parkings et al., 2014; Blankson & Lartey, 2020). The management of such incidents, coupled with limited resources, underscored the strain on both the healthcare system and the families of the victims. Ghanaian families, on average, spent US$ 1687.65 on severe injuries resulting from traffic accidents, in addition to coping with the death and morbidity caused by these incidents. Beyond the physical toll, individuals and their families also grappled with significant levels of psychological discomfort (Blankson et al., 2020; Blankson & Lartey).

Examining available data from the District Health Information Management System (DHIMS) for the period between January 2016 and June 2022, admissions due to RTAs were recorded at various healthcare facilities in Ghana. At the Cape Coast Teaching Hospital (CCTH), RTA-related admissions constituted 5.6% out of 28,127 recorded admissions. Similarly, the

Trauma and Specialist Hospital reported 1.9%, with 787 RTA-related admissions out of 41,378 recorded admissions. The Kasoa Polyclinic (KPC) recorded 1.6%, with 199 RTA-related admissions out of 12,731 recorded admissions. While recognising that some RTA cases might not have been captured in the DHIMS data for certain years, these figures underscore the prevalence of RTAs and the potential for fatal outcomes if not managed effectively (GHS, 2020). Healthcare institutions must be well-equipped to manage trauma situations to guarantee the best possible outcomes and prevent fatalities.

Effective treatment of trauma cases resulting from road traffic accidents (RTAs) is essential in all health institutions, in line with the Sustainable Development Goals (SDG 3, objective 3.6) that seek to reduce the number of RTA-related fatalities and injuries (UN, 2020). This study fills a research vacuum on disaster preparation, especially in the area of trauma management, and represents a groundbreaking endeavour in Ghana and the Central Region. The findings could persuade the government to assume accountability for guaranteeing that medical institutions are prepared to manage the challenges posed by RTAs.

Purpose of the Study

This study aimed to examine how prepared health facilities in the Central Region are, towards the management of trauma.

Research Objectives

1. To assess the knowledge of nurses working in the accident and emergency regarding triage, initial assessment of patients and resuscitation.

2. To ascertain the availability of equipment and other logistics needed to treat trauma victims effectively.
3. To investigate whether the selected facilities have policies for the care of trauma victims.
4. To determine if there are protocols available for the care of trauma victims.
5. To investigate the effects of sociodemographic characteristics on the resuscitation and patient evaluation skills of nurses working in the accident and emergency department.

Research Question

1. What is the knowledge level of the nurses working in the Accident and Emergency on how to care for trauma victims?
2. What equipment and other logistics needed to treat trauma victims effectively are available in these facilities?
3. What policies have been formulated for the care of trauma victims and how are they being implemented?
4. What protocols are available in these facilities for the care of trauma victims?
5. What sociodemographic characteristics affect the degree of knowledge that emergency room nurses have about performing resuscitations and initial patient assessments?

Significance of the Study

For the Central Region's hospitals as well as those across the country, this study will offer an unbiased foundation for handling emergency preparation (in trauma treatment). The education of nurses in trauma

management will also be enhanced. In terms of disaster preparedness and trauma management, the study's findings will also influence policy. As a foundation for future research in the emergency care of trauma victims, the study will complement the body of current knowledge. Results from the research can be used to assess facility preparedness, which will help in policy direction, especially in the nursing of trauma patients. It will help in the organization of more training workshops and drills for emergency department nurses in order to keep their knowledge up to date. In addition, it will help facility management to take the necessary steps to procure necessary equipment for trauma management and review its' hospital's protocols and policies especially towards the management of trauma.

Delimitations

The area of trauma care is very broad but this research seeks to determine the emergency preparedness in trauma management of public health facilities in the Central Region. Although limited research has been done nationally on emergency preparedness about trauma management, this research was limited to only three public health facilities (CCTH, TSH, Kasoa Polyclinic) in the Central Region of Ghana. These three public hospitals were purposefully and conveniently selected because they were located along the Cape Coast-Takoradi highway where most RTA cases that occur at these areas were referred. Every other Region or private facility is excluded from this study. Additionally, this study only included nurses who worked in the emergency rooms of the chosen hospitals. The population of nurses to be studied was identified via a census. The only nurses included were those who

agreed to respond to the surveys. Those on study leave or maternity leave were excluded.

This was a quantitative study, which focused mainly on the knowledge of A & E nurses, availability of logistics, policies, and protocols to determine the emergency preparedness of the selected health facilities in trauma management. Both inferential and descriptive statistics were used to analyse the data collected. The crisis management model by T. William Coomb's was used to guide this study.

Limitations

All the nurses in the A & E department of the selected health facilities were used to collect the data. The result may have been influenced by the number of respondents used for each facility, differences in the levels of health care provided at the selected hospitals, geographical locations of these facilities and its inhabitants (population) or environs they served and facility organization. Health facilities with better organization and level of health care may have had better results as they were all being set against the same benchmark. The W.H.O standardized questionnaire on emergency preparedness was not used. Instead, novel questionnaire was constructed using standardized documents.

Definition of Terms

Emergency: any situation that needs urgent/ immediate action.

Emergency preparedness: plans/guidelines put in place to care for emergency situations.

Trauma: physical injury especially Road Traffic Accident (RTA).

Management: to effectively render care.

Organisation of the Study

This study is organised into five chapters, each of which has a distinct purpose. An overview of the study is given in the first chapter, which covers the issue statement, background, aims, significance, boundaries, restrictions, definitions of terms, and research layout. The second chapter discusses the theoretical and conceptual underpinnings as it dives into the literature review. In-depth analysis of the research methods is provided in Chapter 3, which also includes a synopsis of the chapter and covers the research design, study site, population, sampling strategy, data collecting instruments, protocols, data processing, analysis, and ethical considerations. The analysis of the results from the data collected in chapter three is the main topic of chapter four. Chapter five concludes by summarising the research, drawing conclusions, and offering suggestions in light of the findings.

CHAPTER TWO

LITERATURE REVIEW

Introduction

The study focused on the emergency alertness in trauma management of health professionals in the Central Region. This chapter talked about the existing literature pertaining to emergency preparedness. The literature was organized from studies done on knowledge of nurses working in emergency rooms, through to the availability of resources and equipment (logistics), policies and protocols. The theoretical and conceptual framework of this study is also explained here. The literature examines available studies done in Europe, Africa, and Ghana. Search engines such as Google Scholar, PUBMED, ProQuest and other relevant websites of road safety agencies and organizations within Africa whose publications were between 2015 and 2021 were used.

Concept of Emergency Preparedness

Emergency Preparedness is a broad one, and any attempt at giving an accurate definition to the term can prove illusive. It has been defined variously. Slepski (2005) defined emergency preparedness as *''the comprehensive knowledge, skills, abilities, and actions needed to prepare for and respond to threatened, actual, or suspected chemical, biological, radiological, nuclear or explosive incidents, man-made incidents, natural disasters, or other related events''*. The concept of emergency preparedness is dynamic, necessitating constant updates and a well-structured framework comprising procedures, policies, guidelines, staff training, communication strategies, and resource provisions. Effective preparation for emergencies

requires meticulous planning, encompassing infrastructure, staff readiness, knowledge, and skill levels through training a fundamental aspect of ensuring a high level of mass casualty preparedness (Abdelalim & Ibrahim, 2014). Identifying competent individuals for emergency response, defining their roles, and securing adequate funds are crucial steps in this planning process. Numerous published works emphasize the pivotal role of nurses in disaster management, underscoring the need for robust resources to facilitate effective mass casualty management (Baack & Alfred, 2013). A study in Japan highlighted the significant challenges faced by expert emergency nurses in trauma nursing practice, emphasizing the interdisciplinary collaboration required to address severe and urgent medical conditions (Makino, Nakamura, Ishikawa, & Sugawara, 2019).

Standardized training emerges as a vital component of effective emergency preparedness, as emphasized by Taschner, Nannini, Laccetti, and Greene (2016). Adequate training of health facility staff is essential for handling emergencies efficiently. Beyond the individual nurse, the responsibility for emergency preparedness extends to health facility managers and the state. Their roles encompass formulating policies, establishing protocols and procedures, providing resources and logistics, and organizing training and re-training initiatives for health professionals, among other responsibilities. Unfortunately, a closer examination of the current state of health facilities in the country reveals a deficiency in many resources specific to emergency care.

Knowledge on triage, initial assessment and Cardiopulmonary Resuscitation

Knowledge is characterized as a collection of skills acquired to attain a comprehensive understanding of a particular field. In the context of this study, knowledge pertains to the nurse's contemporary information regarding trauma management, encompassing proficiency in triage, initial patient assessment, and CPR. Triage, defined as the systematic sorting and selection of patients based on treatment urgency and available resources (Payal, Sonu, Anil, & Prachi, 2013), holds immense significance in the emergency department. Efficient triage is crucial for achieving optimal initial management of polytrauma patients and averting delays, thereby minimizing patient morbidity and mortality. In Ghana, the utilization of the South African Triage (SAT) Scale involves sorting patients based on physiological parameters (the vital signs), asking of complaints and looking for clinical signs of the patients. This is used to calculate the early warning score the triage (TEWS) (Soogun, Naidoo, & Naidoo, 2017). This is then followed by matching the score to a color-coded system. The final triage color, determined by the patient's symptoms, dictates the urgency of care, whether immediate (red), within 10 minutes (orange), within 60 minutes (yellow), or after 240 minutes (green), with black indicating the patient is deceased. The effective management of polytrauma patients necessitates a collaborative team approach, emphasizing an organized team approach as the fundamental principle in trauma management, recognizing the challenging nature of the initial evaluation of polytrauma patients, where every minute is critical (Payal et al., 2013).

Research conducted in Japan on the challenges faced by emergency nurses caring for trauma patients revealed a common issue: a perceived lack of essential knowledge and skills (Makino et al., 2019). A number of published literatures agree with this finding. For example, in a research conducted in the United States, it was determined that around 44 percent of respondents believed their institutions were not effectively prepared for emergencies. The study also sought to determine any gaps in emergency nurses' knowledge of emergency preparation and how they preferred to acquire the proper training. The findings indicate deficiencies in emergency nurses' readiness for crises, as less than half of the participants could accurately identify components of the START triage system, an emergency triage system, and only 50% chose the appropriate triage category in the shown situations (Mikita, Trivett, & McMahon, 2017). This underscores a deficiency in knowledge of triage that can impede its effective use. In contrast, Phukubye, Mbombi, and Mothiba (2019) demonstrated that nurses possessed knowledge in triage. Despite the crucial importance of these skills and competencies in emergency care delivery, a considerable number of nurses in health facilities often lack them. A research endeavor investigating the triage methods and expertise of nurses in the emergency departments of rural hospitals in Limpopo revealed that 61% of the nurses performed poorly in triage practice. The conclusion drawn was that, although nurses are cognizant of triage, they encounter challenges translating their theoretical understanding into practical application (Phukubye et al., 2019).

The same can be said for government hospitals within the Gaza Strip, an exploration of emergency nurses' knowledge and perceptions of their role

in disaster management unveiled a need for improvement in the knowledge, readiness, and abilities of Palestinian emergency nurses (Saidam & Eljedi, 2020). A comparable scenario unfolded in a different context, focusing on non-emergency bridging nurses' students. Abdelalim and Ibrahim (2014) conducted a study evaluating Saudi Arabian nurses' knowledge, attitudes, practices, and familiarity with disaster and emergency preparedness. While hospitals may be criticized for not providing adequate resources and protocols for effective emergency response, a considerable number of emergency department nurses themselves lack the requisite knowledge or skills to function optimally in their roles. An evaluation of the knowledge, attitude, and practices concerning mass casualty preparedness among nurses in a referral hospital in Rwanda illustrated inadequacies in knowledge (61.8%), negative attitudes (53%), and poor practices (78%) among the respondents (Uzamuhoza, 2017). The study concluded that nurses exhibited negative attitudes and lacked sufficient knowledge and practices related to continuous training and mass casualty preparedness simulations. This suggests that while the referral hospital may organize in-service training or simulations for mass casualty management (as would be expected), there might be low participation from the nurses.

On the other hand, nurses often have difficulty in some areas of emergency care but excel in others. In two hospitals in Lahore, the emergency and triage departments were the study sites for an assessment of nurses' knowledge and practices regarding disaster management and emergency preparedness. The study found that although 65.4% of the respondents had good overall knowledge, 83.3% of them had poor practices (Shabbir et al.,

2017). This phenomenon is not uncommon, even in our region. There is often a disconnect between theory and practice for many health professionals, particularly nurses. In a systematic study evaluating disaster preparedness among nurses, a significant finding highlighted that nurses were ill-prepared for disaster response (Labrague et al., 2018).

Critical skills and competencies for nurses assigned to emergency and accident wards encompass primary (initial assessment) and secondary survey skills, along with triage proficiency. In trauma management, the primary survey places paramount importance on airway assessment, recognizing that death can rapidly ensue if an airway is obstructed. Recent research demonstrates the efficacy of employing a checklist for assessing and managing the airway to enhance trauma management efficiency and reduce complications (Alzanitan et al., 2021). The airway assessment involves querying the patient with simple questions, such as asking their name, to ensure an unobstructed airway. The next course of action is examining the face, neck, chest, and abdomen for indications of breathing problems. A more thorough examination entails examining the anterior neck and oropharyngeal cavity for cuts, damage to the teeth and tongue, crepitus, and secretion pooling. Depending on their clinical state, unconscious individuals may need to be intubated, have oral or nasal airways used, or have rescue airways. When dealing with an unconscious patient, it is customary for two physicians to collaborate, with one securing the airway and the other immobilizing the cervical spine, assuming cervical spine injury in all blunt trauma patients and employing a cervical collar for immobilization.

The subsequent crucial step involves assessing breathing and circulation after securing the airway. When the airway protection is guaranteed, the sufficiency of oxygenation and ventilation is examined. Road traffic accidents (RTAs) frequently result in chest injuries, which account for 20–25% of trauma-related fatalities that are linked to impaired breathing and oxygenation. Massive hemothorax, cardiac tamponade, flail chest, tension pneumothorax, and missing breath sounds are the most serious situations. Additional indicators of concern include paradoxical or asymmetrical chest movements, dullness or hyper-resonance on percussion, crepitus, and enlarged neck veins. Dyspnea, hypotension, and ipsilateral lack or reduction of breath sounds are indications of tension pneumothorax. Strong signs of tension pneumothorax should be treated with tube thoracostomy first, then large-bore needle decompression in the second intercostal space along the midclavicular line or the fifth intercostal space along the midaxillary line. Delaying decompression for radiographic proof is undesirable and should be avoided. Quick intervention is advised. Ultrasonography (FAST - focused evaluation with sonography in trauma) may be done if other disorders are strongly suspected. For anticipating a hemo-pneumo-thorax in unstable patients, a tube thoracostomy should be promptly inserted.

Palpating the patient's central pulses is the first step in determining the patient's circulatory state after breathing and airway stabilisation. When both the femoral and carotid pulses are strong and observable, an intact circulatory state is assumed (The Merck Manual, 2013). In addition, two large-bore IV catheters (16 gauge or bigger) should be inserted into each arm's antecubital fossa to collect blood for blood type and cross-matching in case blood

transfusion and fluid resuscitation are necessary. (De Paula et al., 2022). Manual pressure, tourniquets, elevation of external arterial haemorrhage, or endovascular procedures such as balloon occlusion, stent grafting, or embolization to control haemorrhage throughout the body are all used to halt life-threatening bleeding promptly (Hörer et al., 2021). Signs of bleeding encompass hypotension and shock indicators (cool, pale, and moist skin). Pelvic injuries, often prevalent in head-on collisions, can lead to profuse internal bleeding. To control internal haemorrhage, a pelvic binder may be employed (Hsu, Chen, Chou, Wang & Chan, 2017).

Resuscitation comprises measures performed to rectify any identified abnormalities in a patient. The initial resuscitation step involves initiating an IV crystalloid bolus, and patients with severe or ongoing bleeding should promptly receive a transfusion of type O blood, as prolonged infusion with crystalloids may adversely affect survival rates by causing coagulopathies (McEvoy et al., 2019). Blood transfusions follow a 1:1:1 ratio of plasma, platelets, and packed red blood cells (Malone, Hess, & Fingerhut, 2006; Holcombet al., 2008; Cannon et al., 2017 and Cantle, & Cotton, 2017). Tranexamic acid treatment is beneficial for patients requiring blood transfusion, particularly within three hours of trauma (Paula et al., 2019). Maintaining perfusion is crucial during the resuscitation of bleeding patients to prevent cardiopulmonary arrest. Nurses must demonstrate proficiency and comfort in fluid resuscitation procedures.

Emergency and accident ward nurses must possess essential skills in primary (initial assessment) and secondary surveys, as well as triaging, to ensure effective trauma management. In the primary survey, airway

assessment takes precedence, given the potential fatality of an obstructed airway. Recent research suggests that following an airway assessment checklist can enhance trauma management efficiency and reduce complications (Alzanitan et al., 2021). The South African Triage (SAT) Scale is employed in Ghana to triage patients based on physiological parameters, facilitating timely management of poly trauma patients (Payal, Sonu, Anil, & Prachi, 2013).

After airway stabilization, attention turns to breathing and circulation. Common chest injuries in road traffic accidents (RTAs) can lead to reduced oxygenation and ventilation, necessitating careful examination for signs such as asymmetric chest movement, crepitus, and absent breath sounds (Hörer et al., 2021). Prompt assessment of circulatory status involves palpating central pulses and establishing intravenous (IV) access for fluid resuscitation and blood transfusion (De Paula et al., 2022). Life-threatening bleeding must be addressed immediately, with various techniques such as manual pressure application, tourniquet use, or endovascular treatments (Hörer et al., 2021; McEvoy et al., 2019).

Emergency nurses should also be adept at performing CPR, a crucial life-saving procedure involving external chest compressions and artificial ventilation during cardiac arrest (Davis, 2021). Early initiation of CPR significantly enhances survival chances for trauma patients experiencing cardiac arrest (Botes, 2020). However, studies reveal concerning gaps in CPR knowledge and skills among emergency department nurses, emphasizing the need for continuous training and periodic refresher courses (Elbaih, Taha, & Elsakaya, 2019; Ehlers & Rajeswaran, 2014). Nurses in emergency and

accident wards play a vital role in trauma management, necessitating proficiency in various skills, from airway assessment to CPR. The challenges identified in existing literature underscore the ongoing need for training and preparedness initiatives to ensure optimal care for trauma patients.

The crucial role that emergency nurses play in managing trauma is examined, with particular attention paid to vital skills including triage, first evaluation, and CPR (Payal et al., 2013; Makino et al., 2019; Mikita et al., 2017; Saidam & Eljedi, 2020; Uzamuhoza, 2017; Shabbir et al., 2017). The framework for a thorough analysis of the difficulties faced by emergency nurses in various healthcare settings is established by the concept of knowledge as the necessary skill set for a sophisticated grasp of trauma treatment. Research conducted in Limpopo, the USA, Japan, and other countries frequently reveals a common problem: nurses tending to trauma patients are thought to lack critical knowledge and abilities. (Makino et al., 2019; Mikita et al., 2017; Phukubye et al., 2019). Notably, discrepancies in understanding emergency preparedness and triage systems underscore the urgency for enhanced training and preparedness initiatives to fortify emergency care capabilities. Similarly, investigations in regions like Gaza and Rwanda shed light on the deficiencies in disaster management knowledge, attitudes, and practices, attributing the shortfalls to both institutional factors and the abilities of individual nurse (Saidam & Eljedi, 2020; Uzamuhoza, 2017).

The synthesis transitions to the intricacies of trauma care, emphasizing the significance of primary and secondary surveys. Airway assessment, breathing, and circulation are spotlighted as critical components in the initial

patient evaluation (Alzanitan et al., 2021; Hörer et al., 2021). Recognition of life-threatening conditions, such as tension pneumothorax and internal bleeding, prompts discussions on necessary interventions and resuscitation measures. The literature also accentuates the paramount importance of CPR, revealing alarming knowledge gaps and skill deficiencies among nurses in regions like Egypt, Botswana, and Al-Najaf's city teaching hospital (Elbaih et al., 2019; Ehlers & Rajeswaran, 2014; Al-Janabi & Al-Ani, 2014). The overarching conclusion highlights the interdependence of triage, initial assessment, and CPR, emphasizing the need for continuous education and preparedness initiatives to empower emergency nurses with the competencies required for adept trauma care in diverse healthcare landscapes.

Availability of equipment and other logistics

The foundational principle of the logistics concept is to enhance the efficiency of operational tasks across various enterprises, spanning manufacturing, service-oriented industries, and those focused on commodities and services (Wudhikarn et al., 2018). Logistics, deemed a crucial strategic key for business success, underscores the importance of resource availability (Wudhikarn et al., 2018). In the context of hospital medical departments worldwide, the daily consumption of essential medical materials, such as sterile needles and swabs, necessitates prudent management as an integral aspect of medical care administration. The meticulous oversight of individual and collective material usage significantly influences the operational costs and productivity of medical departments (Luo et al., 2022).

The impact of logistics on patient management and overall satisfaction became evident in a study conducted on the management of traumatic injuries

from road traffic accidents (RTAs) at the Trauma Emergency Department of the University Hospital in Ouagadougou. Factors such as the average time for patients to have initial contact with caregivers, the time between X-ray completion and admission, and the availability of medications, dressings, and sutures were identified as crucial determinants (Korsaga et al., 2019). Evaluating the surge capacity programs in Ghana's hospitals, Norman et al. (2012) revealed deficiencies in comprehensive emergency preparedness procedures across 22 district and regional health facilities, including teaching hospitals. The study highlighted a lack of readiness for significant RTAs due to insufficient qualified medical and allied healthcare workers, as well as inadequate supplies. Utilizing the WHO standard for emergency preparedness, Norman et al. (2012) emphasized the necessity for hospitals to possess general emergency preparedness programs, qualified staff, ample supplies, and established pre-emergency and emergency readiness strategies to effectively handle large-scale RTAs.

An investigation into the availability of trauma care technology in Ghana uncovered that the non-availability of essential items stemmed from various factors, including insufficient training, the absence of equipment, technology breakdowns, and frequent shortages (Stewart et al., 2015). The study emphasized the critical role of improving stock management and procurement procedures to enhance the availability of low-cost commodities. Also, Alexander (2002) emphasized that, resources organization and management, should be the cornerstone of an emergency preparedness program. However, the study by Stewart et al. (2015) underscored the urgent need for addressing issues in the national insurance reimbursement system and

providing trauma care training for employees in district hospitals. The study's conclusion emphasized the importance of timely reimbursement by the Government of Ghana to facilitate restocking of consumables and the acquisition of necessary equipment for the optimal care of trauma victims, coupled with essential training for hospital staff.

Effective stock management methods are positively correlated with greater availability of trauma care resources, according to a thorough evaluation of local supply chains and stock management techniques for supplies in Ghana's ten chosen hospitals (Boakye et al., 2021). In a parallel context, considering that road traffic accidents (RTAs) constitute a significant cause of injuries (55%) reported at a local maxillofacial center in Accra, the management of such injuries with limited resources sheds light on the strain faced by the healthcare system and the affected families (Blankson & Lartey, 2020). This underscores the imperative for healthcare facilities to consistently maintain resource availability for trauma patients through the implementation of robust supply chain and stocking management systems.

Availability of policies to guide work

Policy is described as a set of decisions, plans, and actions aimed at achieving specific healthcare objectives within a society (WHO, 2021). It can also be construed as a set of overarching guidelines delineating how an organization intends to address a particular issue. These policies elucidate the interconnections between an organization's mission, values, and day-to-day operations, fostering smoother and more efficient functioning. They serve as a communication tool for expressing the values and vision of the organization, ensuring that employees have a clear understanding of their expectations in

various situations (Snook, 2021). Moreover, policies and procedures (P&Ps) play a crucial role in guiding the practice of nurses, offering a potential avenue to integrate research findings into hospital nursing staff's daily routines (Squires, Moralejo, & LeFort, 2007). Knowledge/ awareness on the importance of training or drills and educational courses to control disasters is imperitive in the formulation of policies for ED nurses. This was evident in the study by Diab & Mabrouk (2015) where statistically significant improvement were attained after application of a guidance booklet.

Blankson and Lartey (2020) argued that, in order to mitigate the occurrence and impact of road crashes in Ghana, there is a pressing need to fortify and enforce policies across all levels. This, however, demands a conscientious and multi-sectorial approach. Effective emergency protocols and policies oriented toward victim care have the potential to alleviate the impact of road traffic accidents (RTAs). Given that both pedestrians and motorists are susceptible to the adverse effects of road crashes, road safety should be a shared concern among all stakeholders. At the primary level, as discussions on vehicular and road safety expand, the enforcement of traffic rules and regulations emerges as a paramount consideration. In Ghana, the Ministry of Health's policy and guidelines for hospital accident and emergency services (2011) serve as the blueprint for implementing policies related to emergency service delivery. The Ghana Health Service conducts an annual peer review to assess the quality of care provided by facilities, encompassing six clinical areas: clinical care, governance, emergency services, and institutional care.

Availability of protocols

In the context of this study, protocols are elucidated as established guidelines comprising sequential steps that function as a compass in patient treatment. The primary objective in managing trauma patients is to prevent the development of life-threatening conditions, and if such conditions arise, to promptly and effectively address them. Essential protocols, including Basic Life Support (BLS), Advanced Cardiac Life Support (ACLS), and Advanced Trauma Life Support (ATLS), play a pivotal role in the proficient management of trauma patients. The swift deterioration potential of trauma patients, leading to cardiac arrest if basic trauma assessment protocols such as the primary survey are inadequately conducted, underscores the imperative for emergency department nurses to possess comprehensive proficiency in BLS, ACLS, and ATLS. It is incumbent upon health facilities to organize annual training for their staff in adherence to these protocols, as mandated by the Ministry of Health's policy and guidelines for emergency services, recognizing that retention rates, particularly in CPR, tend to decrease over time (Rajeswaran et al., 2018). The systematic approach provided by the ATLS protocol has been instrumental in saving many trauma patients (Alzanitan et al., 2021).

An assessment conducted by Nyhus and Kamara (2017) among emergency nurses at Connaught Hospital in Sierra Leone highlighted a prevalent theme the absence of protocols for case management, exacerbated by the Ebola outbreak, resulted in a sense of helplessness and heightened insecurity among the respondent nurses. This underscores the crucial need for nurses to have protocols to manage cases they encounter while caring for their patients. Despite varying study settings and populations, a consistent pattern

emerges the suboptimal performance of accident and emergency department nurses, attributed to either individual shortcomings or inefficiencies in facility management.

Socio-demographic data and its association with the knowledge of respondents

Numerous research has employed sociodemographic information on the respondents (nurses), including their age, sex, marital status, years of experience, title, and greatest degree of schooling, to ascertain correlations between factors (Shabbir et al. (2017); Diab, & Mabrouk (2015); Ayuba et al. (2015), Al-Janabi, & Al-Ani (2014); and Uzamuhoba, 2017). One research, for example, examined the relationship between knowledge and respondents' experience, marital status, and designation to evaluate nurses' knowledge and behaviours related to disaster management and emergency preparation in two tertiary care hospitals in Lahore (Shabbir et al., 2017). Ayuba et al. (2015) used nurses' demographic factors to assess their knowledge of various aspects of the role nurses play in emergency preparedness and Uzamuhoba (2017) explored the relationship between nurses' demographics and their knowledge regarding mass casualty incidences. In the aforementioned studies, it was evident that the biographic data had an impact on the results obtained by the researchers. This therefore concludes that, the socio-biographic characteristics of respondents have influence on some of the variables used in research and therefore cannot be ignored.

Relevant additional literature on the stages of disaster management

Timothy Coombs (2007) introduced a Crisis Management Model, conceptualizing a crisis as an abrupt, unforeseen event with the potential to

disrupt an organization's operations, exposing it to financial and reputational threats. Such crises can inflict physical, emotional, and financial harm on various stakeholders. The harm to an organization's reputation during a crisis stems from negative perceptions that people develop. Alexander (2002) posit that, the goal of disaster preparedness is to guarantee that suitable systems, processes and resources give timely efficient aid to disaster victims thus, facilitating relief measures and rehabilitation of services. Effective crisis management is imperative for preventing disasters or curbing their escalation. The crisis management process unfolds in five distinct stages within the disaster preparedness/management cycle: mitigation, prevention, preparedness, response, and recovery (Geosciences, 2018).

Pre-Crisis Stage

Prevention/Mitigation - In this preliminary phase, proactive measures are implemented to prevent/mitigate disasters and reduce their impact. Activities include the establishment of warning codes, identification of risk zones, risk analysis, and public education. Mitigation incorporates both structural and non-structural measures designed to limit the impact of disasters and emergencies. Crucial components during this phase include preparedness plans, emergency exercises, training, and the development and implementation of an Early Warning System, emphasizing readiness to respond to diverse incidents and emergencies.

Preparedness

Plans are meticulously crafted during this stage, outlining strategies to respond to potential disasters. This involves preparedness plans, emergency exercises, training initiatives, and the development and implementation of an

Early Warning System. Training and exercising plans form the bedrock of preparedness, focusing on cultivating readiness to respond to a spectrum of all-hazard incidents and emergencies.

Crisis Response Stage

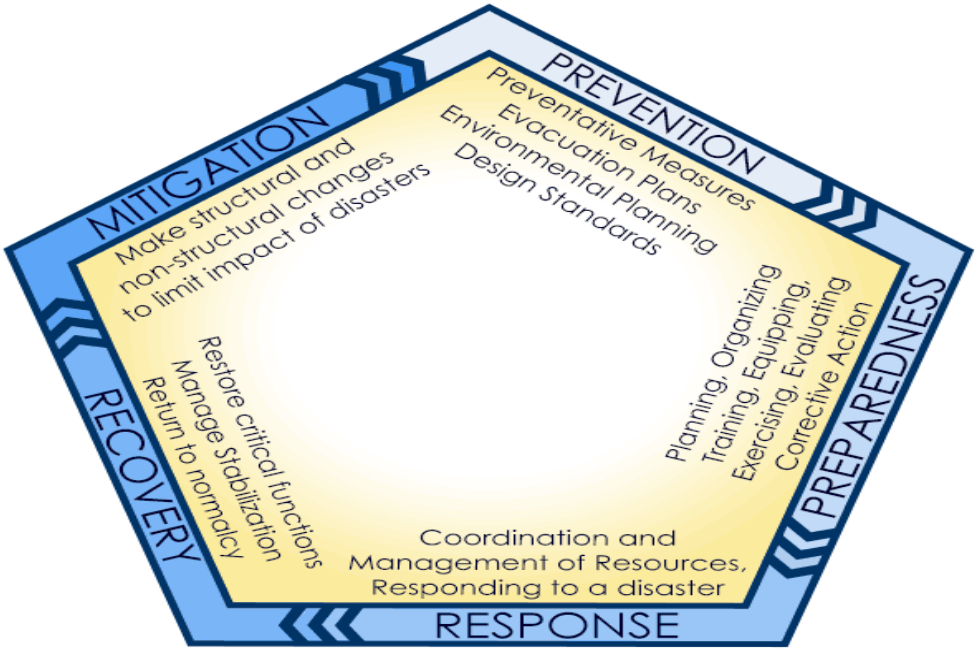
Response- This pivotal stage entails the adept coordination and management of resources (personnel, equipment, supplies) through the application of the Incident Command System, adopting an all-hazards approach. Measures are swiftly instituted to safeguard life, property, and the environment. The response phase is a direct reaction to the occurrence of a catastrophic disaster or emergency, providing essential disaster management services to preserve lives and protect property and the environment.

Post-Crisis

Stage Recovery - This restorative phase involves the gradual return of systems to normalcy after a disaster. Restoring essential community functions and starting stabilisation efforts are the goals of these initiatives, which go beyond the emergency phase. With the primary objective of returning the devastated region to some semblance of normalcy, the recovery phase begins as soon as the immediate threat to human life has subsided.

To effectively manage disasters, meticulous plans must be in place to monitor and detect disasters, mitigate their effects, contribute to relief efforts, and actively participate in the recovery and reconstruction processes (Geosciences, 2018).

The Disaster Management Cycle



https://www.bexar.org/694/Five-Phase

As per the Ministry of Health (MOH) policy and guidelines for hospital accident and emergency services (2011), the commitment to providing Accidents and Emergency (A&E) Services is a fundamental requirement for all health facilities, aligned with their policy statement and goals:

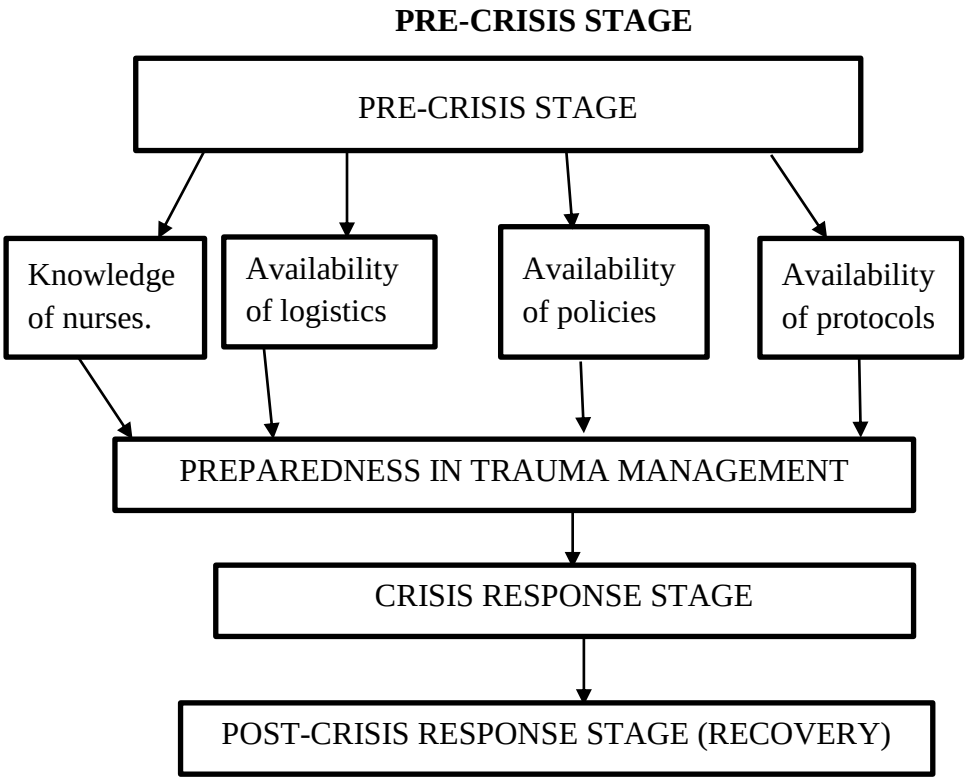
"All health facilities shall provide Accidents and Emergency (A&E) Services."

"The goal is to establish efficient and effective A & E services to reduce disability, morbidity and mortality in hospitals."

To ascertain the preparedness of health facilities in delivering quality care to patients, the GHS conducts an annual peer review. This evaluation assesses the facilities' readiness levels using a checklist derived from the MOH policy and guidelines for hospital accident and emergency services (2011).

The emphasis on maintaining preparedness is particularly crucial for managing the challenges posed by mass-casualty incidents (MCI). It is necessary to identify the essential elements of MCI preparation in order to tackle the intricacies of emergency preparedness. The preparedness pyramid is a paradigm that identifies key elements for maintaining a high level of readiness. These elements include (1) planning and policies; (2) equipment and infrastructure; (3) personnel knowledge and skills; and (4) training and exercises (Adini et al., 2006). To guarantee hospitals remain prepared, catastrophe plans must be established.

Conceptual Framework



Chapter Summary

From the above literature, it was revealed that the emergency department nurses lacked knowledge in emergency preparedness which was reflected in the conclusions of the various studies. It also came out that, although there

may be equipment and resources available to care for patients, some emergency department nurses lacked the knowledge and skills to use this equipment. Good supply chain and stock management procedures are also necessary for efficient trauma care since they guarantee the availability of resources for trauma treatment (Boakye et al., 2021). For nurses to effectively manage trauma cases they encounter at the hospital, there should be clear policies and protocols to guide their work. The information gathered from the above literature will help me focus more on these areas so I can make substantive recommendations at the end of my study.

CHAPTER THREE

METHODOLOGY

This study aims to assess trauma care preparedness for emergencies in the Central Region. This chapter addresses the study design as well as the population, sample, and sampling procedure, data processing, data analysis, and data gathering tools and procedures.

Research Design

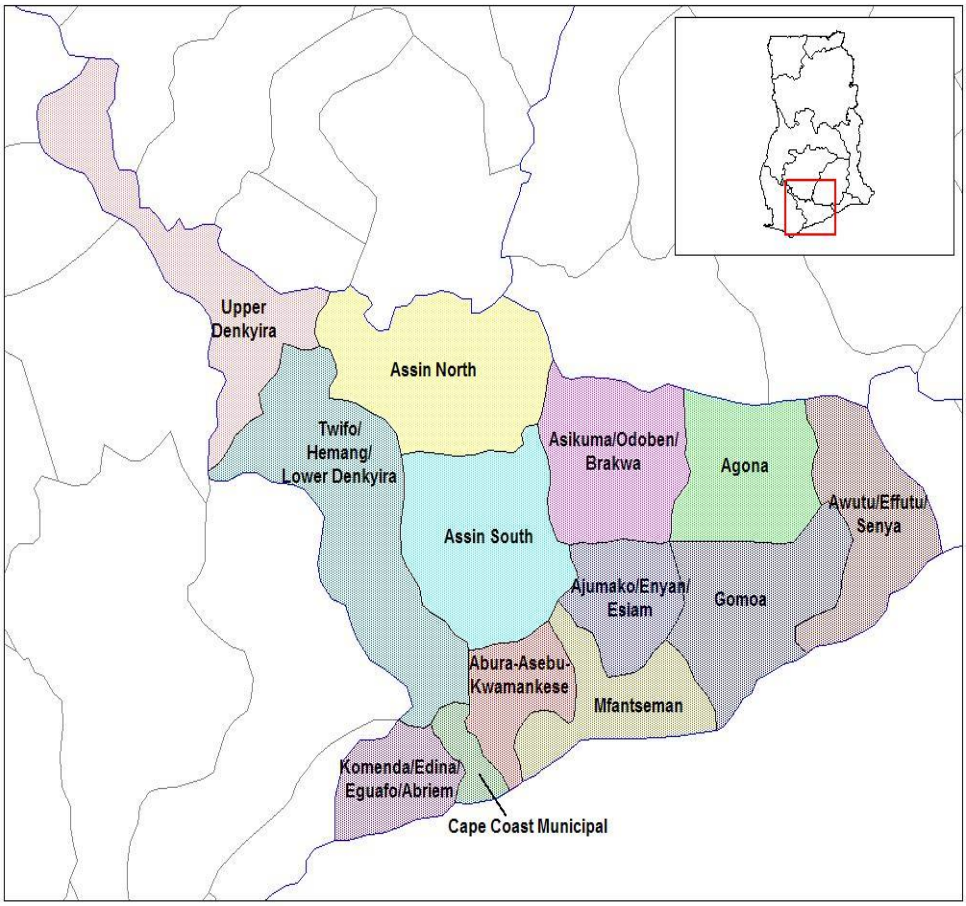
This study takes a quantitative approach, using a cross-sectional survey as its tool. To ascertain the importance of the correlation coefficient, this strategy entails gathering data at one specific moment in time. The choice of this design is motivated by the diverse backgrounds and training of nurses working in the A & E, leading to varying levels of knowledge in nursing care. Additionally, the presence of different staff categories during shifts may impact nursing care. The cross-sectional survey design seeks to offer a thorough understanding of the knowledge base, effective use of resources (consumables and equipment), interpretation of policies, and the utilization of protocols by A & E nurses in managing trauma patients.

Study Area

As the previous administrative hub of the Gold Coast, the Central Region, one of Ghana's sixteen administrative areas, is the focus of this research. Based on the regional analysis report of the 2010 Population and Housing Census, the Central Region borders the Western region to the west and the Greater Accra area to the east. It has a 168-kilometer coastline that runs along the Atlantic Ocean to the south. Initially part of the Western Region until 1970, the Central Region was later designated as a separate entity.

Covering 9,826 square kilometers, it constitutes approximately 4.1% of Ghana's total land area, making it the third-smallest region. Cape Coast, locally known as Oguaa, served as the capital until 1877 and played a significant role in early European interactions. The region's rich cultural heritage is evident in historic sites such as Cape Coast Castle, Elmina Castle, and Fort Sao Jago, along with vibrant festivals like Aboakyer in Winneba, Fetu in Cape Coast, and Bakatue in Elmina.

The educational landscape of the Central Region is marked by the presence of the University of Cape Coast and the University of Education. As of 2010, the region's population was reported to be 1,593,823 according to the Ghana Statistical Service. Geographically, the Central Region encompasses sandy beaches, marshy areas, hills, plains, and occasional cliffs along the coast. Inland, the terrain rises between 250 and 300 meters above sea level, covering both dry and moist equatorial zones. The region experiences varying precipitation levels, ranging from 1,000 mm along the shore to about 2,000 mm in the interior, with the wettest months being May–June and September–October. Conversely, December through February is the driest period, with a brief dry spell in August. According to the Ghana Statistical Service's 2013 data, August records the coolest temperatures, averaging around 24°C, while the warmer months, particularly March-April, have an average temperature of approximately 30°C.



https://maps-ghana.com/map-of-central-region-of-ghana

This study selected three hospitals in the Central Region which included; Cape Coast Teaching Hospital, Trauma and Specialist Hospital, and Kasoa Policlinic. The choice was based on their strategic locations along the accident-prone Cape Coast - Takoradi highway and their significant service coverage for the population in the Central Region and its environs.

Established on August 12, 1998, the Cape Coast Teaching Hospital (CCTH), initially named the Central Regional Hospital, holds a pivotal position as a cutting-edge healthcare facility in the Oguaa district of the Central Region. Recognized as the largest healthcare facility in the region, CCTH operates with a 400-bed capacity and serves as a major referral center, handling numerous referrals from the Cape Coast sub-metro and nearby areas.

Positioned in the northern part of Cape Coast, the hospital plays a crucial role in healthcare delivery, functioning not only as a primary referral center but also as a training facility for medical students and nurses affiliated with the University of Cape Coast. It serves as a center of learning for multiple Nursing Training Colleges in Ankaful, Cape Coast, and Twifo Praso. CCTH includes an Accident and Emergency department with a bed capacity of 15, contributing significantly to the region's emergency healthcare services (http;//www.ccthghana.org>about-us). The current population of Cape Coast is reported as 143,015 (Worldometer, 2020).

The Trauma and Specialist Hospital, a specialised secondary referral health centre for the Central Region, is situated in Winneba, within the Efutu Municipality. As the final point of referral for various healthcare institutions in the region and surrounding areas, this hospital, constructed under the Turnkey project by EN-Project, plays a critical role in providing specialized healthcare services. The technical handover to the Ghana Health Service for service delivery occurred on February 27, 2012, with the official commissioning led by then-President John Dramani Mahama in November 2012.

The Trauma and Specialist hospital started operation in July 2012. It serves as the main trauma facility in the Central Region taking care of many trauma and orthopaedic cases annually. Out of their annual admissions, they care for both general and trauma cases, especially Road Traffic Accidents. The hospital has 161 bed capacity with the emergency room having 12 beds (https;//www.traumahospitalgh.com). The current population of Winneba is 44,254 (Worldometer, 2020).

Kasoa Polyclinic (KPC) is a health facility situated in the central part of Kasoa township in the OdupongKpehe Sub-Municipal of the Awutu Senya Municipality in the Central Region of Ghana. It was established in the year 1995 as a Health post and was upgraded to a Health Centre in the early 2000s. In the year 2013, it was upgraded to a Polyclinic status and has since been operating as such. The polyclinic mainly serves the OdupongKpehe Sub-Municipal. OdupongKpehe Sub-Municipal is one of the five (5) sub-municipals in the Awutu Senya East Municipal. The Sub-Municipal is made up of 15 communities with Kasoa as their capital. The Sub-Municipal area shares its borders with Kasoa North and Opeikuma Sub-Municipals to the north, Gomoa East District (Nyanyarno) to the south, Kasoa Main Sub-Municipal to the east, and Gomoa East District (Budumburam) to the west. Kasoa recognizes Breku as its official language, and commonly spoken languages include Akan and English. Originally inhabited by the Guan ethnic group, Kasoa has evolved into a multicultural community, embracing various ethnicities such as the Gas, Akans, Ewes, Walas/Dagartis, Hausas, Basares, Dagombas, and several smaller tribes.

In the early 2000s, the outpatient facility operated from a single building with two rooms, each containing two beds, serving as emergency detention wards. The maternity and ANC also operated in the same room with partitions that had six beds for women in labor and a single labor ward bed. However, during the upgrade to a Polyclinic in 2013, a 10-bed male and female ward, a 16-bed maternity ward, and a 2-bed labor ward were established. The Polyclinic, with its limited space, now includes Male,

Female, Maternity, and Emergency (OPD) wards with a bed capacity of 40 (Male – 9, Female – 8, Maternity – 16, and Emergency – 7).

The Odupongkpehe Sub-Municipal has an estimated population of about 50,863. Kasoa, with one of the most significant markets in the Central Region, extends its influence into parts of the Greater Accra Region. The markets are known for a diverse range of agro-processed products, and the primary economic activity for the working population revolves around agriculture and related businesses. The majority of the population is engaged in trading. Christianity is the dominant religious group, with Islam and Traditional beliefs constituting a portion of the population. Kasoa Polyclinic operates within the policy framework of the Ghana Health Service, governed by the Ministry of Health (MoH). According to the Ghana Health Service and Teaching Hospital Act (525) 1996, the Polyclinic is managed by a team of professionals led by a Medical Superintendent. The Superintendent oversees daily activities and reports to the Health Service Administrator, responsible for implementing decisions made by the Ghana Health Service. Other members of the management team include the Nurse Manager, Head of Pharmacy, and Head of Accounts. Kasoa Polyclinic falls under level A of the Ghana Health Service facility structure, providing 24-hour service with 17 departments (KPC DHIMS).

Population

The study population would involve all categories of nurses (in active service between 21-60 years) working at the emergency and accident departments of the designated hospitals.

Name of facility	Total number of nurses working at the ED
CCTH	53 nurses including 3 emergency nurses
TSH	11 nurses with 1 emergency nurse
KPC	18 nurses with no emergency nurse

During data collection, only 67 nurses were available and willing to answer the questionnaires (47 in CCTH, 8 nurses in TSH and 10 nurses in KPC).

Sampling Procedure

The study's sampling methodology comprised the convenient and purposeful selection of three major hospitals in the Central Region, namely CCTH, TSH, and KPC. These hospitals were chosen due to their significance in handling a substantial number of trauma cases, particularly those arising from road traffic accidents (RTAs). The 82 nurses working in the accident and emergency departments of the chosen hospitals were chosen using a census-based technique. The census approach was employed since there were so few nurses in this department, guaranteeing that all qualified responders were included and removing any possibility of sampling problems. This comprehensive approach aimed to gather data from every individual in the population.

All classes of nurses employed in accident and emergency departments who were available and willing to participate in the study were sampled on the day of data collection. This technique guaranteed that the data gathered appropriately reflected the viewpoints of the nurses engaged in this crucial area of healthcare, in addition to making it easier for the whole nursing staff to be included in the accident and emergency departments.

Data Collection Instrument

A novel questionnaire was devised by drawing upon standardized documents, amalgamating various established components from diverse settings to suit the study's objectives. While this specific instrument had not been employed previously, its constituent elements a checklist, true/false items, and multiple-choice questions (MCQ) have a history of application in different contexts. Created in accordance with the objectives of the research, the questionnaire sought to gather data on nurses' comprehension of patient triage, first evaluation, and resuscitation, availability of items, policies, and protocols essential for the effective management of trauma patients. Not subjected to pre-testing, the researcher ensured respondents independently addressed questions, with only fully completed questionnaires considered for subsequent analysis. The knowledge section of the questionnaire was adapted from a published article (Kwiecień-Jaguś et al., 2020), while the other three sections (a checklist in tabular form) were borrowed from the MoH policy and guidelines for hospital accident and emergency services in Ghana (2011). The questionnaire comprised five sections.

Section A encompassed nurses' demographic characteristics (9 items): age, sex, years of practice, length of stay at the emergency department, marital status, designation/rank, specialization, highest level of education, and facility name.

Section B gathered information on nurses' knowledge related to triage, initial patient assessment, and resuscitation, including CPR, with 16 test items (5 Likert scale items, 1 true/false, and 11 MCQThe maximum score was 16, with each right response receiving a score of 1 and each incorrect response

receiving a score of 0. Knowledge in triage was assessed on a Likert scale, categorizing it as maximum (4-5), moderate (3), or minimum (1-2). CPR knowledge was measured using MCQ scores: inadequate (0-3), moderately adequate (4-7), and adequate (8-11), as cited by Uzamuhoza (2017). The comprehensive questionnaire, although novel in its formulation, demonstrated adherence to the study's context, ensuring testability and respondent familiarity. Contrary to studies utilizing the WHO standard questionnaire on emergency preparedness, this tool was tailored to the specific nuances of the Ghanaian setting.

Section C focused on evaluating the availability and functionality of resources, logistics, and equipment, comprising 6 items with corresponding sub-items. Response options included yes, no, and available and working well. This section scrutinized the presence of equipment and logistics essential for trauma management, encompassing airway/breathing devices, circulation/hemodynamic stabilization and monitoring devices, splints, diagnostic sets, and medicines. A scoring scale ranging from 1 to 4 was adopted, aligning with the GHS (Central Regional Health Directorate) checklist for assessing emergency services in Hospitals and Polyclinics Peer Review (2022). Scores above 35 were rated 4, 34 to 22 were rated 3, 21 to 18 were rated 2, and less than 18 were rated 1 for logistics availability. A maximum score of 4 denoted sufficient logistics, while a score of 1 indicated a lack of basic equipment/logistics. Similarly, scores greater than or equal to 22 were rated 3, 21 to 18 were rated 2, and less than 18 were rated 1 for the availability of medicines for managing trauma victims. A maximum score of 3

implied the presence of essential A&E medicines, while a score of 1 signified a deficiency in the necessary medicines for trauma management.

Section D gathered information on facility policies guiding work in the wards, featuring 9 items with yes/no options. Each affirmative response was assigned a correct score of 1, while a negative response received an incorrect score of 0.

Section E focused on the availability of protocols, consisting of 7 items categorized as yes (1) or no (0).

While the formulation of this questionnaire is innovative, it aligns with the Ghanaian context, ensuring testability and respondent familiarity. In contrast, many studies on emergency preparedness utilize the WHO standard questionnaire on emergency preparedness, which was deemed impractical for our setting due to its component misalignment.

Reliability and Validity of the Research Instrument

The questionnaire's validity was maintained by basing it on current scientific understanding that were found in published papers and other publications. By providing the questionnaire for assessment to the researcher's supervisor, face validity was guaranteed. An detailed assessment of the literature was conducted to evaluate the content validity of the questionnaire, making sure that the instrument would accomplish the study's goals. The GHS Ethics Review Committee, the CCTH ERC research specialists, and the nursing department supervisor examined the questionnaire to guarantee its content validity, and modifications were made by their suggestions. The questionnaires were however not pre-tested since the ED nurses were already familiar with the content of the MoH guideline that was used as benchmark.

Also, the questionnaire used was standardized. Collection of data and questionnaire administration was done in the Emergency Department of the three selected hospitals.

Data Collection Procedure

Data collection began with the use of self-administered questionnaires among emergency department nurses, following administrative consent from the chosen hospitals. Respondents on duty on the day of data collection were orally briefed on the subject and given the assurance that their participation would be voluntary and private. The questionnaires were distributed during the nurses' free time, and each respondent was required to read and fill out the questionnaire independently. To ensure anonymity, they were asked to sign the informed consent form. Emergency room nurses on duty willing to participate were conveniently selected for the study. The data collector distributed the questionnaires in one month. In cases where the researcher had to leave questionnaires with the in-charge, thorough instructions were provided on data collection procedures. The in-charge was briefed on the importance of ensuring independent responses from the nurses, emphasizing voluntary participation. No research assistants were trained for the data collection. Respondents were encouraged to complete the questionnaires during their free time. The questionnaires, both answered and unanswered, were left with the in-charge for at least one month. Continuous communication with the in-charge ensured that all willing respondents had the opportunity to complete the questionnaires.

Data Processing and Analysis

After collecting all the completed questionnaires, a thorough check for incompleteness was conducted, and any incomplete questionnaires (2) were excluded from the subsequent data analysis. The gathered data were meticulously organized and assigned numerical codes to facilitate easy identification and traceability of any potential errors in the data entry process. With the use of the Statistical Package for the Social Sciences (SPSS) version 26, the data were processed and analysed using both inferential and descriptive statistics. All questionnaires were uniquely numbered (e.g., CCTH 001, TSH 001, and KPC 001), and the data were coded in SPSS to ensure seamless analysis and minimize data entry errors.

The analysis of each research question involved either descriptive or inferential statistics, and the results were presented using tables. For nurses' characteristics, the combined number of men and women nurses was determined, and age groups of the nurses were created with corresponding percentages. Years of practice were analyzed and presented in frequency tables.

Means and frequencies were employed to analyze the knowledge scores of the nurses in Section B. The interpretation of results involved assessing the average score obtained by all the nurses, with knowledge levels classified as inadequate, moderately adequate, or adequate knowledge based on the raw score compared to the total test items. Means were used to determine the average number of years of practice among the nurses. Unfortunately, due to the small sample size of specialists (3) participating in the study, the relationship between being a specialist and its impact on the

knowledge level of the nurses could not be accurately determined. Finally, the bivariant chi square test was used to examine, with a significance threshold set at $P < 0.05$, the association between the nurses' demographic information and their knowledge of the first evaluation of victims and resuscitation.

For the analysis of the availability of resources and other logistics in Section C, data were assessed based on their availability and functionality. The categorization included whether they were available or not, and if available, whether they were functioning well. The GHS checklist for hospitals and polyclinics, specifically used for peer review (Module 5), served as a benchmark.

Regarding Section D, which focused on the availability of policies, the analysis employed categorical variables. Items in this section were adapted from the MoH policy guideline (2011), and scores were assigned utilizing the GHS checklist for hospitals and polyclinics Peer Review (2022). Similarly, Section E, which examined the protocols used in caring for trauma victims, was analyzed using categorical variables. Items were adapted from the MOH policy guideline (2011), and scores were allocated using the GHS checklist for hospitals and polyclinics Peer Review (2022).

Research Question 5 purposes to investigate the socio-demographic characteristics that influence nurses' knowledge of first patient evaluation and resuscitation in accident and emergency situations. In Research Question 5, the study aims to investigate the socio-demographic characteristics that influence nurses' understanding of first patient evaluation and resuscitation in accident and emergency situations. Knowledge levels were categorized as high (score of 12 or higher) or low (score less than 12). To evaluate the relationship

between sociodemographic characteristics and knowledge levels, chi-square statistics were used. Binary logistic regression was used to determine the degree to which characteristics demonstrating significance at the bivariate stage predict the level of expertise of accident and emergency nurses with respect to the first patient evaluation and resuscitation.

Ethical Considerations

The three selected facilities were given an introduction letter that was obtained, seeking permission to collect background information. Winneba Trauma and Specialist Hospital and the Cape Coast Teaching Hospital's Ethics Review Committee were happy to offer background information, but Kasoa Polyclinic needed a clearance letter from Ghana Health Services (GHS) through the Regional Health Directorate (RHD). The RHD reviewed the proposal and facilitated an introduction to GHS-Accra for ethical clearance. The Ethics Review Committee (ERC) of GHS was contacted, and the researcher filled out an electronic form, which underwent a review process. Comments and corrections were addressed, and after payment of an administrative charge, ethical clearance was granted.

The Ethics Review Committee of the Cape Coast Teaching Hospital was consulted concurrently in order to get ethical approval. The researcher paid a required amount at the account office, and upon submission of the electronic application form, it was reviewed and approved by the committee. A cover letter from the department was then acquired to commence data collection at CCTH.

The researcher sent copies of the approval and introduction letters to the nurse managers and medical superintendents of the chosen hospitals after

receiving ethical clearance from the Ghana Health Service. The researcher carried out the study inside the guidelines provided by the review boards, scrupulously adhering to all necessary ethical norms. Prior to starting the data gathering process, the hospitals' appropriate authorities gave their express consent.

Additionally, the research purpose was thoroughly explained, and verbal consent was obtained from every participant expressing a willingness to take part in the study. Before engaging in the questionnaire, respondents further signed an anonymous consent form, ensuring a formal acknowledgment of their agreement to participate. The respondents were well-informed about their right to accept or decline participation in the study, with a clear understanding that they could withdraw at any point. Importantly, respondents were assured that their identities would remain confidential, with the study using only numbers on the questionnaires and participant signatures for identification purposes, ensuring anonymity.

Chapter Summary

This chapter entailed the research method used for this study. This study was a quantitative study involving emergency department nurses of 3 selected public health facilities (CCTH, TSH and KPC). A total of 65 willing nurses (in active service) in the A & E department of the selected health facilities were used. A novel questionnaire was constructed using standardized documents. The different components of the developed questionnaire were standardized components that has been used in different settings. The instrument was however formulated using the objectives of this study. The data gathered was analysed using both descriptive and inferential statistics. A key for scores was adapted and analysed using SPSS Version 26.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter presents the data analysis and conclusions based on the research goals outlined in the study. The purpose of the study was to assess trauma treatment emergency preparedness in three public health facilities in Ghana's Central Region. Every nurse employed by the three chosen hospitals' emergency departments provided data for the study. To facilitate easy understanding, the findings were presented as tables. The survey consisted of five parts: demographic details, trauma management knowledge, logistics and equipment availability, availability of policies and protocols, and an additional section highlighting the influence of sociodemographic factors on nurses' understanding of initial patient assessment and resuscitation in accident and emergency rooms. Following an analysis of the facility's data, any gaps in the trauma patients' care were noted and explained.

Results

The demographic features of the 65 nurses that were employed in the study are shown in Table 1. Most of the nurses 74% (n=48) were females while 26 % (n=17) were males, and 58% (n=38) were between the ages of 31-40 years. 38.5% (n=25) had worked between 4-6 years and 38.5% (n=25) had stayed between 2-3 years in the ED. With regards to marital status, 63.1% (n=41) were single, 35.4%(n=23) were married and 1.5% (n=1) was widowed. Concerning designation, 95.4% (n=62) were SN while 92% (n=6) were EN. 95% (n=62) were not specialists, 55.4% (n=36) were diploma holders while only 3.1%(n=2) were masters holder.

Table 1: Demographic data of respondents

	Name of facility			
	CCTH n (%)	TSH n (%)	KPC n (%)	Total (%)
Age in years				
21-30	16(34.0)	5(62.5)	5(50.0)	26(40)
31-40	31(66.0)	2(25.0)	5(50.0)	38(58.5)
41-50	0(0.0)	1(12.5)	0(0.0)	1(1.5)
Sex				
Male	12(25.5)	2(25.0)	3(30.0)	17(26.2)
Female	35(74.5)	6(75.0)	7(70.0)	48(38.8)
Number of years of practice				
1-3 year	18(38.3)	1(12.5)	6(60.0)	25(38.5)
4-6 years	21(44.7)	4(50.1)	0(0.0)	25(38.5)
7-9 years	5(10.6)	2(25.0)	1(10.0)	8(12.3)
Ten years and above	3(6.3)	1(12.5)	3(30.0)	7(10.7)
Length of stay at the emergency department				
0-1 years	14(29.8)	4(50)	4(40.0)	22(33.8)
2-3 years	18(38.3)	3(37.5)	4(40.0)	25(38.5)
4-5 years	7(14.9)	0(0.0)	1(10.0)	8(12.3)
Above 5 years	8(17.0)	1(12.5)	1(10.0)	10(15.4)
Marital status				
Single	32(68.1)	3(37.5)	6(60.0)	41(63.1)
Married	14(29.8)	5(62.5)	4(40.0)	23(35.4)
Widow/widower	1(2.1)	0(0.0)	0(0.0)	1(1.5)
Designation				
SN	16(34)	1(12.5)	4(40.0)	21(32.3)
SSN	12(25.5)	2(25.0)	0(0.0)	14(21.5)
NO	7(14.9)	1(12.5)	0(0.0)	8(12.3)
SNO	6(12.8)	0(0.0)	1(10.0)	7(10.8)
PNO	2(4.3)	0(0.0)	0(0.0)	2(3.1)
EN	0(0)	3(37.5)	3(30.0)	6(9.2)
SEN	2(4.3)	0(0.0)	1(10.0)	3(4.6)
PEN	2(4.3)	1(12.5)	1(10.0)	4(6.2)
Specialist				
Yes	3(6.4)	0(0.0)	0(0.0)	3(4.6)
No	44(93.6)	8(100.0)	10(100.0)	62(95.4)
Highest level of education				
Certificate	3(6.4)	4(50.0)	2(20.0)	9(13.8)
Diploma	27(57.4)	3(37.5)	6(60.0)	36(55.4)
Degree	15(31.9)	1(12.5)	2(20.0)	18(27.7)
Masters	2(4.3)	0(0.0)	0(0.0)	2(3.1)

Source: Field data (2023).

The various levels of understanding for triaging, initial patient evaluation, and resuscitation—which includes CPR—are displayed in Table 2. All 65 nurses in the study (100%) agreed with the defined notion of triage. A

majority of 87.7% (n=57) determined that the triage colour codes were red, orange, yellow, green, and black. There are three distinct versions of the triage scale for adults, children, and newborns, based on the replies of all 65 nurses (n = 65). 96.9% of the nurses (n = 63) correctly identified the discriminator list and the triage early warning score as the two components of the triage scale.

The fundamental vital signs of the patient should be the starting point for calculating the total triage early warning score (TEWS), according to 92% of the nurses (n = 60). According to 47.7% (n=31) of the participants, the fundamental resuscitation algorithm for the 2020 American Heart Association consists of clearing the airway, monitoring breathing, and assessing the pulse.

According to 73.8% (n=48) of the nurses, their first concern while dealing with an unconscious person on the road is to ensure both the unconscious person's and their own safety. Of those who responded, 49.2% (n=32) correctly recognised the centre of the chest when it came to adult chest compression. Furthermore, 42 individuals, or 64.6% of the sample, identified 120 compressions per minute as the optimal compression rate. In terms of the fundamental adult resuscitation plan, 49.25% (n=32) of respondents said that ensuring the patient's safety, calling for an ambulance, checking for a pulse, and initiating CPR are crucial.

During the assessment of adult pulses, 72.3% (n=47) of the nurses correctly identified the carotid artery. Out of the respondents, 81.5% (n = 53) favored the 30:2 compression to breath ratio, while 87.7% (n = 57) of researchers believed that the victim's condition should be assessed after every 5 cycles of basic resuscitation (30 chest compressions and 2 rescue breaths).

According to 72.3% of respondents (n=47), using an AED defibrillator correctly involves turning it on, applying the electrodes, checking the beat, avoiding touching the sufferer, and discharging the device. In addition, 76.9% (n=50) of the nurses attested to the fact that fluid restriction is essential for the initial resuscitation attempt in trauma patients who seem to have suffered a brain injury. In the same way, Dextrose Normal Saline should be avoided, according to 75.4% (n=49) of patients who were thought to have had a brain damage.

Table 2: Knowledge on triaging, initial assessment of patients and resuscitation including cardiopulmonary resuscitation

	Name of facility			
	CCTH n(%)	TSH n(%)	KPC n(%)	Total n(%)
Triage refers to the process of "sorting out" ill or injured individuals based on the severity of their condition in order to maximise the utilisation of medical and nursing personnel as well as facilities; evaluation of the severity of the damage and the urgency or immediacy	47(100.0)	8(100.0)	10(100.0)	65(100.0)
According to the SATS, the triage colour codes are red, orange, yellow, green, and black.				
I concur	43(91.5)	5(62.5)	9(90.0)	57(87.7)
I do not agree	4(8.5)	2(25.0)	1(10.0)	7(10.8)
I am unaware	0(0.0)	1(12.5)	0(0.0)	1(1.5)
The triage scale is available in three versions: one for adults, one for children, and one for newborns.				
1 agree	47(100.0)	8(100.0)	10(100.0)	65(100.0)
I disagree	0(0.0)	0(0.0)	0(0.0)	0(0.0)
I do not know	0(0.0)	0(0.0)	0(0.0)	0(0.0)
A triage scale consists of two parts: the Triage Early Warning Score (TEWS) and the Discriminator list.				
1 agree	46(97.9)	8(100.0)	9(90.0)	63(96.9)
I disagree	1(2.1)	0(0.0)	0(0.0)	1(1.5)
I do not know	0()	0(0.0)	1(10.0)	1(1.5)

Observing the patient's fundamental vital signs yields the triage early warning score (TEWS) total.				
I agree	42(89.4)	8(100.0)	10(100.0)	60(92.3)
I disagree	2(4.2)	0(0.0)	0(0.0)	2(3.1)
I do not agree	3(6.4)	0(0.0)	0(0.0)	3(4.6)
The following procedural protocol is suggested by the American Heart Association's (AHA) 2020 recommendations for basic resuscitation procedures.				
Compress the chest, clear the airway, check the breathing.	3(6.4)	1(12.5)	7(70.0)	11(16.9)
Clear the airway, check the breathing, check the pulse	26(55.3)	2(250)	3(30.0)	31(47.7)
Check the breathing, clear the airway, check the pulse	18(38.3)	5(62.5)	0(0.0)	23(35.4)
Your friend is asleep, unresponsive, and breathing irregularly when you find him in the middle of the road. What action do you take first?				
I am going to open his airways.	5(10.6)	1(12.5)	3(30.0)	9(13.8)
I am going see to it that we both stay safe.	36(76.6)	5(62.5)	7(70.0)	48(73.8)
I will Start applying chest compressions to him.	6(12.8)	2(25.0)	0(0.0)	8(12.3)
Where is the appropriate location for chest compressions in adults?				
	10(21.3)	4(50.0)	1(10.0)	15(23.1)
The chest's left side	0(0.0)	0(0.0)	1(10.0)	1(1.5)
	25(53.2)	4(50.0)	3(30.0)	32(49.2)
The chest's right side	12(25.5)	0(0.0)	5(50.0)	17(26.2)
For both adults and children, the proper frequency of chest compressions during CPR is at least 100 per minute.				
more than one hundred compressions every minute.				
80 compressions in a minute				
120 compressions in a minute				
Which of the following describes the adult basic resuscitation algorithm?				
For both adults and children, the proper frequency of chest compressions during CPR is at least 100 per minute.	2(4.3)	4(50.0)	5(50.0)	11(16.9)
more than one hundred compressions every minute.				
80 compressions in a minute				
120 compressions in a minute				
Which of the following describes the adult basic resuscitation algorithm?				

For both adults and children, the proper frequency of chest compressions during CPR is at least 100 per minute. more than one hundred compressions every minute. 80 compressions in a minute 120 compressions in a minute Which of the following describes the adult basic resuscitation algorithm?	5(10.6)	1(12.5)	2(20.0)	8(12.3)
For both adults and children, the proper frequency of chest compressions during CPR is at least 100 per minute. more than one hundred compressions every minute. 80 compressions in a minute 120 compressions in a minute Which of the following describes the adult basic resuscitation algorithm?	2(4.3)	1(12.5)	1(10.0)	4(6.2)
For both adults and children, the proper frequency of chest compressions during CPR is at least 100 per minute. more than one hundred compressions every minute. 80 compressions in a minute 120 compressions in a minute Which of the following describes the adult basic resuscitation algorithm?	38(80.9)	2(25.0)	2(20.0)	42(64.6)
For both adults and children, the proper frequency of chest compressions during CPR is at least 100 per minute. more than one hundred compressions every minute. 80 compressions in a minute 120 compressions in a minute Which of the following describes the adult basic resuscitation algorithm?				
Make sure both you and the victim are safe, give two rescue breaths, perform defibrillation, and begin CPR	2(4.3)	1(12.5)	1(10.0)	4(6.2)
Make sure both you and the victim is safe, call an ambulance, check for a pulse, begin CPR	19(40.4)	4(50.0)	9(90.0)	32(49.2)
Check for a pulse, give two rescue breaths, make sure both you and the victim is safe, perform defibrillation	2(4.3)	0(0.0)	0(0.0)	2(3.1)
As soon as you and the victim are secure, start CPR, give the victim two rescue breaths, and provide defibrillation. An adult is examined to look for a pulse on the…	24(51.1)	3(37.5)	0(0.0)	27(41.5)
Carotid artery	32(68.1)	7(87.0)	8(80.0)	47(72.3)

Brachial artery	6(12.8)	0(0.0)	2(20.0)	8(12.3)
Femoral artery	7(14.9)	0(0.0)	0(0.0)	7(10.7)
Temporal artery	2(4.3)	1(13.0)	0(0.0)	3(4.6)
The ratio of chest compressions to breaths during CPR in adults is…				
15:2	4(8.5)	2(25.5)	0(0.0)	6(9.2)
15:1	0(0.0)	1(12.5)	1(10.0)	2(3.1)
30:1	2(4.3)	1(12.5)	1(10.0)	4(6.2)
30:2	41(87.2)	4(50.0)	8(80.0)	53(81.5)
During the basic resuscitation procedure, the condition of the victim should be assessed:				
Every minute	4(8.5)	2(25)	0(0.0)	6(9.2)
Every 5 cycles (30 compressions and 2 rescue breaths)	42(89.4)	5(62.5)	10(100.0)	57(87.7)
When the victim starts to breathe incorrectly	0(0.0)	1(12.5)	0(0.0)	1(1.5)
Before the attachment of the AED electrodes	1(2.1)	0(0.0)	0(0.0)	1(1.5)
Which of the following is the correct sequence of the use of AED defibrillator?				
Switch on the AED, apply the electrodes, discharge, and analyse the rhythm	4(8.5)	1(12.5)	1(10.0)	6(9.2)
Switch on the AED, apply the electrodes, analyse the rhythm, make sure no one touches the victim, and discharge.	39(83.0)	2(25.0)	6(60.0)	47(72.3)
Apply the electrodes, check the pulse, discharge, and analyse the rhythm.	1(2.1)	1(12.5)	2(20.0)	4(6.2)
Check the pulse, apply the electrodes, analyse the rhythm, and discharge.	3(6.4)	4(50.0)	1(10.0)	8(12.3)
Fluid restriction should be implemented when resuscitating a trauma patient who may have suffered a head injury				
True	34(72.3)	7(70.0)	9(90.0)	50(76.9)
False	13(27.7)	1(10.0)	1(10.0)	15(23.1)
A patient who may have had a head injury should not receive which of these fluids?				
Dextrose Normal Saline	38(80.9)	5(62.5)	6(60.0)	49(75.4)
Normal Saline	7(14.9)	2(25.0)	1(10.0)	10(15.4)
Ringers Lactate	1(2.1)	1(12.5)	0(0.0)	2(3.1)
Blood	1(2.1)	0(0.0)	3(30.0)	4(6.2)

Source: Field data (2023)

Table 3 presents the availability of equipment and other resources for trauma management in the emergency and accident ward. In CCTH, 42.5% (n=20) of nurses acknowledged having more than 35 listed pieces of equipment. At TSH, 87.5% (n=7) of nurses reported possessing over 35 pieces of equipment, while at KPC, 50% (n=5) of nurses indicated availability of

between 22-34 of the listed equipment. Conversely, 100% (n=10) of nurses from KPC and 100% (n=8) of nurses at TSH agreed they have more than 22 of the listed medicines available. A high percentage, 93.6% (n=44), of nurses in CCTH also confirmed having more than 22 of the listed medicines available.

Table 3: Availability of equipment and other logistics for the management of trauma in the emergency and accident ward

	Name of facility			Total
	CCTH	TSH	KPC	
Availability of equipment and other logistics for management of trauma in the emergency and accident ward.				
Less than 18	17(36.2)	1(12.5)	2(20.0)	20(30.8)
Between 18-21	4(8.5)	0(0.0)	2(20.0)	6(9.2)
Between 22-34	6(12.8)	0(0.0)	5(50.0)	11(16.9)
Greater than 35	20(42.6)	7(87.5)	1(10.0)	28(43.1)
Availability of medicine				
Less than 18	2(4.3)	0(0.0)	0(0.0)	2(3.1)
Between 18-21	1(2.1)	0(0.0)	0(0.0)	1(1.5)
Greater than 22	44(93.6)	8(100.0)	0(100.0)	62(95.4)

Source: Field data (multiple responses) (2023).

Table 4 explores the availability of policies for trauma management. All the nurses at CCTH 100% (n=47) and that of TSH 100% (n=8) of asserted that the triage team should assess all patients presenting to the A&E. In contrast, KPC had a percentage of 90% (n=9) of nurses agreeing to this statement. Furthermore, 100% (n=8) of nurses from TSH affirmed the protocol stating that a triage patient should be attended to by a doctor, while 80% (n=8) of KPC nurses and 97.9% (n=46) of CCTH nurses agreed with this policy. The policy that clinical decisions regarding patient disposition (transfer or discharge) shall be made by the attending physician received agreement from 97.9% (n=46) of CCTH nurses, 80% (n=8) of KPC nurses, and 100% (n=8) of

TSH nurses. Also, 93.6% (n=44) of CCTH nurses, 62.5% (n=5) of TSH nurses, and 100% (n=10) of KPC nurses agreed with the policy that states that only patients whose triage assessment falls under Red, Orange, and Yellow shall be admitted to the A&E unit for further management, with green triage cases referred to the general outpatient or an appropriate health facility. Regarding the policy that, with regard to financing, all persons in Ghana have the right to receive quality accident and emergency care, 97.9% (n=46) of CCTH nurses, 100% (n=8) of TSH nurses, and 80% (n=8) of KPC nurses concurred. Furthermore, all nurses from CCTH (n=47), TSH (n=8), and KPC (n=10) agreed that, in alignment with the Ministry of Health policy, all accident and emergency patients should be attended to without requesting money during the first 48 hours. Finally, 100% of nurses from CCTH (n=47) and TSH (n=8) were of the opinion that the hospital organizes yearly training for all A&E room nurses, while KPC had 80% (n=8) of respondents answering true to this policy. Additionally, 95.7% of nurses from CCTH (n=45), 100% from TSH (n=8), and 60% from KPC (n=6) agreed that the Ministry of Health should review the policy guidelines every ten years.

Table 4: Availability of policies for trauma management

	Name of facility			
	CCTH	TSH	KPC	**Total**
The triage team should assess all patients presenting to the A&E				
True	47(100.0)	8(100.0)	9(90.0)	64(98.5)
False	0(0.0)	0(0.0)	1(10.0)	1(1.5)
A triaged patient should be attended to by a doctor as per protocol				
True	46(97.9)	8(100.0)	8(80.0)	62(95.4)
False	1(2.1)	0(0.0)	2(20.0)	3(4.6)
Clinical decisions regarding patient disposition (transfer or discharge) shall be by the attending physician.				
True	46(97.9)	8(100.0)	8(80.0)	62(95.4)
False	1(2.1)	0(0.0)	2(20.0)	3(4.6)
Only patients whose assessment during triage falls under Red, Orange, and Yellow shall be admitted to the A&E unit for further management.				
True	44(93.6)	5(62.5)	10(100.0)	59(90.8)
False	3(6.4)	3(37.5)	0(0.0)	6(9.2)
It is the responsibility of the triage officer to refer all patients whose triage assessment falls under Green to the general outpatient or an appropriate health facility for further management.				
True	38(80.9)	7(87.5)	9(90.0)	54(83.1)
False	9(19.1)	1(12.5)	1(10.0)	11(16.9)
With regard to financing, all persons in Ghana have the right to receive quality accident and emergency care. In conformity with the Ministry of Health policy, all accident and emergency patients should be attended to without requesting money during the first 48 hours.				
True	46(97.9)	8(100.0)	8(80.0)	62(95.4)
False	1(2.1)	0(0.0)	2(20.0)	3(4.6)

With regards to training, all A & E staff should be trained in 1. Basic Life Support 2. Advance Cardiac Life Support 3. Advance Trauma Life Support 4. Paediatric Advance Life Support 5. Triaging 6. Recognition and Management of the critically ill				
True	47(100.0)	8(100.0)	10(100.0)	65(100.0)
False	0(0.0)	0(0.0)	0(0.0)	0(0.0)
The hospital organizes yearly training for all accident and emergency room nurses.				
True	47(100.0)	8(100.0)	8(80.0)	63(96.9)
False	0(0.0)	0(0.0)	2(20.0)	2(3.1)
The MOH should review the policy guidelines every ten years.				
True	45(95.7)	8(100.0)	6(60.0)	59(90.8)
False	2(4.3)	0(0.0)	4(40.0)	6(9.2)

Source: Field data (2023)

Table 5 provides insights into the responses concerning the availability of protocols for the care of trauma victims. All nurses from CCTH (n=47) and TSH (n=8) unanimously agreed (100%) that the emergency doctor on duty may request consultation with another specialist for a patient in the A&E. In the case of KPC, 90% (n=9) of the nurses concurred with this protocol. Regarding the statement that the request shall follow established arrangements such as pagers, SMS, phone calls, etc., and shall be attended to immediately, a percentage of 91.5.% (n=43) of CCTH nurses, 87.5% (n=7) of TSH nurses, and 100% (n=10) of KPC nurses affirmed yes to this protocol. All nurses from CCTH (n=47), TSH (n=8), and KPC (n=10) also unanimously agreed (100%) that all consultation requests should be written in the patient's medical notes indicating time, date, and signature. Concerning the protocol for referral to other facilities, 100% of nurses from CCTH (n=47) and TSH (n=8) indicated yes to the protocol that the procedure for referral should follow the MOH

referral Policy guidelines. Conversely, KPC had 70% (n=7) of nurses disagreeing with this protocol. Additionally, 89.4% (n=42) of CCTH nurses and 100% (n=8) of TSH nurses agreed that only the emergency physician/specialist or senior doctor on duty has the authority to refer patients to other hospitals. However, 70% (n=7) of respondents from KPC disagreed with this protocol.

Regarding the protocol that the emergency doctor on duty should provide a written consultation regarding his recommendation for treatment and disposition on the emergency record, 97.9% (n=46) of CCTH nurses and 100% (n=8) of TSH nurses answered yes, while 70% (n=7) of KPC nurses disagreed with this protocol.

Table 5: Availability of protocols in the care of trauma victims

	Name of facility			
	CCTH	**TSH**	**KPC**	**Total**
The emergency doctor on duty may request a consultation with another specialist for a patient in the A & E.				
Yes	47(100.0)	8(100.0)	9(90.0)	64(98.5)
No	0(0.0)	0(0.0)	1(10.0)	1(1.5)
The request shall follow established internal arrangements such as the use of pagers, SMS, phone calls, etc.				
The request shall be attended to immediately.				
Yes	43(91.5)	7(87.5)	10(100.0)	60(92.3)
No	4(8.5)	1(12.5)	0(0.0)	5(7.7)
All consultation requests should be written in the patient's medical notes indicating the time, date and signature.				
Yes	47(100.0)	8(100.0)	10(100.0)	65(100.0)
No	0(0.0)	0(0.0)	0(0.0)	0(0.0)

Protocol for referral to other facilities				
The procedure for referral should follow the MOH referral Policy Guidelines				
Yes	47(100.0)	8(100.0)	3(30.0)	58(89.2)
No	0(0.0)	0(0.0)	7(70.0)	7(10.8)
Only the emergency physician/specialist or senior doctor on duty has the authority to refer patients to other hospitals.				
Yes	42(89.4)	8(100.0)	3(30.0)	53(81.5)
No	5(10.6)	0(0.0)	7(70.0)	12(18.5)
The emergency doctor on duty should provide a written consultation regarding his recommendation for treatment and disposition in the emergency ward.				
Yes	46(97.9)	8(100.0)	3(30.0)	57(87.7)
No	1(2.1)	0(0.0)	**7(70.0)**	8(12.3)
There are updated protocols on the management of conditions visibly pasted at the A & E				
Yes	46(97.9)	7(87.5)	10(100.0)	63(96.9)
No	1(2.1)	1(12.5)	0(0.0)	2(3.1)

Source: Field data (2023)

The results of the bivariate (Chi-square) analysis are shown in Table 6, which examines the relationship between respondents' awareness of the first patient evaluation and resuscitation and different demographic characteristics. Analysis by age groups (21-30 years, 31-40 years, 41-50 years) revealed no statistically significant association ($X^2 = 1.953$, $p = 0.377$). However, a significant association was observed in relation to respondents' sex (male or female) and their knowledge of resuscitation ($X^2 = 10.054$, $p = 0.002$). The number of years of practice (1-3 years, 4-6 years, 7-9 years, 10 years and above) showed no statistically significant relationship ($X^2 = 4.262$, $p = 0.235$). A significant association emerged concerning the length of stay at the emergency department ($X^2 = 11.043$, $p = 0.011$). Marital status (single, married, widow/widower) indicated no statistically significant association ($X^2 = 2.429$, $p =$

0.297). The designation or rank of respondents (SN, SSN, NO, SNO, PNO, EN, SEN, PEN) showed no statistically significant association (X^2 = 9.258, p = 0.235). The specialization of respondents exhibited no statistically significant association (X^2 = 0.162, p = 0.687). However, the highest level of education attained (Certificate, Diploma, Degree, Masters) displayed a statistically significant association (X^2 = 10.816, p = 0.013).

Table 6: Bivariate (Chi-square) association between knowledge on the initial assessment of patients and resuscitation and demographic factors

Variables	Knowledge on resuscitation			X^2	P-value
	High (%)	Low (%)	Total (%)		
Age of respondents				1.953	0.377
21-30 years	13 (20%)	13 (20%)	26 (40%)		
31-40 years	23(35.4%)	15(23.1%)	38 (58.5%)		
41-50 years	0 (0%)	1(1.5%)	1 (1.5%)		
Sex of respondents				10.054	0.002
Male	15(23.1%)	2(3.1%)	17 (26.2%)		
Female	21 (32.3%)	27 (41.5%)	48 (73.8%)		
Number of years of practice				4.262	0.235
1-3 years	3 (4.6%)	4 (6.2%)	7 (10.8%)		
4-6 years	12 (18.5%)	12 (18.5%)	24 (36.9%)		
7-9 years	8 (12.3%)	9 (13.8%)	17 (26.2%)		
10 years and above	13 (20%)	4 (6.2%)	17 (26.2%)		
Length of stay at the emergency department				11.043	0.011
0-1 year	7 (10.8%)	15 (23.1%)	22 (33.8%)		
2-3 years	14 (21.5%)	11 (16.9%)	25 (38.5%)		
4-5 years	6 (9.2%)	2 (3.1%)	8 (12.3%)		
Above 5 years	9 (13.8%)	1 (1.5%)	10 (15.4%)		
Marital status				2.429	0.297
Single	20 (30.8%)	21 (32.3%)	41 (63.1%)		
Married	15	8 (12.3%)	23 (35.4%)		

	(23.1%)				
Widow/widower	1 (1.5%)	0 (0%)	1 (1.5%)		
Designation/rank of respondents				9.258	0.235
SN	11 (16.9%)	10 (15.4%)	21 (32.3%)		
SSN	8 (12.3%)	6 (9.2%)	14 (21.5%)		
NO	6(9.2%)	2(3.1%)	8 (12.3%)		
SNO	6 (9.2%)	1 (1.5%)	7 (10.8%)		
PNO	1 (1.5%)	1 (1.5%)	2 (3.1%)		
EN	1 (1.5%)	5(7.7%))	6 (9.2%)		
SEN	2 (3.1%)	1 (1.5%)	3 (4.6%)		
PEN	1 (1.5%)	3 (4.6%)	4 (6.2%)		
Are you a specialist				0.162	0.687
Yes	2(3.1%)	1 (1.5%)	3 (4.6%)		
No	34 (52.3%)	28 (43.1%)	62 (95.4%)		
Highest level of education				10.816	0.013
Certificate	3 (4.6%)	6 (9.2%)	9 (13.8%)		
Diploma	16 (24.6%)	20 (30.8%)	36 (55.4%)		
Degree	15 (23.1%)	3 (4.6%)	18 (27.7%)		
Masters	2 (3.1%)	0(0%)	2 (3.1%)		

Table 7 presents the findings of the binary logistic regression, which looked at the relationships between a variety of demographic characteristics and first patient evaluation and resuscitation expertise. Indicating that the logistic regression model relatively well matches the data, the Hosmer and Lemeshow chi-square goodness-of-fit test with six degrees of freedom yielded a value of 2.753 and a non-significant result ($p = 0.839$). With 53.9% of the variance described by the model, the Nagelkerke R Square shows a decent level of predictive accuracy. The findings show that the logistic regression model makes sense given the data and that the factors in the model have a significant impact on how well study participants understood first patient evaluation and resuscitation.

Women working in healthcare had much greater chances of possessing adequate resuscitation knowledge (AOR = 23.631, p = 0.000; 95% CI: 2.88 - 193.68). When comparing individuals with one to one year experience and those with two to five years' experience, the former group (AOR = 0.137, p = 0.034; 95% CI: 0.022 - 0.859) had lower odds of knowing enough about patient assessment and resuscitation than the latter group (AOR = 0.045, p = 0.013; 95% CI: 0.004 - 0.526). Additionally, the latter group (AOR = 0.022, p = 0.005; 95% CI: 0.002 - 0.317) also had significantly lower odds of adequate knowledge in this area. The regression analysis revealed that healthcare personnel' education level did not significantly influence their knowledge of first patient evaluation and resuscitation.

Table 7: Binary logistic regression of the association between knowledge on the initial assessment of patients and resuscitation and demographic factors

Variable	Categories	B	Wald	AOR	95% Confidence Interval	
					Lower	Upper
Sex	Male	Ref	Ref	Ref	Ref	Ref
	Female	3.16	8.681	23.631***	2.88	193.68
Length of stay at facility	0-1 year	Ref	Ref	Ref	Ref	Ref
	2-3 years	-1.99	4.516	0.137*	0.022	0.859
	4-5 years	-3.10	6.123	0.045*	0.004	0.526
	>5 years	-3.80	7.809	0.022**	0.002	0.317
Education	Certificate	Ref	Ref	Ref	Ref	Ref
	Diploma	-0.53	0.286	0.587	0.083	
	Degree	-1.99	2.269	0.137	0.010	
	Masters	-19.56	0.000	0.01	0.000	0.010
Hosmer and Lemeshow			2.753 (6) = 0.839			
Nagelkerke R Square			0.539			

******* p-value < 0.001; ** p-value < 0.01; * p-value < 0.05Discussion

Demographic characteristics of respondents

Majority of the respondents fall between the ages of 31 to 40 years. This is similar to the results obtained in Phukubye, Mbombi, & Mothiba (2019) and contrary to the study by Al-Janabi, & Al-Ani (2014); Ehlers, & Rajeswaran (2014); Elbaih, Taha, & Elsakaya (2019); and Saidam, & Eljedi (2020) where most of the nurses working in the ED were below 30 years. This result shows that, most of the nurses are in their active working years and are expected to perform. The results also indicated that, 48 (74%) of the respondents were females. This results is similar to that obtained by Ehlers & Rajeswaran (2014); Phukubye, Mbombi, & Mothiba (2019) where most of the respondents were females and contrary to the findings in Al-Janabi, & Al-Ani (2014); Saidam, & Eljedi (2020) where most of the nurses working in the ED were males. This result may be because the nursing profession is a female dominated one. Majority of the respondents (n=11) have practice for 3 years, only 1 nurse had worked for seven and sixteen years respectively. The average number of years of practice among the respondents is 5 years, indicating that a significant proportion of nurses in the emergency department have a minimum of 5 years of experience. A minority of the respondents (n=7, 10.7%) however, have worked for 10 years and above. This findings agree with the results obtained in the study by Al-Janabi, & Al-Ani (2014); Saidam, & Eljedi (2020); and Elbaih, Taha, & Elsakaya (2019) where most of the nurses working in the ED had between 1- 5 years working experience and contrary to that obtained by Ehlers & Rajeswaran (2014) and Phukubye, Mbombi, & Mothiba (2019) where most of the respondents had between 8-9 years and more than 10 years of working experience respectively. The clinical

experiences of nurses are crucial for providing effective patient care in the emergency setting, as competency and expertise are essential.

A notable portion of the nurses (n=25, 38.5%) has a tenure of 2-3 years in the emergency department, while a smaller group (n=8, 12.3%) has worked for 4-5 years . This distribution suggests that mentoring and knowledge transfer might be important, especially considering that a majority of nurses in the emergency department require guidance to enhance their efficiency. This mentoring approach can significantly contribute to the overall efficiency of the emergency department, particularly in managing the complexities associated with road accident victims. It underscores the need for structured mentorship programs and continuous professional development to harness the wealth of experience within the department for optimal patient outcomes in the context of road traffic accidents. This outcome may be because of the annual rotation of nurses to different wards/ departments and the migration of most experienced nurses to other countries in search of greener pastures.

In terms of marital status, the majority of respondents (n=41, 63.1%) are single. This contradicts findings in Saidam, & Eljedi (2020) where most of the respondents were married. This may be because most of the respondents were still in their prime (31-40 years old).

Regarding designation, Staff Nurses (SN) dominate the workforce with 21 individuals, followed by 6 Enrolled Nurses (EN), 3 Senior Enrolled Nurses (SEN), and 4 Principal Enrolled Nurses (PEN). Staff Nurses constitute the largest group, emphasizing the prevalence of junior nurses in the emergency department. The study acknowledges the impact of the mass exodus of experienced nurses, potentially affecting the knowledge base in

triage, CPR, resource utilization, and policy interpretation. While the study couldn't establish a conclusive link between nurse designations and knowledge, it recognizes the assignment of junior nurses to critical roles due to staffing shortages during shifts. The implications of the findings suggest potential challenges in the emergency department related to staffing dynamics and knowledge retention. The predominance of single individuals among the respondents may impact the social and emotional support system within the workforce. Moreover, the dominance of SN in the department highlights a reliance on junior nurses in critical roles, indicating potential challenges in knowledge application, especially in areas such as triage, CPR, resource utilization, and policy interpretation. The study underscores the importance of addressing staffing shortages and implementing strategies for mentorship and upskilling of junior nurses to ensure a well-rounded and knowledgeable workforce, ultimately enhancing the quality of emergency patient care.

Specialists account for only 3 nurses (4.6%), with the remaining 62 nurses (95.4%) lacking specialization. This is similar to the results obtained in Phukubye, Mbombi, & Mothiba (2019). Nurses having specialization in emergency are the category of nurses need in the ED because of their knowledge, scope of practice and expertise in areas pertaining to emergency care. The scarcity of specialists may be attributed to challenges such as study leave issues and the stress associated with pursuing specialist courses in Ghana. The absence of specialization might influence the proficiency of nurses, as specialization tends to enhance skills through rigorous training. However, the study could not draw significant conclusions about the impact of specialization on nurses' triage knowledge due to the limited number of

specialists compared to the overall participant pool. The scarcity of specialized nurses in the emergency department, with only 4.6% being specialists, raises concerns about the potential impact on the proficiency of patient care. The absence of specialization among the majority of nurses (95.4%) may imply a potential gap in advanced skills and expertise that specialists typically bring to critical situations. This finding underscores the importance of addressing barriers to specialization and implementing strategies to encourage and support nurses in pursuing advanced training. Enhancing the number of specialists within the emergency department could contribute to improved patient outcomes during mass casualty incidences and overall departmental effectiveness.

In terms of educational qualifications, the majority of respondents (n=36) hold diplomas, while 18 are degree holders, 9 possess certificates, and 2 nurses have master's qualifications. This results is similar to that obtained by Ehlers & Rajeswaran (2014) where most of the respondents were diploma holders and contrary with the results obtained in the study by Al-Janabi, & Al-Ani (2014); Saidam, & Eljedi (2020) where most of the nurses working in the ED had a bachelor's degree. This distribution is likely influenced by the higher intake of students in Nursing Training Colleges compared to Universities.

Knowledge on triage, initial assessment of patient and resuscitation including CPR

The definition of triage was accepted by all respondents (n = 65) without exception. Nonetheless, a notable comprehension of the SATS technique was demonstrated by the only 57 nurses (87.7%) who identified the

triage colour codes as red, orange, yellow, green, and black. There exist three variants of the triage scale for adult, child, and baby patients, as agreed upon by all nurses (n = 65). Only sixty-three nurses, or ninety-six percent, agreed, however, that the discriminator list and the triage early warning score are the two components of the triage scale. Furthermore, 60 nurses (92.3%) concurred that a patient's fundamental vital signs are the basis for calculating the triage early warning score. The results showed that most respondents were proficient in triage; respondents' cumulative scores for CCTH, KPC, and TSH all indicated that they had enough understanding of triage (4-5). The results of Phukubye, Mbombi & Mothiba (2019) and Uzamuhoza (2017) corroborate this, indicating that nurses are usually knowledgeable about triage. On the other hand, this is in opposition to findings by Mikita, Trivett, and McMahon (2017), which indicated that nurses' triage knowledge was inadequate. The difference could be clarified by how the NURSMID protocol was shown to clinical nurses in Ghanaian emergency departments, leading to better comprehension and effective use of the triage tool. The varying levels of education among emergency department nurses, which range from diplomas to master's degrees, can be seen in their different credentials. The presence of individuals holding degrees and those with advanced qualifications indicates a variety of educational histories, despite most individuals having diplomas. This may have transferred their capacity to efficiently triage patients because the majority of triage workshops involve in-service training and practical exercises that require formal education to understand and perform. A diverse group of nurses may form a well-rounded team with a range of viewpoints and skill sets, which is crucial for in-patient treatment, particularly in emergency

situations like car crashes. This is a good discovery since prompt therapy of poly trauma patients is made possible by appropriate patient triaging (Payal, Sonu, Anil, & Prachi, 2013).

The 2020 American Heart Association (AHA) recommendations, namely the steps pertaining to clearing the airway, monitoring breathing, and checking the pulse, were not known to more than half of the 31 nurses. Based on the comments, it appears that many emergency room nurses might not be familiar with the most recent AHA standards. This result is consistent with other analyses by Elbaih, Taha, and Elsakaya (2019) and Rajeswaran et al. (2018), which demonstrated that a sizable portion of participants were unaware of AHA recommendations.

This knowledge gap may be exacerbated by individuals' limited expenditures for course attendance combined with facilities' limited investment in staff training. Currently, the cost of one training in Advanced Cardiac Life Support (ACLS) or Basic Life Support (BLS) ranges from 2,500 to 3,500 Ghana Cedis. Emergency room nurses may not be fully aware of the 2020 AHA standards, and the cost of training programmes may make it difficult to follow current life support procedures and jeopardise patient care in dire circumstances. This knowledge gap highlights how crucial it is for organisations to provide funding and resources for emergency department nurses to get ongoing training so they can stay current on life support recommendations. Improving patient outcomes and upholding a high level of care in emergencies require addressing these limitations.

The majority of nurses (n=48) stated that before beginning CPR, they would put their own safety and the safety of an unconscious individual first,

whereas 17 nurses were unsure on when to begin CPR. The first stage in the BLS algorithm is to remove the patient from danger or risk from the patient (safety). Patients who suffer from cardiac arrest may not survive as a result of this dangerous ignorance. Thirty-three nurses made the wrong decisions on where to apply chest compressions to adults, while 32 nurses correctly determined the middle of the chest. According to the study's findings, more than 50% of emergency room nurses are incompetent in performing chest compressions with the appropriate hands. The success of CPR depends on proper hand placement, and using the wrong technique might drastically lower the survival percentage of people experiencing cardiac arrest. This is in line with research by Al-Janabi & Al-Ani (2014), which found that respondents knew very little about CPR. It also highlights the necessity of ongoing instruction and recurring CPR refresher courses (Elbaih, Taha, & Elsakaya, 2019; Ehlers & Rajeswaran, 2014). Targeted training programmes are necessary since a large percentage of emergency room nurses consistently lack information about how to initiate and perform CPR correctly. In order to improve nurses' readiness and competency and, ultimately, the outcomes for patients experiencing cardiac arrest in emergency situations, more education on CPR methods is required.

The majority of nurses (42), however, felt that the proper frequency for compressions during CPR for adults and children should be at least 100 compressions per minute. Only 11 respondents agreed with this statement. The majority of respondents that is, half of them selected the erroneous response, making this finding significant for all three institutions. Patients who suffer from cardiac arrest may have worse outcomes than nurses who lack enough

training in chest compression. To allow for full chest recoil (for the heart to refill) and ensure that enough blood is circulated to critical organs including the brain, the American Heart Association (AHA) advises doing vigorous and quick CPR compressions at a minimum of 100 compressions per minute. Too rapid chest compressions defeat this purpose. This outcome is in line with pre-test survey results by Elbaih, Taha, & Elsakaya (2019) and Rajeswaran et al. (2018), where a lack of awareness of CPR was shown by the majority of respondents who selected erroneous answers when asked how frequently they do chest compressions. It also aligns with prior research that found concerning competence and knowledge disparities among nurses (Elbaih et al., 2019; Ehlers & Rajeswaran, 2014; Al-Janabi & Al-Ani, 2014). The widespread misunderstanding among nurses about how often compressions should be performed during CPR highlights the critical need for focused training initiatives. To maximise the efficiency of CPR and improve the prognosis for cardiac arrest patients in emergency settings, adequate information regarding the proper compression frequency is essential.

The proper protocol for basic adult resuscitation, according to less than half of the nurses (n=27), is to ensure the victim and oneself are safe, start CPR, administer two rescue breaths, and execute defibrillation. Because over half of the respondents selected erroneous answers, this result indicates that nurses are not well-versed in the basic resuscitation strategy for adults. In all three facilities, there is a sizable knowledge gap. The algorithm's lack of expertise may be the result of poor information retention on Basic Life Support (BLS), the accompanying training expenditures, and a lack of in-service training for nurses in this area. The present outcome is consistent with

the pre-test results obtained by Rajeswaran et al. (2018) and Elbaih, Taha & Elsakaya (2019), as well as the findings of Al-Janabi & Al-Ani (2014), who reported that the participants exhibited inadequate comprehension of the fundamental resuscitation algorithm and BLS (CPR). These studies have observed that after six months of training, CPR retention appears to decline (Kardon-Edgren & Adamson, 2009; Passali et al., 2011; Bukiran et al., 2014; Saiboon et al., 2016). Additionally, they stressed how a nurse's drive, attitude, and readiness to practise BLS or take part in drills affected her understanding. The significant lack of information that nurses have about the fundamental adult resuscitation algorithm emphasises the urgent necessity for continuous and rigorous training programmes. Inadequate BLS training may make it more difficult for nurses to react appropriately in emergency circumstances, underscoring the need for regular and easily available training to improve skills and knowledge retention (Elbaih, Taha, & Elsakaya, 2019; Ehlers & Rajeswaran, 2014).

The carotid artery was properly identified by the majority of nurses (n=47) as the place to check for an adult's pulse. This information is essential for starting chest compressions on trauma victims as soon as possible if they have cardiac arrest. The nurse must palpate the patient's carotid pulse to determine whether or not the patient has a pulse before starting chest compressions. This result is in line with research by Botes (2020), in which participants showed that they could determine when to start CPR. The outcome of cardiac arrest patients depends on this critical stage.

The ratio of adult chest compression to breath was accurately assessed by the majority of respondents (n = 53) as 30:2. This outcome is in contrast to

Rajeswaran et al. (2018) survey results, which showed that the majority of participants in a pre-test were unable to choose the appropriate chest compression to breath ratio. Also, this finding is consistent with results in Elbaih, Taha, & Elsakaya (2019) where respondents post training results revealed a significant difference in quality and correct CPR steps as compared to pre-training results. To guarantee that a victim of cardiac arrest receives enough breathing during CPR, proficiency in this technique is essential. Furthermore, the majority of responders showed enhanced competency in a critical CPR skill by accurately recognising the chest compression to breath ratio (30:2), guaranteeing successful breathing throughout resuscitation attempts. This increased proficiency is necessary to improve patient outcomes in emergency scenarios and the overall quality of life-saving treatments.

The state of the victim should be evaluated every five cycles (30 chest compressions and two rescue breaths making one cycle) in the basic resuscitation method, according to a sizable majority of responders (n=57). To determine if a method is beneficial, ongoing assessment is essential. Effective management requires knowing when to evaluate the status of the patient receiving resuscitation. The decision of whether or not to continue doing CPR on an unconscious patient directly affects the patient's chance of life. According to research by Rajeswaran et al. (2018) and Botes (2020), evaluating the unconscious person and starting CPR right away may increase survival rates and lower in-hospital mortality. This aligns with what they discovered. A significant number of respondents agree on the importance of conducting a five-cycle assessment of the victim's condition (5 x 30 chest compressions and 2 rescue breaths) to ensure continuous monitoring and

effectiveness of basic resuscitation procedures. This data is crucial for making informed decisions while performing CPR, impacting the patient's likelihood of survival.

The correct way to use an automated external defibrillator (AED) is to switch it on, connect the electrodes, observe the rhythm, ensure no contact is made with the victim, and then administer the shock. This is how most respondents (n=47) agreed to use an AED. Some responders (n=4) did, however, clarify that the proper order was to apply the electrodes, analyse the rhythm, then discharge. The significance of this result is observed in TSH, where half of the respondents (n=4) chose the wrong sequence. The reason for this gap might be the unavailability or occasional usage of the AED, the infrequency of in-service training, or the high expense of staff training, which results in a lack of expertise in its administration. This outcome aligns with the research conducted by Rajeswaran et al. (2019), which connected poor training and unavailability with low proficiency in using AEDs. This finding aligns with research findings that link institutional and individual nurse competencies to the deficiencies in nurses' knowledge on disaster management (Saidam & Eljedi, 2020; Uzamuhoza, 2017). Patients who have polytrauma or cardiac arrest have far higher survival rates when they get early defibrillation. Regular training and easy access to AEDs are important ways to improve proficiency in their usage. Regular training for nurses is essential to enhance their proficiency in using life-saving devices like AEDs. Increased access to AEDs is crucial due to the significant positive effects that early defibrillation has on patient survival rates in cases of cardiac arrest and polytrauma.

Based on the feedback from 50 people, it is advised to minimize fluid intake when initially treating a trauma patient suspected of having a head injury. To avoid a rise in intracranial pressure, this procedure adheres to the sanctioned guidelines. Several authors recommend administering fluid resuscitation in a ratio of 1:1:1 (plasma: platelets: packed red blood cells) for significant blood loss (Alzanitan et al., 2021; Malone, Hess, & Fingerhut, 2006; Holcomb et al., 2008; Cannon et al., 2017; and Cantle & Cotton, 2017). Furthermore, research has shown that prolonged use of crystalloids may lower survival rates because it can lead to the development of coagulopathies (McEvoy et al., 2019). Nonetheless, 13 nurses in CCTH, representing 27.6% of the participants, selected the wrong response, suggesting a possible lack of comprehension. This information is concerning because ER nurses should be skilled in fluid resuscitation and understand the fundamental steps to prevent worsening patient conditions. Continuous training is necessary for taking care of severely ill patients.

Dextrose Normal Saline should be avoided in individuals who may have had a head injury, according to the majority of responders (n=49). To avoid fluid shifting into the brain, which might raise intracranial pressure, the fluid chosen must be crystalloid (glucose-free). Blood should be donated following the 1:1:1 ratio (plasma: platelets: packed red blood cells), as stated by Alzanitan et al. (2021), Cantle & Cotton (2017); Cannon et al. (2017), Holcombet al. (2008) and Malone, Hess, & Fingerhut (2006).

The combined knowledge score of 6-7 shows that responders from TSH, KPC, and CCTH have a relatively good understanding of basic patient evaluation and resuscitation, which includes CPR. This result contradicts the

findings of (Makino et al., 2019; Mikita et al., 2017; Phukubye et al., 2019: Uzamuhoza (2017), which claimed that nurses treating trauma patients lacked the required skills and knowledge.) It is consistent with research by Rajeswaran et al. (2018) and Shabbir et al., (2017).

Availability of equipment and other logistics for trauma management

Concerning equipment availability, in CCTH, the majority of respondents (n=20) agreed they had more than 35 pieces of listed equipment. In TSH, 7 respondents indicated having more than 35 pieces, while in KPC, the majority (5 respondents) stated they had between 22-34 of the listed equipment. It can be concluded that, TSH has majority of the equipment listed making them the most adequately prepared (in terms of equipment wise) with sufficient logistics (scoring 4) for trauma management (Module 5, GHS checklist for peer review). This is somehow not surprising since TSH is an ultramodern trauma centre specially built to manage trauma cases. However, the analysis indicates some conflicting figures for CCTH and KPC, making it challenging to have a clear picture of equipment availability. CCTH, although scored 4 (using majority of the respondent) cannot be credited with this score since the other majority (n=27) gave conflicting figures pertaining to the number of equipment available. This indicates that, CCTH should put in more efforts to purchase and train its staff in the identification and use of these equipment to ensure effective use of them since the response do not give a clear picture as to whether they really have the equipment or whether the staff could not identify the available equipment since quite a significant number of respondents (n=14) were just posted to the ED and are within their first year of working in the emergency and 18 of them have worked between 1-3 years

(Table 1: demographic characteristics of respondents). KPC on the other hand, had majority of its respondents (n=7) indication the they had the most of the listed equipment (22-34) giving them a score of 3 (Module 5, GHS checklist for peer review). This makes them moderately prepared to care for trauma victims. It can therefore be concluded that, CCTH and KPC have most of the basic equipment needed for trauma care.

A score of 3 was obtained by all facilities, indicating that they have the majority of essential medicines needed for trauma victim care. This score, based on the MOH policy and guideline and the GHS checklist for assessment of emergency services, suggests that all facilities in this study possess the essential resources for trauma care. This finding aligns with a study by Korsaga et al. (2019) and Wudhikarn et al. (2018) which concluded that, the availability of medications and consumables such as dressings and sutures has a positive impact on patient management. This re-echoes the fact that, lack of readiness for preparedness to manage significant RTAs are affected by inadequate supplies (Norman et al. (2012) and that, many factors caused unavailability of essential items in trauma care technology (Stewart et al., 2015). These findings practically go a long way to determine the care trauma victims receive in these 3 facilities. The researcher is confident that, these facilities are well prepared to effectively manage trauma victims they receive and therefore reduced the mortality rate associated with road traffic accidents. The MOH and GHS checklist serves as an essential guide for health facilities to acquire the needed equipment and medicines needed for trauma care as there is a positive correlation between effective stock management procedures and an increased availability of resources for trauma care (Boakye et al., 2021)

and that resource organization and management is the pillar for every emergency preparedness program (Alexander, 2002).

Availability of policies for the care of trauma victims

All respondents in CCTH (n=47) and TSH (n=8) unanimously indicated that it is a policy for the triage team to assess all patients presenting to the A&E. In KPC, 9 respondents agreed with this policy. Furthermore, all respondents in TSH (n=8) affirmed that it is a protocol for a triage patient to be attended to by a doctor, with the majority of respondents in KPC (n=8) and CCTH (n=46) also expressing agreement. For the policy stating that clinical decisions regarding patient disposition (transfer or discharge) shall be made by the attending physician, all respondents in TSH (n=8) agreed, and the majority of respondents in KPC (n=8) and CCTH (n=46) concurred. Practically, this policy ensures that, all patients needing referrals receive all the necessary basic care needed before referral. It also ensures appropriate communication between both the referring health facility and the receiving centre. This may go a long way to reduce unnecessary loss of lives of trauma victims as basic resuscitative measures are put in place to ensure the victim is stable before transfer or discharge.

Concerning patient admission according to triage assessment, most respondents (n=59) concurred that only patients with red, orange, and yellow triage assessments should be admitted to the A&E unit for additional care. Moreover, 54 participants acknowledged that the triage officer should ensure that all patients with a green triage evaluation are directed to either the general outpatient department or a suitable healthcare facility for continued care. This

reduces congestion and patient waiting time at the ED as personnel can focus and channel all their energies into caring for seriously injured patients.

In terms of financing, 62 respondents agreed that all persons in Ghana have the right to receive quality accident and emergency care without being asked for money during the first 48 hours, as per the Ministry of Health policy and guidelines. Regarding the policy, all 65 respondents agreed that all A&E professionals should get training in triaging, recognition and management of the very sick, advanced cardiac life support, advance trauma life support, and basic life support. Moreover, all respondents in CCTH (n=47) and TSH (n=8) acknowledged the policy that the hospital organizes yearly training for all A&E room nurses, while 8 respondents in KPC agreed with this policy. Yearly training of ED staff in BLS, ACLS, ATLS and other essential protocols imparts on the quality of care rendered to trauma victims. The findings suggest that ED nurses in this study demonstrated moderately adequate knowledge, contrary to the results obtained by Uzamuhoza (2017), which concluded that nurses had inadequate knowledge and poor practices in ongoing training and simulations related to mass casualty preparedness. Periodic training is essential in knowledge retention as studies have shown that, knowledge seems to reduce at least 6 months post-training in BLS which predominantly comprises CPR (Rajeswaran et al., 2018).

The majority of respondents (n=59) agreed that the Ministry of Health should review policy guidelines every ten years. Policy review enables policy makers to make adequate evaluations on existing policies and formulate new guidelines to effectively implement new policies. New policies are often formulated based on evidence-based practices and this enables policy makers

to formulate new policy guidelines based on the current trends and practices. MoH being the main policy maker for the country, formulates policies for the main implementor (GHS) for effective patient care.

It can be concluded that CCTH and TSH organize yearly training for nurses which may be due to the robust nature of the nursing administration and hospital organization. It can also be deduced that CCTH, TSH, and KPC have laid down policies in place for the care of trauma victims. This is in line with a study by Squires, Moralejo, & LeFort (2007) which suggested that, nurses use policies and procedures to guide their practice and that, using policies is one possible strategy for moving research evidence into practice among nursing staff in hospitals. It can be concluded that, respondents had knowledge on the availability of policies to effectively manage trauma vicims. This is contrary to the findings of Diab & Mabrouk (2015) where respondents had unsatisfactory levels of awareness of the importance of training and education courses to control disaster in the pre-intervention phase of the study. It can also be said that, using the protocols outlined in the MoH guideline has ensured that, hospitals are well abreast with procedures to follow in times of emergencies or crisis.

Availability of protocols for the care of trauma victims

All the respondents in TSH (n=8) and CCTH (n=47) indicated that, the emergency doctor on duty may request consultation with another specialist for a patient in the A&E while 9 respondents from KPC agreed to this protocol. It can be deduced that; all the respondents agree that the emergency doctor may seek specialist consultation for a patient. This is true because the patients seen at the ED sometimes come in with multiple complaints which cannot be

solved by the ED doctor alone. Timely referral to specialists helps to prevent unnecessary mortality and morbidity.

According to the statement, all requests must adhere to set protocols, including those for pagers, SMS, phone calls, etc. Sixty of the respondents (92.3%) said that the request will be fulfilled right away. Every responder concurred that the patient's medical records should have a written record of all consultation requests, complete with the patient's signature, date, and time. This means that, first of all, a folder (for patients' medical notes) shall be created for every patient that enters a facility. In this folder, the patient's health complaints and plan of care shall be documented. The attending physician shall indicate the time, date, and his / her signature after the consultation is complete. This is the protocol for entry for many health facilities.

The majority of respondents (n=58) indicated agreement with the item stating that the procedure for referral should adhere to the Ministry of Health (MoH) referral policy guidelines, while 7 respondents from KPC dissented from this protocol. This result is particularly significant for KPC, as CCTH and TSH have well-structured organograms and human resources to follow the MoH policy for referrals to other hospitals. This section highlights the dynamics that occur in peripheral healthcare settings concerning referrals to other facilities, often due to the unavailability of personnel (especially doctors). In such cases, other healthcare professionals, particularly nurses, may take on the responsibility of referrals in peripheral areas, diverging from the traditional norm where referrals are primarily the responsibility of doctors.

In terms of the ability to transfer patients to different hospitals, 53 participants stated that only the emergency physician/specialist or senior doctor on duty has the power to do so. This finding was especially important for KPC, with 7 participants expressing a different opinion. It is not surprising to find CCTH and TSH indicating agreement with this protocol, given their sufficient human resources and robust systems. This section further reflects the challenges faced in peripheral areas, where fewer doctors are available, and the facilities may not be adequately equipped to handle the diverse patient population. Consequently, nurses of varying qualifications in peripheral areas may, by necessity, have the authority to refer patients.

The policy that the on-call emergency physician should give a written consultation with their advice for treatment and disposition in the emergency ward was approved by 57 out of the respondents. This result is notably significant for KPC, where 7 respondents indicated disagreement. This discrepancy is likely due to the collaborative nature of patient consultation, care, and decision-making, involving both doctors and nurses, particularly in situations where doctors may be scarce. The findings suggest that CCTH and TSH have well-established protocols for trauma management, supported by bureaucratic structures that define distinct roles among the healthcare team. The majority of respondents (n=63) answered affirmatively to the statement that there are updated protocols on the management of conditions visibly posted at the A&E.

It can be concluded from the available data that, CCTH and TSH have a well-structured protocol for trauma management while KPC does not strictly follow the guidelines proposed by the MoH due to their special circumstances

surrounding their service delivery (unavailability of staff). This is mainly because, KPC finds itself on a different level of health care and it mainly depends on TSH and CCTH to care for the patients they refer. They also do not have enough human resources to follow the MOH recommendations regarding protocols for referral to other hospitals. The awareness of trauma management protocols by respondents in these facilities however contradicts the results of Shabbir et al., (2017) where respondents were not aware of disaster management protocols in the workplace.

The study's findings reveal important practical implications for the emergency departments at CCTH, TSH, and KPC. Firstly, the moderately adequate knowledge demonstrated by the emergency department nurses indicates a foundation for effective patient care, aligning with previous studies. However, discrepancies in equipment availability reporting, especially conflicting figures for CCTH and KPC, emphasize the need for accurate and standardized inventory management to ensure resources are readily available for trauma management. Furthermore, the unanimous agreement on policies such as yearly training for nurses, triage assessment, and patient disposition reflects a commitment to standardized protocols across the facilities, contributing to consistent and quality emergency care. The acknowledgment of the need for regular policy reviews by the Ministry of Health and the agreement on continuous training underscores the importance of staying updated and adaptable in the dynamic field of emergency care. On the other hand, variations in agreement regarding referral procedures and authority, particularly in KPC, highlight the challenges faced in peripheral healthcare settings. The potential involvement of nurses in referrals due to limited doctor

availability necessitates a closer examination of roles and responsibilities, emphasizing the importance of streamlined communication and collaborative decision-making among healthcare professionals.

Bivariate (Chi-square) association between knowledge on the initial assessment of patients and resuscitation and demographic factors.

The results from this study revealed no statistically significant association between the knowledge of the respondents and their age, number of years of experience, marital status, designation, and whether they had a specialization. This is consistent with a study by Al-Janabi, & Al-Ani, (2014) and Uzamuhoba (2017) which revealed a non-significant association between the nurses' knowledge and their gender, age and years of experience. There was however a significant association between the nurses' knowledge and their age and number of years of experience of respondents in Elbaih, Taha, & Elsakaya (2019). Also, the findings of Shabbir et al. (2017) revealed a significant association between knowledge and respondents' experience, marital status, and designation. The results of this study revealed a significant association between respondents' knowledge and sex, length of stay at the ED, and the highest level of education attained. This is in line with a study by Al-Janabi, & Al-Ani, (2014) where there was a significant association between the overall nurses' knowledge and their academic qualification and contrary to results from Shabbir et al. (2017) and Uzamuhoba (2017) where age, qualification, department and organization had non-significant associations.

Binary logical regression association between socio-demographic factors and respondent's knowledge on initial assessment of patient and resuscitation

There may be gender differences in this important area, as evidenced by the strong correlation found between healthcare providers' gender and their initial assessment of patient and resuscitation knowledge. A complex gender dynamic in healthcare competence is shown by the finding that female healthcare professionals had significantly greater odds of having acceptable evaluation and resuscitation knowledge (AOR = 23.631, p = 0.000; 95% CI: 2.88 - 193.68). This could be related to differences in communication preferences, training backgrounds, or even unequal access to educational materials for male and female healthcare professionals (Blewer et al., 2018). The effects of this gender disparity underscore the need for tailored training programs that include the tastes and backgrounds in learning that are particular to each gender. Reducing these differences will help healthcare professionals become more evenly trained in resuscitation, which will make the workforce more equipped to handle crises.

The impacts of gender disparity highlight the importance of customized training programs that take into account the individual learning styles and experiences of both males and females. The findings indicate that people who have held their positions for extended periods, particularly those with 2-3 years (AOR = 0.137, p = 0.034; 95% CI: 0.022 - 0.859), 4-5 years (AOR = 0.045, p = 0.013, 95% CI: 0.004 - 0.526), and over 5 years (AOR = 0.022, p = 0.005; 95% CI: 0.002 - 0.317), were significantly less likely to possess adequate initial assessment and resuscitation knowledge compared to individuals with 0-1 year of experience. This finding is contrary to findings reported by Aranzábal-Alegría et al. (2017) in Peru suggesting longer time spent in facilities improve CPR knowledge. This counterintuitive finding may

be attributed to the potential complacency or reduced emphasis on continuous training among healthcare providers with longer tenures (Cho & Kim, 2021). The implications emphasise how crucial it is to put in place frequent refresher courses and continuing education programmes, particularly for experienced healthcare professionals, to guarantee that their knowledge of resuscitation and initial patient assessment stays current and useful throughout their careers. Also, the mass exodus of nurses has had a negative impact on mentorship since most of the respondents were young nurses with at least 2-3 years working experience with very few experienced nurses in the system. This calls for government to employ more nurses and review the conditions of service for nurses in order to tone down the migration of nurses for greener pastures.

The study found no evidence of a significant correlation between the education level of healthcare workers and their expertise in first evaluation and resuscitation. The results of this study indicate that, although formal education is an important starting point, other elements, such as hands-on training and practical experience, have a greater impact on the formation of healthcare practitioners' first assessment and resuscitation expertise (Cho & Kim, 2021). The result implies that it is crucial to approach training holistically, including both formal education and the development of practical skills. Regardless of the educational background of healthcare personnel, healthcare institutions should prioritise offering practical experiences, simulation training, and ongoing learning opportunities to improve resuscitation expertise. This method guarantees a training structure that is more thorough and flexible, in line with the changing needs of emergency medical treatment.

Theory and conceptual framework and its significance to the study

The theoretical framework guiding this study revolves around Mass Casualty Incidence (MCI), referring to events involving a substantial number of casualties that can potentially overwhelm healthcare systems. Adini et al. (2006) proposed a preparedness pyramid that identifies four crucial components essential for maintaining a heightened level of preparedness in the face of MCIs. These components encompass planning and policies, emphasizing the need for well-defined strategies tailored to address the challenges of mass casualty incidents. Additionally, the framework underscores the significance of having appropriate equipment and infrastructure, ensuring that healthcare facilities are well-equipped to provide efficient care during such events. Knowledge and capabilities of staff form another vital element, highlighting the importance of well-trained personnel ready to respond effectively. The fourth component emphasizes continuous training and drills, enabling healthcare professionals to practice and refine their response procedures, ultimately enhancing the overall preparedness for mass casualty incidents. This theoretical framework provides a comprehensive perspective, addressing the multifaceted nature of preparedness required to effectively manage the challenges posed by mass casualty incidents in healthcare settings. From the analysis of the data gathered, it can therefore be concluded that, the selected facilities are moderately prepared to care for trauma victims.

Chapter Summary

This chapter presented and discussed the results obtained after analysing the data. Three public health facilities were used for this study.

Nurses working in the ED of the selected facilities were used. The results were analysed according to the research questions. SPSS version 26 was used for the analysis.

Important analytical findings revealed that female healthcare professionals had significantly higher probabilities of possessing sufficient resuscitation skills, even while longer employment at the hospital was associated with lower odds of proper knowledge. Surprisingly, the education level did not predict resuscitation knowledge, emphasising the need for tailored training and continuous professional development for gender-specific and experienced healthcare providers. The study's findings also show important practical implications for the emergency departments at CCTH, TSH, and KPC. All the nurses in the health facilities were knowledgeable in triage. The moderately adequate knowledge of initial resuscitation and CPR demonstrated by the emergency department nurses indicates a foundation for effective patient care, aligning with previous studies. On the availability of logistics, discrepancies in equipment availability reporting, especially conflicting figures for CCTH and KPC, emphasize the need for accurate and standardized inventory management to ensure resources are readily available for trauma management. No concrete conclusion can be reached based on the results obtained from CCTH.

Due to the organized structure of CCTH and TSH, the responses followed MoH's recommended policy and protocol. Additionally, the unanimous agreement on policies such as yearly training for nurses, triage assessment, and patient disposition reflects a commitment to standardized protocols across the facilities, contributing to consistent and quality emergency care. The

acknowledgment of the need for regular policy reviews by the Ministry of Health and the agreement on continuous training underscores the importance of staying updated and adaptable in the dynamic field of emergency care. On the other hand, variations in agreement regarding referral procedures and authority, particularly in KPC, highlight the challenges faced in peripheral healthcare settings. The potential involvement of nurses in referrals due to limited doctor availability necessitates a closer examination of roles and responsibilities, emphasizing the importance of streamlined communication and collaborative decision-making among healthcare professionals. This finding showed clearly the dynamics of operations of facilities in the peripheries.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This study focused on evaluating the preparedness of health facilities in the Central Region for managing trauma, utilizing the MOH Policy and Guidelines for Hospital Accident and Emergency Services in Ghana (MOH, 2011) as a standard. The primary objectives were to evaluate the accident and emergency department nurses' level of knowledge on trauma care, determine the availability of necessary equipment and logistics for effective trauma treatment, examine the formulated policies for trauma care and their implementation, investigate the existing protocols for trauma care in these facilities, and analyse how equipment, logistics, policies, and protocols collectively influence the management of trauma victims at the Accident and Emergency Department.

This was a quantitative research which focused mainly on the knowledge of A & E nurses, availability of logistics, policies and protocols to determine the emergency preparedness of the selected health facilities in trauma management and how the demographic factors predict nurse knowledge initial fluid resuscitation. A cross-sectional survey was used and the research was limited to only three public health facilities {Cape Coast Teaching Hospital (CCTH), Trauma and Specialist Hospital (TSH) and Kasoa Polyclinic (KPC)} in the Central Region. The results of the study showed that, most of the nurses at the selected hospitals had knowledge in triage, initial assessment of the trauma victim and basic knowledge on how to perform CPR. They also asserted to the fact that, they had available the basic consumables and medicines needed to care for trauma victims. With respect to the MOH

policy guidelines, they proved that they understood and followed the guidelines based on their special circumstances in service delivery. The study found that female healthcare providers had higher resuscitation knowledge odds, but longer facility tenure was linked to lower odds. Surprisingly, education level did not predict knowledge, highlighting the need for tailored training and continuous development for gender-specific and experienced providers.

Conclusion

All the different category of nurses proved their knowledge in triage. Certificate holders surprisingly scored high in all aspect and this was a good observation since they often man triage stations during shift changes. The correct use of the AED was problematic The correct algorithm for CPR often got incorrect responses. Facilities in the peripheries did not strictly follow the protocols stipulated in the MoH guidelines.

The overall opinion regarding this study is that, it has brought to bear the positive impact of training and regular refresher courses. This study has also revealed the gaps in CPR knowledge and the need for facility managers to invest in the training of staff in this very important procedure. The government should facilitate the reimbursement of health facilities so they can procure the needed logistics for patient care. This finding revealed that, the facilities used for this study may not be 100% prepared (in terms of logistics) for mass casualty incidences or disasters but have the necessary basic equipment needed for trauma management. This means that, most of the basic logistics needed for trauma care is available. Some of the credit can be attributed to the tireless efforts of the Central Regional Health Directorate for their periodic

monitoring of health facilities in emergency preparedness and other areas during their annual peer reviews. This peer reviews have gone a long way to ensure health facilities effectively implement MoH and GHS policies for better health care delivery in the region.

This study has revealed how the knowledge of nurses in the use and interpretation of policies and protocols play an essential role in the care of patients. It has also proven the fact that, all nurses can function equally no matter the educational qualification as long as the needed training is given. This confirms the fact that, nursing is a practical vocation and that with hands-on training, most nurses will be very proficient in the performance of many procedures. Lack of funds has gone a long way to affect all the facilities in one way or the other and has limited their effectiveness in service provision. This study has enlightened the researcher to better understand the role of managers in running a health facility.

The study discerns gender-related variations in resuscitation knowledge, with female healthcare providers exhibiting significantly higher odds of competence. Contrarily, prolonged tenures seem to correlate with diminished resuscitation knowledge, emphasizing the necessity of ongoing training for experienced healthcare providers. Interestingly, the educational level of healthcare did not show up as a major predictor, highlighting the importance of real-world experience in forming resuscitation expertise.

Recommendation

This study recommends that, nurse managers should continue organizing periodic refresher courses in the use of the NURSMID protocol so that old nurses can refresh their knowledge and new ones can learn and gain

understanding of the use of the tool. Refresher course on CPR should be organized for all three facilities and facility managers should factor the training of health workers in their yearly budget. Simulation drills for ED nurses on mass casualty incidences can be organized with help from the Ghana National Fire Services.

Facility managers should procure more logistics and medicines to beef their surge capacity so as to able nurses to respond appropriately during mass casualty incidences. Someone should be responsible for periodic checks of medicines and replacement of consumables when used. The disaster management teams of the various facilities should be active so as to have a clear chain of command during mass casualty incidences.

More human resource should be posted to the peripheries to ensure proper implementation of proposed policies. An incentive package should be established for nurses sent to peripheries so as to encourage more staff to accept postings to these areas. The Regional Health Directorate should grant or allocate a quota in study leave awards to nurses in the peripheries so as to have quality staff to care for patients.

Based on the findings, the study suggests several practical recommendations to enhance resuscitation knowledge among healthcare providers. Firstly, tailored training programs should be implemented, taking into account potential gender-related disparities in learning preferences and experiences. This ensures a more equitable distribution of resuscitation knowledge across male and female healthcare providers. Recognising the diminishing resuscitation knowledge with prolonged tenures, healthcare institutions should prioritize continuous professional development initiatives

for experienced providers. In order to prevent complacency and guarantee that resuscitation knowledge stays current throughout their employment, regular refresher courses and practical training opportunities are recommended. A comprehensive approach to training is essential, even when education level does not show up as a significant predictor. Irrespective of their educational background, healthcare facilities have to prioritize offering hands-on training, simulation, and ongoing education to all healthcare practitioners. This comprehensive approach ensures that both formal education and practical skill development contribute to a well-prepared healthcare workforce.

Furthermore, for further research the study recommends that, studies should be conducted on the proficient use of the automated external defibrillator (AED). A qualitative study should be conducted on the challenges experienced by ED nurses during mass casualty incidences.

As stated earlier in this study, emergency preparedness and efficiency constitute a vital aspect of a government's service to its citizens. The government, bearing the ultimate responsibility for the well-being of its citizens, must ensure the seamless operation of emergency and disaster services in health facilities to mitigate the impact of inadequacies on the mortality rates. The Government of Ghana should therefore make the health care sector its priority so that its citizens will have the best of health care. As the saying goes, health is wealth.

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APPENDICES

APPENDIX A

Recorded RTA cases from the Various Health facilities

In the Central Region, three hospitals were looked at in terms of their emergency preparedness in the management of trauma. The criteria used in this assessment were in line with the research objectives/ questions. The Cape Coast Teaching Hospital (CCTH), Trauma and Specialist Hospital (TSH) and Kasoa Polyclinic (KPC) were the health facilities used. Data with regards to the total annual admissions, the total annual reported RTAs and where data is available, the number of referred-in cases from 2016 to June 2022.

In CCTH, the total number of reported RTAs from 2016 to June 2022.

Year	Total Admissions	Total RTA	Trans-in (Referred in)
2016	3641	290	-
2017	4583	145	17
2018	4370	157	69
2019	4492	267	57
2020	3709	341	83
2021	4859	217	-
2022 (January-June)	2473	149	-

from CCTH DHIMS

For Trauma and Specialist Hospital, the total number of reported RTAs from 2016 to June 2022.

Year	Total admissions	Total RTAs
2016	4227	66
2017	5412	40
2018	7082	
2019	7197	205
2020	7574	223
2021	6728	115
2022 (January-June)	3158	138

From TSH DHIMS

Out of the total RTA admissions in 2021(June), 1 patient died.

For Kasoa Polyclinic, the total number of reported RTAs from 2015 to December 2021.

Year	Total admissions	Total RTAs
2016		83
2017	1475	64
2018	2285	51
2019	2539	
2020	1727	1
2021	4705	

From KPC DHIMS

APPENDIX B

QUESTIONNAIRE

Serial number: GHS-ERC: 020/02/23

This questionnaire aims to evaluate the Emergency Preparedness in Trauma Management in the Central Region. This research seeks to understand the level of preparedness of your facility in treating trauma patients at the Emergency Department. Your participation in this survey is voluntary, and your responses will remain anonymous and confidential. There is no risk involved, as you can answer the questionnaire at your convenience and in your preferred environment. Please provide your responses in the designated spaces. The survey is expected to take approximately 10 to 15 minutes of your time. If you have any additional inquiries about this survey, feel free to contact Monica Mensah at Tel: 0246793480.

VOLUNTEER'S AGREEMENT

The above document describing the benefit, risks and procedures for the research (Emergency Preparedness in Trauma Management in the Central Region) has been read and explained to me. I have been given an opportunity to have questions about the research answered to my satisfaction. I agree to participate as a volunteer.

Volunteer's signature…… Date…….

SNO

PNO ☐

CNO ☐

7. Are you a specialist? Yes ☐ No ☐

If yes, please specify…….

8. Highest level of education:

Certificate ☐

Diploma ☐

Degree ☐

Masters ☐

Others ☐

For others, please specify……

9. Facility name

CCTH ☐

TSH ☐

KASOA ☐

SECTION B: KNOWLEDGE ON TRIAGING, INITIAL ASSESSMENT OF PATIENTS AND RESUSCITATION INCLUDING CARDIO-PULMONARY RESUSCITATION.

Please tick (√) where appropriate

QUESTION	I AGREE	I DISAGREE	I DO NOT KNOW
10. Triage means "to sort out" the sick or injured people according to the severity of their sickness or injury in order to ensure that medical and nursing staff and facilities are used most efficiently; assessment of injury intensity and the immediacy or urgency for medical attention.			
11. Using the SATS protocol, the triage colour codes include red, orange, yellow, green and black.			
12. There are three versions of the triage scale namely adult, children and infants.			
13. The two parts of the triage scale are the Triage Early Warning Score (TEWS) and the Discriminator list.			
14. The total score for the triage early warning score (TEWS) is generated by observing the basic vital signs of the patient.			

15. The 2020 American Heart Association (AHA) guidelines concerning basic resuscitation operations recommend the following algorithm of procedure:

(A)Compress the chest, clear the airway, check the breathing

(B)Clear the airway, check the breathing, check the pulse

(C) Check the breathing, clear the airway, check the pulse

16. You find your friend in the middle of the road he is unconscious, does not react, and does not breathe properly. What do you do first?

(A)I will clear his airways

(B)I will make sure we are both safe

(C)Begin to give him chest compression

(D)I will give him 2 rescue breaths

17. what is the correct place for the compression of the chest in an adult?

(A)The left side of the chest

(B)The right side of the chest

(C)The centre of the chest

(D)The xiphoid process

18. The correct frequency of chest compressions during CPR for adults and children is:

(A) At least 100 compressions per minute

(B) More than 100 compressions per minute

(C) 80 compressions per minute

(D) 120 compressions per minute

19. Which of the following is the algorithm for basic resuscitation in an adult?

(A)Make sure both you and the victim are safe, give two rescue breaths, perform defibrillation, begin CPR

(B)Make sure both you and the victim are safe, call an ambulance, check for a pulse, begin CPR

(C)Check for a pulse, give two rescue breaths, make sure both you and the victim are safe, perform defibrillation

(D)Make sure both you and the victim are safe, begin CPR, give two rescue breaths, perform defibrillation

20.We check for a pulse in an adult on the:

(A)Carotid artery

(B)Brachial artery

(C)Femoral artery

(D)Temporal artery

21.The ratio of chest compressions to breaths during CPR in adults is:

(A)15:2

(B)15:1

(C)30:1

(D)30:2

22. During the basic resuscitation procedure, the condition of the victim should be assessed:

(A)Every minute

(B)Every 5 cycles (30 chest compressions and 2 rescue breaths)

(C)When the victim starts to breathe correctly

(D)Before the attachment of the AED electrodes

23. Which of the following is the correct sequence of the use of AED defibrillator?

(A)Switch on the AED, apply the electrodes, discharge, analyse the rhythm

(B)Switch on the AED, apply the electrodes, analyse the rhythm, make sure no one touches the victim, discharge.

(C)Apply the electrodes, check the pulse, discharge, analyse the rhythm.

(D)Check the pulse, apply the electrodes, analyse the rhythm, discharge.

24. in initial resuscitation of a trauma patient with a suspected Head injury, fluids should be restricted as much as possible

(A) True

(B) False

25. which of these fluids is not to be given to a suspected head injury patient?

(A) Dextrose Normal Saline

(B) Normal Saline

(C) Ringers Lactate

(D) Blood

SECTION C: AVAILABILITY OF RESOURCES AND OTHER LOGISTICS(EQUIPMENT) FOR MANAGEMENT OF TRAUMA IN THE EMERGENCY AND ACCIDENT WARD.

Kindly tick (√) where appropriate

Does your facility have the following equipment?	Yes	No	Available and working well.
26. Airways/Breathing a. Bag valve mask			
b. Chest tube / underwater seal drainage			
c. Combitube			
d. Elastic gum bougies			
e. Endotracheal tube TT			
f. Laryngeal Mask Airway			
g. Laryngoscope, various size s of blades			
h. McGill forceps			
i.Nasal prongs			
j. Nasopharyngeal airways			
k. Nebulizers			
l. Oropharyngeal airways			
m. Oxygen cylinder with a flow metre			
n. Suction machines and tubes			
o. Thoracotomy set			
p. Tongue depressor			
q. Tracheostomy set			
r. Transport Ventilators			
s. Ventilator (ICU)			
27.Circulation/Haemodynamic a. 12 lead ECG machine			
b. Blood and fluid warmer			
c. Central venous catheters			
d.Defibrillator/ Automated External Defibrillator (AED)			
e. Foleys catheter			
f. High capacity catheters			
g. Infusion pumps			
h. Intraosseous Needles			

i.IV cannula 14, 16, 18, 20 and 22			
j. Syringe pumps			
k. Sterile suturing sets			
28. Splints a. Bandages			
b.cervical collar –soft/hard collar			
c. POP			
d. Spine board			
e. Splints (different sizes)			
f. Sterile gauze			
29. Monitoring Devices a. Pulse oximeter			
b. Patient Monitors (invasive and non-invasive)			
c. Glucometer			
d. Spirometer/ peak flow meter			
e. Thermometer			
f. Diagnosis set			
g. Stethoscope			
h. Sphygmomanometer (Digital & Aneroid)			
30. Diagnostics a.Blood gas/electrolyte analyser			
b. Mobile X-ray machine			
c. Diagnostic set			
d. Diagnostic Peritoneal Lavage set			
e. Glucometer			
f. Laboratory sample set			
g. Lumber puncture set			
h. Minor surgical set.			
i.Foetal heart monitor			
j. Hand held Doppler machine			
k. Suprapubic catheter sets			
l. Ultrasound machine			

ITEM	Available	Not available
31. Medicines a. 50% Dextrose		
b. Adrenaline		
c. Nor-adrenaline		
d. Anti-snake venom serum		
e. Aspirin		
f. Atropine		
g. Anti-Tetanus Serum		
h. Dextran/ voluven		
i.Diazepam		
j. Dobutamine		
k. Etomidate		
l. Fresh Frozen Plasma		
m. Gelofusin		
n. Group O Neg whole blood		
o. Heparin		
p. Hydralazine		
q. Hydrocortisone		
r. IM Glucagon		
s. Insulin		
t. IV calcium Gluconate		
u. IV Dopamine		
v. IV Fluid - all type		
w. IV Frusemide		
x. IV KCl		
y. IV Vit K		
z. Labetalol		
a..Lignocaine		
b..Magnesium Sulphate		
c..Mannitol		
d..Midazolam		
e..Morphine		
f..Naloxone		
g..Nitroglycerine		
h..Oral Rehydration Salt (ORS)		
i..Oxygen supply		
j..Pethidine		
k..Phenylephrine		
l..Salbutamol		
m..Sodium bicarbonate		

SECTION D: AVAILABILITY OF POLICIES FOR THE CARE OF TRAUMA VICTIMS.

Kindly tick (√) where appropriate

Policy	True	False
32. The triage team should assess all patients presenting to the A&E.		
33. A triaged patient should be attended to by a doctor as per protocol.		
34. Clinical decision regarding patient disposition (transfer or discharge) shall be by the attending physician.		
35. Only patients whose assessment during triage falls under Red, Orange and Yellow shall be admitted to the A&E unit for further management.		
36. It is the responsibility of the triage officer to refer all patients whose triage assessment falls under Green to the general outpatient or an appropriate health facility for further management.		
37. With regards to financing, all persons in Ghana have the right to receive quality accident and emergency care. In conformity with the Ministry of Health policy, all accident and emergency patient should be attended to without requesting for money during the first 48 hours.		
38. With regards to training, all A & E staff should be trained in 1. Basic Life Support 2. Advance Cardiac Life Support 3. Advance Trauma Life Support 4. Paediatric Advance Life Support 5. Triaging 6. Recognition and Management of the critically ill		
39. The hospital organizes yearly training for all accident and emergency room nurses.		
40. The MOH should review the policy guidelines every ten years.		

SECTION E: AVAILABILITY OF PROTOCOLS FOR THE CARE OF TRAUMA VICTIMS

Kindly tick (√) where appropriate

Protocol	Yes	No
41. The emergency doctor on duty may request consultation with another specialist for a patient in the A & E.		
42. The request shall follow established internal arrangements such as the use of pagers, SMS, phone calls, etc. Request shall be attended to immediately.		
43. All consultation requests should be written in the patient's medical notes indicating time, date and signature.		
Protocol for referral to other facilities		
44. The procedure for referral should follow the MOH referral Policy Guidelines.		
45. Only the emergency physician/specialist or senior doctor on duty has the authority to refer patients to other hospitals.		
46. The emergency doctor on duty should provide a written consultation regarding his recommendation for treatment and disposition on the emergency record.		
47. There are updated protocols on the management of conditions visibly pasted at the A & E.		