ASSESSMENT OF DETERMINANTS OF HOSPITAL PREPAREDNESS FOR EMERGENCY DISEASE OUTBREAK IN ZAMBIA: A CASE STUDY OF LUSAKA DISTRICT.

By

Thandiwe Mwale

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SUPERVISOR

Dr. Chipimo Peter Jay

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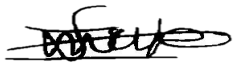
DECLARATION

This project is my original work and has not been presented for a degree in any other University or for any other award.

Signature.  Date.....14/07/2025.....

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APPROVAL

This dissertation of **Thandiwe Mwale** has been approved as partial fulfilment of the requirements for the award of the Degree of Masters of Science epidemiology and Biostatistics by the **University of Lusaka**.

Signed:  **Date: 10/02/2026**

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DEDICATION

To my God, whose unwavering guidance and strength have illuminated my path throughout this journey. Your grace has been my anchor, inspiring me to persevere through every challenge.

To my beloved mother, your sacrifices, love, and wisdom have shaped the person I am today. Your belief in my potential has been a source of motivation, and this achievement is a testament to your support.

To my beautiful children, you are my pride and joy. May you always pursue your dreams with courage and determination. This work is for you, reflecting the hope I have for your bright futures.

With love,

Thandiwe Mwale

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ABBREVIATIONS AND ACRONYMS

DMMU	Disaster Management and Mitigation Unit
HCW	Health Care Worker
HEP	Hospital Emergency Preparedness
MoH	Ministry of Health
PPE	Personal Protective Equipment
PHEMSs	Public Health Emergency Management Systems
SDG	Sustainable Development Goals
SPSS	Statistical Package for Social Sciences
UHC	Universal Health Coverage
UN	United Nations
UNESCO	United Nations Educational, Scientific, and Cultural Organization
WHO	World Health Organization

ABSTRACT

This study assessed the determinants of hospital preparedness for emergency disease outbreaks in Lusaka District, Zambia, focusing on Matero Level 1 Hospital and Chipata First-Level Hospital. A cross-sectional design was employed, targeting 125 outpatient health workers across both facilities, with a response rate of 70% (87 participants). Data were collected using structured self-administered questionnaires and analysed using STATA version 19. The study revealed mixed levels of preparedness: 23% of respondents rated their hospitals as highly prepared, 66.7% as moderately prepared, and 10.3% as poorly prepared. Key determinants influencing preparedness included institutional policies, financial resources, human resource capacity, and infrastructure and commodity availability. Institutional policies were the most significant contributor ($\beta = 0.430$, $p < .001$), highlighting the importance of structured frameworks. Financial resources also played a crucial role ($\beta = 0.302$, $p = .005$), while human resource capacity and infrastructure availability had weaker or non-significant impacts. Challenges included insufficient financial resources, inadequate staff training, poor infrastructure, and limited resource availability. To address these gaps, the study recommends regular staff training, improved drug supply systems, investment in medical equipment, and enhanced stakeholder involvement in policy development. Regular emergency drills and feedback systems were also emphasized as vital for continuous improvement. The study underscores the need for a multifaceted approach to enhance hospital preparedness, combining strategic planning, resource allocation, and capacity building. Future research should explore preparedness in higher-level hospitals and compare public versus private healthcare facilities to provide a broader understanding of emergency preparedness in Zambia.

Keywords: ***Emergency preparedness, disease outbreak, hospital readiness, determinants, Lusaka District, Zambia, health systems.***

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter presents an introduction to the research study on the determinants of hospital preparedness for emergency disease outbreak in Zambia: a case study of Lusaka district. The first section presents the background, then the following sections brings to the fore the problem statement, objectives and research questions as well as significance of the study, scope and limitations, a Conceptual framework and operational definitions of terms. Lastly, a summary of the entire chapter will be provided.

1.2 Background of the Study

Hospital preparedness for emergency disease outbreaks is a critical component of public health infrastructure, particularly in regions prone to frequent health crises. The World Health Organization (WHO) has identified several key pillars for Health Systems Management, including the health workforce, service delivery, leadership and governance, health information systems, access to essential medicines, and financing (WHO, 2021). Among these, the focus on service delivery in emergency preparedness is crucial. This pillar aims to provide high-quality and effective healthcare services to everyone, regardless of gender, ethnicity, or socioeconomic status, while emphasizing patient and caregiver safety, patient-centred care, timeliness, and efficiency (Carroll, 2016).

Emergency preparedness is an essential aspect of healthcare and disaster medicine. An emergency is defined as any extraordinary event or situation that demands a rapid and intense response, which can be managed with existing community resources (Qureshi & Gebbie, 2021). Preparedness involves making arrangements to ensure that, in the event of an emergency, all necessary resources and services can be quickly mobilized and deployed (Aitken, 2015).

The concept of healthcare preparedness gained prominence in 1996, driven by the rise in terrorism and other large-scale disasters, such as the 1993 World Trade Centre bombing, the 1995 Oklahoma City bombing, and the 1995 biological and chemical attacks by Aum Shinrikyo in Japan (Jaye et al., 2016; Toner, 2017). In Africa, disasters such as droughts, fires,

floods, terrorism, technological accidents, and diseases frequently disrupt livelihoods, damage infrastructure, divert resources, interrupt economic activities, and hinder development. For instance, Zambia has faced significant challenges, including epidemics, floods, droughts, and the recent cholera outbreak, all of which have disrupted lives, destroyed infrastructure, diverted resources, and slowed development.

The integration of emergency preparedness into policies and operational frameworks at various levels, including countries, cities, and hospitals, is essential. The legal and policy frameworks governing Zambia's preparedness and response to epidemics and pandemics encompass several key acts and plans. The Disaster Management Act No. 13 of 2010 establishes a system for disaster anticipation, preparedness, prevention, coordination, mitigation, and management, while the Public Health Act No. 295 of 1995 focuses on suppressing and preventing disease outbreaks. Additionally, the draft Zambia National Public Health Bill aims to address gaps in the current legal framework. Policy frameworks include the Ministry of Health National Health Strategic Plan, which addresses public health security, and the National Action Plan for Health Security, which outlines capacities and capabilities needed to protect against public health emergencies. The All-Hazards Emergency Preparedness and Response Plan provides a framework for managing public health emergencies at various levels, and the National Action Plan for Antimicrobial Resistance addresses antimicrobial resistance through a "One Health" approach. Further directives come from Presidential Pronouncements and Cabinet instructions, and Zambia is a signatory to international protocols such as the International Health Regulations (2005). The enactment of the Zambia National Public Health Bill is crucial for closing gaps in the legal framework for epidemic and pandemic response (PRMC, 2021).

Zambia's policy framework supports its legal structures with several strategic and action plans aimed at enhancing public health security. The Ministry of Health National Health Strategic Plan includes provisions for addressing public health security and responding to epidemics and pandemics, integrating public health preparedness into the broader health system strategy (Ministry of Health, 2021). The National Action Plan for Health Security outlines the capacities, and technical areas that need strengthening to protect the country from public health emergencies. This plan provides a detailed roadmap for enhancing public health infrastructure, training, and coordination mechanisms, helping Zambia build a more resilient

health system capable of effectively responding to health emergencies (National Action Plan for Health Security, 2021).

Emerging infectious diseases (EIDs) are a global public health problem because they can cause debilitating infections and large-scale epidemics. In the past 30 years, more than 30 new infectious diseases have emerged worldwide. EIDs are defined as infectious diseases that have recently been identified in a population or that have previously existed but have a rapidly expanding geographic scope or incidence. COVID-19 is the most recent illustration of an EID. Millions of people have died as a result of the COVID-19 pandemic, which has also caused significant socioeconomic problems (Bavel et al., 2020; Marome & Shaw, 2021).

According to the World Disaster Report (2016), inadequate emergency preparedness significantly impacted health institutions in Guinea, with over 30,544 lives directly affected and 2,845 deaths resulting from the Ebola outbreak in March 2014 (Stephenson, 2014). Effective emergency preparedness should emphasize community readiness, personnel augmentation plans, and communication and public policies for funding. The ability to manage a mass casualty incident (MCI) is fundamental for preparedness against unconventional events, including decontaminating chemical casualties, treating victims with acute stress reactions, expanding hospital surge capacities, and conducting drills to integrate knowledge. Risk communication is also crucial (Raisbeck, 2014).

One of the primary goals of emergency preparedness plans is to enhance the emergency management capabilities of hospitals and healthcare professionals, enabling them to effectively prepare for, mitigate against, respond to, and recover from any hazard through planning, training, and exercises. While the main focus is on saving lives, the preparedness of organizations and individual health workers in response to emergencies often remains unaccounted for (Qureshi & Gebbie, 2001). Additionally, there is limited research providing a comprehensive overview of facility preparedness, particularly for key outlets (Jaye et al., 2016). Therefore, it is essential to establish the determinants of emergency preparedness in hospitals, with a focus on facilities like those in Lusaka District.

Hospitals play an important role in providing effective healthcare during a disaster (Vugrin et al., 2015; Sunindijo et al., 2020). Pandemics can lead to an increasing spread of diseases and suddenly become a surge of patient demands that can affect hospitals' capacity and the overall functioning of the health system. Many hospitals are unprepared to deal with major

disasters. Before the COVID-19 outbreak, Zambia's healthcare capacity was insufficient to meet demand. The pandemic highlighted the fragility of Zambia's medical supply chains; medical personnel and infrastructure were insufficient to deal with the rise of COVID-19 (WHO, 2020). For instance, Zambia faced significant challenges in maintaining essential health services and managing the surge in patient demands. The country had to rely on emergency measures and international support to bolster its healthcare system.

The reference tools developed by WHO and partners comprise a unique framework of methodologies for public health capacity strengthening. These tools, which each country can adapt to reflect its national context, needs, and priorities, provide an opportunity for countries and regional and global bodies to adopt a coherent approach to national public health workforce development and management (WHO, 2024).

In Zambia, the need for robust hospital preparedness has been underscored by recent health crises, including the COVID-19 pandemic. The ability of hospitals to respond effectively to such emergencies is influenced by various determinants, including infrastructure, staff training, resource availability, and coordination mechanisms (Ministry of Health Zambia, 2024). Zambia has faced numerous public health challenges, ranging from infectious diseases like Ebola and tuberculosis to more recent threats such as cholera and COVID-19. These outbreaks have highlighted the vulnerabilities within the health system, particularly in terms of emergency preparedness and response capabilities (World Bank, 2020). The WHO has emphasized the importance of building health system resilience to address these challenges effectively (PRMC, 2021).

Hospital preparedness involves several key components, including emergency planning, staff training, resource allocation, and inter-agency coordination. Effective emergency planning ensures that hospitals have clear protocols and procedures in place to manage disease outbreaks. Staff training is crucial to ensure that healthcare workers are equipped with the necessary skills and knowledge to respond to emergencies. Resource allocation, including the availability of medical supplies and equipment, is essential for the effective management of disease outbreaks (NHS, 2022). In Lusaka District, the level of hospital preparedness varies significantly across different healthcare facilities. Some hospitals have well-established emergency response plans and adequate resources, while others struggle with limited infrastructure and insufficient training programs. This disparity highlights the needed for a

comprehensive assessment of the determinants of hospital preparedness to identify gaps and areas for improvement.

1.3 Statement of the Problem

Globally, health facilities are considered the cornerstone of emergency response plans, with the capacity of healthcare workers and policy formulation being identified as vital components in these plans (Balicer, 2016). In Zambia, the preparedness of health facilities for emergency disease outbreaks has been tested by recent events such as the COVID-19 pandemic and cholera outbreaks. During the COVID-19 pandemic, Zambia recorded over 209,000 confirmed cases and more than 3,600 deaths. Hospitals faced significant challenges in managing the surge of patients, ensuring adequate resources, and providing protective equipment for healthcare workers (World Bank, 2020). Similarly, during the cholera outbreak in 2018, Zambia reported over 5,000 cases and 114 deaths. Hospitals struggled with patient flow management and the provision of essential medical supplies (WHO, 2022). In 2023, another cholera outbreak in Zambia, was declared in Lusaka in October 2023, which escalated into a critical public health emergency, with the epidemic now afflicting all ten of the nation's provinces and urgently demanding an integrated response. The alarming spread has resulted in 62 districts grappling with the outbreak, leading to 14900 reported cases and 560 deaths, translating to a case fatality rate of 3.8% (WHO, 2024).

A vulnerability assessment of hospitals in Lusaka District is crucial to identify the current state of emergency preparedness plans. This assessment will help anticipate, prepare for, and manage client flow trends and their effects, ultimately contributing to enhanced hospital efficiency. For example, during the COVID-19 pandemic, hospitals in Lusaka had to rapidly adapt to increased patient numbers, often facing shortages of critical supplies and staff. Similarly, during cholera outbreaks, hospitals had to manage large numbers of patients with limited resources, highlighting gaps in preparedness (WHO, 2024).

By examining the determinants of emergency preparedness in Lusaka hospitals, this study has provided critical insights for policy formulation and resource allocation adjustments. It identified key factors such as the availability of medical supplies, the training and capacity of healthcare workers, and the effectiveness of existing emergency response plans. These insights are crucial for improving health system resilience against future emergencies. By addressing these gaps, policymakers can make informed decisions to enhance hospital

preparedness in Lusaka, ensuring they are better equipped to handle future disease outbreaks. This will not only improve hospital efficiency during emergencies but also strengthen Zambia's overall health system resilience.

1.4 Purpose of the Study

The purpose of this study was to assess the determinants for hospital preparedness for emergency disease outbreaks in Lusaka District, Zambia.

1.5 Objectives of the Study

Specifically, the research aimed to:

1. To determine the level of emergency preparedness within hospitals in Lusaka District.
2. To establish the determinant factors that influence hospital emergency preparedness.
3. To identify the challenges faced by hospitals in achieving optimal emergency preparedness.
4. To propose measures to improve hospital emergency preparedness based on the identified challenges and determinants.

1.6 Research Questions

The study was guided by the following questions:

1. What is the current level of emergency preparedness within hospitals in Lusaka District?
2. What are the determinant factors that influence hospital emergency preparedness in Lusaka District?
3. What challenges do hospitals face in achieving optimal emergency preparedness?
4. What measures can be proposed to improve hospital emergency preparedness based on the identified challenges and determinants?

1.7 Significance of the Study

This study was significant as it aimed to provide a comprehensive understanding of the determinants of hospital preparedness for emergency disease outbreaks in Lusaka District,

Zambia. By identifying key factors that influence preparedness, the study will offer valuable insights for policymakers, healthcare administrators, and practitioners. The findings can inform the development of targeted interventions and policies to enhance hospital readiness, ultimately improving the resilience of the healthcare system. Additionally, the study will contribute to the existing body of knowledge on emergency preparedness in low-resource settings, providing a basis for future research and comparative studies.

1.9 Scope of the Study

This study focused on assessing the determinants of hospital preparedness for emergency disease outbreaks in Lusaka District, Zambia, with a specific emphasis on Matero Level 1 Hospital and Chipata First-level 1 Hospital. Key factors examined included the institutional policies, financial capability, human resource capacity, infrastructural capacity and commodities availability and the effectiveness of existing emergency response plans. Data were collected through surveys, interviews, and analysis of hospital records. The study period encompassed recent disease outbreaks, such as the COVID-19 pandemic and cholera outbreaks of 2018 and 2023.

1.10 Limitation of the Study

The varying schedules of health workers posed a significant challenge. As the study was cross-sectional, researchers could not control the information since it was collected at a single point in time. Consequently, data on events before or after the study were not captured. Additional delays were experienced due to travel. The interviews were conducted at times convenient for the health workers. Finally, the study is limited to hospitals in Lusaka District, which may not fully represent the preparedness levels of hospitals in other regions of Zambia.

1.11 Delimitations of the Study

This study focused on assessing the determinants of hospital preparedness for emergency disease outbreaks among healthcare workers in Lusaka District, Zambia. The key areas of investigation included the impact of healthcare workers' capacity, the availability of essential commodities, financial resources, and institutional policies on emergency preparedness.

The research was conducted at Matero Level 1 Hospital and Chipata First-Level 1 Hospital, which are strategically located and play a crucial role in providing healthcare services in the district. These hospitals were selected due to their accessibility and relevance in handling

emergencies. The study targeted healthcare workers in outpatient departments, as these units are typically the first point of contact for emergency cases.

To ensure the integrity of the research, strict confidentiality measures were implemented. Participants were assured anonymity while completing the questionnaires to foster trust and encourage honest responses. This approach aimed to provide an accurate and comprehensive assessment of the factors influencing hospital emergency preparedness in the selected facilities.

1.12 Operational Definition of Terms

Emergency preparedness: The extent to which emergency planning enables the effective and efficient prevention, reduction, control, mitigation of and response to incidents and emergencies.

Resilience: Ability of the community, services, area or infrastructure to detect, prevent and, if necessary, withstand, handle and recover from incidents and emergencies.

Response: Decisions and actions taken in accordance with the strategic, tactical and operational objectives defined by emergency responders, including those associated with recovery.

Commodity: A material or product that is invested in, allocated, distributed, and expected to be useful during emergencies.

Emergency: An unprecedented occasion or circumstance that requires an extraordinary, rapid reaction and can be addressed with everyday resources.

Finance: The process of prioritizing, investing, budgeting, saving, and forecasting monetary resources for emergencies.

Health worker: A human resource for health expected to prepare for and respond to emergencies.

Information: Facts or data provided or learned about emergency preparedness, used for decision-making or action by organizations during emergencies.

Policy: A set of principles, rules, and guidelines formulated or adopted by an organization to address emergencies.

Preparedness: The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to and recover from, the impacts of likely, imminent or current hazard events or conditions (WHO, 2022).

Prevention: Prevention involves taking proactive measures to completely avoid the negative impacts of hazards and public health emergencies. While it aims for total avoidance of potential adverse effects through preemptive actions, complete prevention is often not feasible, leading to a focus on mitigation. Consequently, the terms prevention and mitigation are sometimes used interchangeably in casual contexts

Readiness: Readiness refers to the ability to respond swiftly and appropriately when needed. It is achieved through planning, resource allocation, training, exercises, and organization to build, sustain, and enhance operational capabilities based on risk assessments.

Recovery: Recovery involves restoring and improving facilities, livelihoods, and living conditions of communities affected by disasters.

1.13 Chapter Summary

This chapter discussed the introduction of the study, the back ground information, statement of the problem, objectives of the study, and scope of the study, limitation of the study, purpose of the study, significance of the study, conceptual framework and also the definition of key terms. The next chapter provided the Literature Review of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section provided a comprehensive review of relevant literature related to the study's objectives, hospital preparedness, determinants influencing Hospital emergency preparedness, challenges in Hospital emergency preparedness, related studies and gaps. Lastly, a summary of the entire chapter will be provided.

2.2 Hospital Preparedness

Hospital preparedness is a critical component of health system resilience. Preparedness involves various elements, including management, infection prevention and control, communication, human resources, logistics, and continuity of essential health services. The WHO's "Strengthening hospital preparedness and resilience to respond to emergencies" catalogue outlines practical steps and tools for enhancing hospital preparedness (WHO, 2021).

According to the World Health Organization (2021) Preparedness is the knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to and recover from, the impacts of likely, imminent or current hazard events or conditions. Preparedness action is carried out within the context risk management and aims to build the capacities needed to efficiently manage all types of emergencies and achieve orderly transitions from response through to sustained recovery. Preparedness is based on a sound analysis of risks and good linkages with early warning systems and includes such activities as contingency planning, stockpiling of equipment and supplies, the development of arrangements for coordination, evacuation and public information and associated training and field exercises. These must be supported by formal institutional, legal and budgetary capacities. The related term "readiness" describes the ability to quickly and appropriately respond when required.

Researchers and authorities have developed various indicators and methods to assess the preparedness and response performance of hospitals (Djalali et al., 2019). One widely accepted method is the Hospital Safety Index (HSI) developed by the World Health Organization (WHO), which evaluates the functional capacity of hospital staff and the

implementation of disaster plans (Djalali et al., 2019). However, it is uncertain whether these evaluation tools can accurately predict a hospital's performance during an actual disaster (Djalali et al., 2014). The lack of internationally accepted standards for preparedness and response measurement is a global concern (Djalali et al., 2022). Regardless, there are five core components of emergency response: surveillance, healthcare response, public health intervention, communication, and command (Qiu et al., 2018). These components inform preparedness, and the summation of responses determines the level of preparedness (Mohammad-pajooh & Ab. Aziz, 2014). In this study, awareness of these core components equates to preparedness, and the inverse is also true.

The term "emergency" refers to any extraordinary event or situation that requires a rapid response and can be addressed with existing community resources (Qureshi & Gebbie, 2001). Preparedness, on the other hand, involves arrangements to ensure that all necessary resources and services can be quickly mobilized and deployed in the event of an emergency (Peter, 2021). The role of a healthcare facility during an emergency goes beyond increasing awareness; it must also develop the ability to respond effectively and provide necessary knowledge based on gained skills (Song & Park, 2019). Despite emergencies being unexpected and causing significant disruption, immediate solutions are required to stabilize and harmonize the situation.

There is no universally accepted set of skills for public health preparedness. However, according to Bass et al., there are seven core competencies for healthcare workers in disaster training, including the ability to recognize and take initial actions in a critical event (Toner, 2020). A critical event refers to any situation that threatens an organization's ability to maintain operations. It is essential to document the ability of healthcare workers to recognize and respond early in an emergency. Health personnel should also be capable of assuming leadership roles and correctly identifying potential critical events (Song & Park, 2019).

Inadequate supply of medical commodities significantly hampers emergency preparedness in healthcare institutions. For example, during the Ebola outbreak in Guinea, weak surveillance systems and inadequate medical supplies contributed to the difficulty in containing the virus (WHO, 2018). The recent global outbreak of the coronavirus has also exposed the lack of emergency preparedness in many countries, with the United States, Brazil, Spain, and Italy being severely affected due to inadequate supply of hospital commodities, such as personal protective equipment (PPE) (Najafi et al., 2021). In Africa, proper emergency preparedness

mechanisms are crucial to prevent further spread of COVID-19, as highlighted by the World Health Organization (2020).

2.3 Determinants of Hospital Preparedness

Hospital preparedness for emergency disease outbreaks is influenced by various determinants. This section reviews the literature on the key factors influencing hospital preparedness, focusing on human resources, management in crisis, essential health services and support, hospital infrastructure, infection prevention control and surveillance, equipment, and policies, networking, and research.

Hospital emergency preparedness is influenced by various factors, including financial capacity or funding (Toner, 2017), planning strategies (Skryabina et al., 2017), resource management, infrastructure availability, the presence of healthcare personnel, and staff education and training (Veenema, 2018). Additionally, other elements, such as a hospital's mission, capabilities, competencies, resources, and location, also play a significant role. Hospitals located in high-risk zones must prioritize planning and training for disasters that have a high probability and impact. Effective planning programs and tools, often overseen by the hospital administration, significantly affect emergency readiness (World Health Organization, 2017).

Additionally, other elements, such as a hospital's mission, capabilities, competencies, resources, and location, also play a significant role. Hospitals located in high-risk zones must prioritize planning and training for disasters that have a high probability and impact. Effective planning programs and tools, often overseen by the hospital administration, significantly affect emergency readiness (World Health Organization, 2017).

Examples of such planning tools include strategic preparedness planning (World Health Organization, 2016) and hazard vulnerability analysis tools (California Hospital Association, 2017). Strategic preparedness planning provides a structured framework to address key concerns and build consensus on how the hospital should prepare for emergencies. Through this process, hospitals can develop realistic strategies that minimize exposure to disasters while enhancing their ability to respond effectively. A systematic approach allows for the thorough examination of assumptions, evidence, and potential scenarios, ensuring that the hospital is well-prepared for any emergency.

However, if hospital administrators fail to follow a structured planning process, implementing strategic preparedness plans becomes challenging. Without clear procedures, discussions may not occur, decisions may remain unresolved, strategies may go unimplemented, and essential strategic thinking may not be documented. Therefore, administrators must establish and follow a comprehensive process to ensure that planning, discussions, decision-making, and documentation are effectively executed, enabling the hospital to manage emergencies efficiently.

2.3.1 Human Resources

2.3.1.1 Influence of Health Workers' Skills on Hospital Emergency Preparedness

The competence of hospital staff is pivotal for an effective emergency response. Continuous professional development and simulation exercises are critical to enhancing staff readiness. The WHO underscores the importance of training and capacity building to ensure staff are well-prepared to handle emergencies. For instance, the WHO has been advocating for comprehensive training programs that include not just technical skills but also decision-making and teamwork abilities. Such training ensures that healthcare workers can respond effectively to a range of emergency scenarios, from natural disasters to disease outbreaks (WHO, 2021).

The ability of healthcare workers to meet emergency preparedness performance goals is closely tied to their prescribed and acquired skills (Shabanikiya et al., 2023). Articulating the necessary knowledge (facts and figures), skills (psychomotor or mental operations), and attitudes (values) ensures adequate preparedness for disasters and public health emergencies (Walsh et al., 2012). Clarifying the specific knowledge, skills, and attitudes that public health professionals must demonstrate during emergencies is therefore a priority (Gebbie et al., 2023). Although training and education have long been integral to disaster preparedness, their application is not always evidence-based (Bass et al., 2020).

Hospital personnel must possess particular characteristics for effective emergency preparedness, especially in difficult and unpredictable conditions (Shabanikiya et al., 2016). However, there is limited information available regarding the characteristics that enable hospital staff to perform well during adversities (Shabanikiya et al., 2016). Since health emergencies require major responses and occur infrequently, organizations and staff need to practice procedures and skills to be prepared. The only way to test a plan effectively is

through organized drills. Various drill mechanisms are adopted in different study contexts (Kiongo, 2015).

There are no universally accepted skills for public health preparedness (Gebbie et al., 2023). However, Bass et al. (2020) identified seven core cross-cutting competencies for disaster training, including the ability to recognize a potential critical event and implement initial actions. A critical event is any situation that threatens to disrupt an organization's ability to maintain continuity of operations. Documenting the ability of healthcare workers to provide early event recognition and early response mobilization is vital for any emergency plan. Healthcare personnel should be able to assume leadership roles during emergencies (Shabanikiya et al., 2020). Additionally, their competency in recognizing triggers and reporting appropriately is crucial (Bass et al., 2021). Evaluating the ability of healthcare workers to correctly identify all potential critical events among various scenarios is essential.

The ability of a health worker to meet emergency preparedness performance goals is closely linked to their acquired skills and knowledge. Articulating the necessary knowledge (facts and figures), skills (psychomotor or mental operations), and attitudes (values) is essential for adequate preparedness for disasters and public health emergencies (Walsh et al., 2012). Clarifying the specific knowledge, skills, and attitudes that public health professionals must demonstrate during a surge is therefore a priority (K. M. Gebbie et al., 2023). Although training and education have long been recognized as integral to disaster preparedness, their application is not always evidence-based (Bass et al., 2021).

Despite extensive recognition of the critical role of health workers' skills in emergency preparedness, there remains a significant gap in the empirical data regarding the specific skills and competencies required for effective emergency response in the context of Zambian hospitals, particularly in Lusaka District. Existing studies predominantly focus on theoretical frameworks and training programs in developed countries (Shabanikiya et al., 2023; Gebbie et al., 2023; Bass et al., 2020), with limited evidence-based research on the practical application and effectiveness of these programs in Zambia. This study aims to address this gap by quantitatively assessing the influence of health workers' skills on hospital preparedness for emergency disease outbreaks in Lusaka District. It will investigate the current state of health workers' skills, identify specific competencies that are crucial for effective emergency response, and provide data-driven recommendations for training programs tailored to the needs of Zambian healthcare workers.

2.3.1.2 Professional Training and Experience in Hospital Emergency Preparedness

Regular training programs and workshops significantly enhance the skills and knowledge of healthcare workers, enabling them to respond effectively to disease outbreaks. The WHO's 2021 report highlights the significance of such training in improving emergency response capabilities. These programs often involve simulation exercises, which provide a hands-on approach to learning and help staff become familiar with emergency protocols. Furthermore, capacity building initiatives aim to strengthen healthcare systems by improving the infrastructure and resources available to staff, thereby enhancing overall emergency preparedness (WHO, 2021).

Providing effective disaster preparedness training to the estimated twelve million healthcare workers in the United States presents several significant challenges. Firstly, identifying and recognizing best practices to be taught is essential. Secondly, defining specific target audiences and the content they should be taught is crucial. Instructional content must be tailored to meet the training requirements for different job categories. Effective multidisciplinary disaster response requires not only the acquisition and application of factual knowledge but also complex concepts, multi-level decision-making, and specific technical skills. Evaluating whether these skill sets have been efficiently conveyed and effectively acquired presents its own inherent challenges (Stephenson, 2022). Additionally, differences among healthcare workers, such as prior training, work experience, baseline abilities, and cultural background, directly impact training effectiveness and must be considered when training large groups.

A methodical, competency-based approach may provide a solid foundation for building a comprehensive training and evaluation program to meet these challenges. Research on practices, standards, and educational programs based on both evidence and sound actions remains an important gap to be filled. Disaster preparedness and response are two of the four core areas of focus in Strategy 2010, the strategy document of the International Federation. This strategy guides the National Societies in their work and the Secretariat and delegations who support them, emphasizing the need to improve the Red Cross Red Crescent Movement's response to emergencies. The aim of disaster management training is to build the capacity of National Societies' staff and volunteers, as well as International Federation delegates, to improve preparedness and response at all levels before, during, and after

disasters, and to enable all components of the Movement to work together in a coordinated manner (WHO, 2020).

The focus of disaster management training is generally on improving the technical skills of participants, as well as on personnel and team management. It aims to encourage the exchange of experience and knowledge and the creation of networks among disaster managers. It also seeks to improve the coordination of disaster response and the quality and availability of disaster management tools. The role of the International Federation is to standardize training curricula, train trainers in National Societies, and facilitate and support training in disaster management at national, regional, and international levels. Training at the national level is the responsibility of individual National Red Cross and Red Crescent Societies, supported as needed by technical delegates of the International Federation (Strategic Plan, 2020-2025).

The existing literature highlights several key areas of emergency preparedness but reveals a significant gap in empirical data on the specific skills and competencies required for healthcare workers in Zambia, particularly in Lusaka District. Most studies have focused on high-income countries, with limited attention to the unique challenges faced by healthcare systems in low-resource settings. There is a need for research that quantitatively assesses the training, skills, and preparedness of healthcare workers in Zambia to develop tailored training programs and improve emergency response strategies.

This study aims to fill this gap by evaluating the current state of professional training and experience in hospital emergency preparedness among healthcare workers in Lusaka District. It will assess their competencies, identify areas for improvement, and provide recommendations for enhancing training programs to ensure that healthcare workers are well-equipped to handle emergency disease outbreaks.

2.3.1.3 Knowledge and Awareness on Hospital Emergency Preparedness

Understanding the institutional emergency operations plan is crucial for disaster plan activation (mobilization) (Bass et al., 2016). In this context, awareness of the specialized personnel and equipment necessary for surge capacity and the preparation steps required for mobilization is a key competency (Bass et al., 2016). The ability to control emotions is another important personal attribute (Shabanikiya et al., 2016). Understanding the incident command system and individual roles is also essential (Bass et al., 2016). Are healthcare

workers in the current study able to identify the phases of critical event management and match activities to the appropriate phase? Applying knowledge of preparedness to identify key components and recognize appropriate activities in a given critical event scenario is critical (Bass et al., 2016). What is the ability of the respondents to correctly identify the components of preparedness and select the appropriate activities for each component?

The frequency and severity of emergencies, resulting in damages and losses, have gradually increased. This calls for high competency skills among healthcare personnel to reduce and manage harm to individuals or entire organizations. Additional educational skills have been highly recommended by both developed and developing countries to manage emergency healthcare risks. Good educational skills instilled in healthcare workers improve their ability to manage emergency cases. The abrupt outbreak of the coronavirus disease highlighted gaps in emergency handling across various countries. For instance, as of July 2020, the United States recorded the highest number of cases, with 141,000 deaths from 3.68 million infected people and 1.08 million recoveries (Nukpezah & Soujaa, 2020).

Disaster preparedness includes activities designed to improve the ability to initiate emergency measures to protect property and contain damage and disruption, as well as the capacity to engage in post-disaster restoration and early recovery activities (ÖztekİN et al., 2014). Preparedness serves as a time-based connector between the pre- and post-impact stages of a disaster incident. It consists of measures that allow individuals, institutions, and communities to react efficiently and recover quickly when disasters strike (Sadeka, 2015). Preparedness aims to ensure that the resources necessary for effective disaster response are in place, and that responding personnel know how to use those resources (UNISDR & UNOCHA, 2018).

2.3.2 Institutional Policies on Hospital Emergency Preparedness

Policies and procedures are essential for ensuring compliance with legislation, laws, and accreditation standards. They help minimize practice variations, standardize operations across multiple health system agencies, and serve as valuable resources for staff, particularly new employees (Koliba et al., 2017). By reducing reliance on memory, policies address a significant source of human error, particularly when hospitals face overwhelming situations. Hospitals can strengthen their emergency preparedness by integrating evidence-based practices and theoretical principles into their policies.

Emergency requirements should align with the types of disasters outlined in preparedness plans, ensuring clear guidelines that cover all aspects of disaster relief and recovery. These should be specified in legislation, including provisions for special arrangements for fund allocation, disbursement, and emergency funding measures. The creation and execution of policies, strategies, and practices should aim to minimize vulnerabilities, reduce disaster risks, and support prevention and mitigation efforts (Ali et al., 2015).

Formal disaster plans and agreements play a critical role in preparing multi-organizational response networks, communities, and hospitals for coordinated activities during emergencies (Twigg, 2014). The policy compliance process involves four main steps: risk assessment, remediation, auditing, and response/reporting. When implemented effectively, these steps provide structure and efficiency, ensuring a successful hospital risk management program. However, managing regulatory risks in a hospital environment remains a significant challenge due to the extensive array of laws and regulations that must be adhered to (Moran et al., 2018). This study, therefore, asserts the importance of policy compliance in enhancing disaster preparedness for effective hospital management in emergency scenarios.

2.3.2.1 Policies and Legislation on Hospital Emergency Preparedness

Governance involves both policies and legislation that integrate emergency preparedness, response, recovery plans, and coordination mechanisms. According to the WHO, institutions should prioritize developing joint health sector emergency preparedness plans within the existing health sector coordination framework, as well as contingency planning, with regular updates to methodologies and planning for exercises and simulations (Haltigan & Vaillancourt, 2018). Effective institutional arrangements are crucial for successful disaster management (Pathirage et al., 2014). Policies, systems, networks, lines of authority, and decision-making processes are essential components of any master plan (Pathirage et al., 2014).

Shabanikiya et al. (2016) emphasized that achieving optimal hospital disaster capacity relies on effective institutional arrangements. How does the institutional arrangement in the current study compare? Kim (2014) highlighted that hospital emergencies should follow all stages of preparedness to ensure quick adoption of techniques by management, healthcare workers, and other hospital personnel. He also noted that inadequate policies in emergency preparedness contribute to poor emergency response. Effective emergency preparedness policies involve several approaches, including emergency response and adaptability, building block

approaches, stakeholder participation, and action-based strategies (Kim, 2014), which are worth exploring in research.

In Zambia, the legal framework governing the government's preparedness and response to epidemics and pandemics is robust, encompassing several key acts and policies aimed at ensuring comprehensive disaster management and public health security. The Disaster Management Act No. 13 of 2010 is a cornerstone of Zambia's disaster preparedness framework. This act establishes a system for the anticipation, preparedness, prevention, coordination, mitigation, and management of disaster situations, as well as the organization of relief and recovery efforts. It provides a structured approach to handling emergencies, ensuring that all relevant agencies and stakeholders are engaged and coordinated in their efforts (Disaster Management Act, 2010).

Another critical legal instrument is the Public Health Act No. 295 of 1995, which outlines the activities necessary to suppress and prevent disease outbreaks, including epidemics and pandemics. This act is fundamental in defining the public health measures required to protect the population from infectious diseases and other health threats. It ensures that health authorities have the necessary powers and guidelines to implement effective disease control measures (Public Health Act, 1995). Additionally, the draft Zambia National Public Health Bill aims to address gaps in the current legal framework and enhance the country's capacity to respond to public health emergencies. The enactment of this bill will be pivotal in strengthening the legal basis for public health interventions and ensuring that Zambia is better prepared for future health crises (PRMC, 2021).

Zambia's policy framework further supports its legal structures, with several strategic plans and action plans aimed at enhancing public health security. The Ministry of Health National Health Strategic Plan includes provisions for addressing public health security and responding to epidemics and pandemics. This plan ensures that public health preparedness is integrated into the broader health system strategy, promoting a holistic approach to health security (Ministry of Health, 2021). The National Action Plan for Health Security describes the capacities, capabilities, and technical areas that need to be strengthened to protect the country from public health emergencies. It provides a detailed roadmap for enhancing public health infrastructure, training, and coordination mechanisms. By addressing these areas, Zambia can build a more resilient health system capable of withstanding and effectively responding to health emergencies (National Action Plan for Health Security, 2021).

The All-Hazards Emergency Preparedness and Response Plan offers a comprehensive framework for managing public health emergencies, detailing the coordination mechanisms available at national, provincial, district, and local levels. This plan ensures that there is a clear and structured approach to emergency response, facilitating efficient and effective action across all levels of the health system (All Hazards Emergency Preparedness and Response Plan, 2021). The National Action Plan for Antimicrobial Resistance outlines strategies for managing the emergence of antimicrobial resistance through a "One Health" approach. This plan addresses the critical issue of antimicrobial resistance, promoting integrated efforts across human, animal, and environmental health sectors to combat this growing threat (National Action Plan for Antimicrobial Resistance, 2021).

Beyond national policies and plans, Zambia's government also issues directives through Presidential Pronouncements and Cabinet instructions, ensuring that emergency measures are implemented swiftly and effectively. Furthermore, Zambia is a signatory to various international protocols, including the International Health Regulations (2005), which provide a global framework for health security and emergency response. These international agreements ensure that Zambia's response efforts are aligned with global standards and practices, facilitating cooperation and support from the international community (International Health Regulations, 2005).

Despite the comprehensive policy and legislative framework described, there is a noticeable gap in empirical research specifically evaluating the determinants of hospital preparedness in Lusaka District. The literature indicates a need for more targeted studies that assess how well these policies and frameworks translate into actual preparedness at the hospital level. Existing studies often emphasize the general importance of policies and governance (Shabanikiya et al., 2016; Kim, 2014) but lack a specific focus on the practical implementation and outcomes in the context of Zambian hospitals. This study aims to fill that gap by providing a quantitative assessment of the determinants influencing hospital preparedness for emergency disease outbreaks in Lusaka District. By doing so, it will offer valuable insights and recommendations that can directly inform policy and operational improvements in the Zambian healthcare system.

2.3.2.2 Communication in Hospital Emergency Preparedness

Communication is a vital factor in emergency preparedness, as it enables healthcare providers to deliver appropriate information related to emergency responses (Pickton & Broderick, 2021). Effective and consistent communication within institutions can alleviate feelings of vulnerability and enhance response capabilities (Friedman & Kelman, 2016). Jennings et al. (2016) discovered that unresolved communication challenges negatively affect emergency preparedness, participation in preventive measures, obtaining permissions, and healthcare workers' ability to meet ethical obligations regarding quality and patient safety. Limited communication methods, such as print and visual media, can disadvantage some healthcare workers, impacting their literacy and response skills. Schillinger et al. (2021) highlighted that ineffective communication with healthcare workers is associated with poor emergency preparedness responses. Access to health information on emergency preparedness influences healthcare workers' decisions, leading to informed actions that improve lives (WHO, 2024).

Stewart (2021) noted that effective communication between healthcare workers and emergency preparedness units increases satisfaction, particularly when it addresses necessary needs, values, and preferences. Communication also improves adherence and outcomes. All healthcare interactions depend on effective communication, such as organizing seminars to educate on preventive measures during emergencies. Interactive technology has created new opportunities for health communication, overcoming barriers like low literacy and expanding the ability to tailor and personalize information. Social support, as a communication behavior, significantly impacts the mental and physical well-being of healthcare workers (Martinez et al., 2019).

Despite the clear recognition of communication as a critical determinant in emergency preparedness, there is a noticeable gap in empirical research that quantitatively assesses its impact within the context of hospital preparedness in Lusaka District, Zambia. While existing studies provide valuable insights into the importance of communication (Pickton & Broderick, 2021; Jennings et al., 2016; Schillinger et al., 2021), there is a lack of specific data on how communication strategies are implemented and their effectiveness in Zambian hospitals during emergency outbreaks. This study aims to fill this gap by quantitatively assessing the role of communication in hospital preparedness for emergency disease outbreaks in Lusaka District. By doing so, it will provide a more comprehensive understanding of how

communication influences emergency preparedness and offer evidence-based recommendations for improving communication strategies in the Zambian healthcare system.

2.3.2.3 Command System on Hospital Emergency Preparedness

This section refers to standardized approaches used in command, control, and coordination during emergency responses. A Command System (CS) ensures effective communication within an organization, involving various agencies and stakeholders, who should adhere to a hierarchical structure (Federal Highway Administration, 2018). Mistovich et al. (2018) noted that a command system includes a standardized hierarchy of procedures that aid in managing emergencies in organizations of any size. It helps manage resources such as funds, human resources, and equipment. Human resources are allocated and assigned duties based on established standardized procedures. The Command System provides an organization with unified and centralized authority, ensuring effective communication and preventing role duplication as assigned by management.

A well-functioning hospital incident command system is crucial for effective emergency operations management (WHO, 2020). This includes designating a Hospital Command Centre, a specific location prepared to coordinate hospital-wide emergency response activities, equipped with effective communication means (WHO,2021). The absence of a systematic search and rescue system, equipment, and poor empowerment and participation indicates a lack of readiness and emergency preparedness (Kiongo, 2015).

Despite the recognition of the importance of a command system in hospital preparedness, there is a lack of empirical data on how these systems are implemented and function in hospitals in Lusaka District, Zambia. Existing studies highlight the theoretical benefits of command systems (Federal Highway Administration, 2018; Mistovich et al., 2018; WHO, 2019), but there is limited research that quantitatively assesses their effectiveness in real-world settings, particularly in the Zambian context. This study aims to fill this gap by conducting a quantitative assessment of the determinants of hospital preparedness for emergency disease outbreaks in Lusaka District, with a focus on the role of command systems. This research will provide valuable insights into the implementation and efficacy of command systems in Zambian hospitals, offering evidence-based recommendations for improving emergency preparedness.

2.3.3 Commodities for Hospital Emergency Preparedness

Commodities play a crucial role in emergency medical situations, influencing the scope of services offered and the behavior of healthcare providers, facilities, and entire countries (Kiongo, 2015; Shabanikiya et al., 2016). From a Zambian perspective, there is limited research examining the impact of commodities on emergency preparedness. The Zambia Health Policy emphasizes the importance of providing essential medicines, ambulances, and information as part of emergency preparedness.

2.3.3.1 Procurement and Supplies for Hospital Emergency Preparedness

This section addresses how hospital equipment is sourced and delivered for both routine use and emergency preparedness. In healthcare, as in other sectors, procurement involves several steps before completion. Hospital equipment, products, and services typically go through multiple stages before purchase approval. These stages include tender applications to supply the needed equipment, followed by a review of these applications by the hospital management team and other stakeholders (Peter, 2015).

The slow procurement processes have affected many hospitals' ability to prepare for emergencies, as the lengthy procedures delay the acquisition of necessary equipment. Healthcare workers often struggle to plan for emergencies due to the lack of proper equipment, which hampers the provision of quality healthcare services and can lead to loss of life. To ensure effective planning and the timely provision of health services, it is essential to streamline procurement processes in healthcare, reducing the time required for the delivery of necessary equipment and services (Javaid & Siddiqui, 2018).

Public procurement units across the country will face significant pressure as they make decisions on purchasing goods and services with taxpayer money. While these purchases are urgently needed, there is a risk of wasting taxpayer money if decisions are made too hastily (Soucat, 2019). One effective tool in such situations is a framework agreement, which should be part of any country's Disaster Risk Management plan. The goal is to have a procurement system that can respond quickly to emergencies without increasing risks beyond acceptable levels. Special procurement procedures for emergencies, including tailored framework agreements, should be integrated into disaster management systems. These agreements can cover essential goods and services likely to be needed in serious emergencies, such as drugs,

medical supplies, emergency housing, fuel, mattresses, blankets, food, and water (Stephenson, 2014).

The primary role of the procurement unit is to acquire the right products in the right quantity and quality, at the right time, and deliver them to the right place. All relief activities depend on the timely procurement of relief materials. In emergencies, where lives are at stake, it is crucial to procure and deliver the necessary goods and materials promptly (Toner, 2017). Effective communication, collaboration, and coordination in the procurement process are vital to the success of the entire relief operation. Slow or ineffective procurement can delay or halt the operation if relief items are unavailable, hindering the mission of providing urgently needed assistance to disaster-affected people (Stephenson, 2014).

2.3.3.2 Products and Medicine for Hospital Emergency Preparedness

Hospitals play a critical role in managing emergencies by providing essential products and medicines. This includes maintaining a well-equipped emergency kit stocked with necessary supplies for any emergency response. Regular assessment of hospital products and medicines is crucial to ensure the integrity and availability of essential utilities. This includes evaluating the safety and functionality of elevators, water systems, ceilings, and communication systems. Key questions to consider include: Are the fire suppression and alarm systems operational? Is there a water-rationing plan in place for potential water outages or issues? Is there a camera with sufficient film to document damages to the building and equipment for insurance purposes? (Kiongo, 2015). Evaluating these parameters in the current context can guide necessary structural adjustments.

2.3.3.3 Equipment

Adequate personal protective equipment (PPE) is essential for protecting healthcare workers during outbreaks. Research underscores the importance of maintaining sufficient PPE stockpiles to ensure that healthcare workers have access to necessary protective gear at all times. The WHO's 2021 guidelines discuss the importance of PPE, recommending regular assessments of PPE needs, stockpiling, and training on proper PPE usage. Ensuring the availability and proper use of PPE is critical for safeguarding the health and safety of healthcare workers (WHO, 2021).

Efficient resource allocation during crises ensures that critical supplies are available where needed. Studies highlight the need for ethical and transparent allocation frameworks to guide decision-making during emergencies. The WHO's 2021 guidelines provide insights into resource allocation, recommending the development of allocation criteria, the establishment of resource tracking systems, and the involvement of stakeholders in allocation decisions. Effective resource allocation supports the equitable distribution of supplies and enhances the overall response to health emergencies (WHO, 2021).

In healthcare, as in other institutions, procurement involves several processes before completion. Hospital equipment, products, and services typically undergo multiple steps before purchase approval. These steps include tender applications for the required equipment, followed by reviews by the hospital management team and other stakeholders (Peter Aitken A., 2015). Slow procurement processes have impacted many hospitals' emergency preparedness, as the lengthy procedures delay the acquisition of necessary equipment. Consequently, healthcare workers struggle to plan for emergencies due to a lack of proper equipment, leading to delays in providing quality healthcare services and, in some cases, loss of life. To improve planning and service provision, healthcare procurement processes should be revised to shorten the delivery time for required equipment and services (Javaid & Siddiqui, 2018).

Hospitals must provide essential products for managing emergencies. These products include a well-equipped emergency kit with necessary items for emergency response. Assessing hospital products and medicines is crucial to ensure the integrity and availability of essential utilities, such as safe elevators, functional water systems, secure ceilings, and reliable communication systems. It is also important to verify the functionality of fire suppression and alarm systems, establish a water-rationing plan for outages, and have a camera with sufficient film to record damages for insurance purposes (Rios, 2015). Evaluating these parameters in the current context can inform necessary structural adjustments.

Despite the comprehensive discussion on the importance of commodities, procurement, and equipment for hospital emergency preparedness, there remains a gap in understanding the specific determinants of hospital preparedness in Lusaka District, Zambia. Most existing studies have taken a broad or generalized approach, focusing on other regions or contexts. This study aims to address this gap by providing a detailed, quantitative assessment of the determinants influencing hospital preparedness for emergency disease outbreaks in Lusaka

District. By doing so, it will offer targeted insights and recommendations that are directly applicable to improving emergency preparedness in Zambian hospitals.

2.3.4 Financing in Hospital Emergency Preparedness

Financial capability is a crucial factor influencing healthcare emergency preparedness (Khan et al., 2021). Hospitals with stable and sufficient financial resources can invest in the infrastructure necessary to support their growth and effectively manage emergencies. Adequate funding enables hospitals to stockpile essential medications and antibiotics, purchase medical tools and equipment, and conduct research to better understand biological hazards such as diseases or viruses. However, financial constraints remain a significant challenge for healthcare systems, particularly in the public sector, where budgets are often limited (Simou & Koutsogeorgou, 2018).

A well-funded public health system is essential for maintaining hospital operations and ensuring efficient and effective healthcare delivery, especially during emergencies. Financially stable hospitals are better positioned to acquire critical materials such as personal protective equipment (PPE), ventilators, and other necessary tools (Turer et al., 2020). These resources play a vital role in daily operations and are particularly crucial during emergencies, directly influencing a hospital's level of preparedness.

Hospitals with adequate financial resources can also meet patient needs more effectively by providing essential supplies such as linens, bedpans, and other necessary items. This capability reflects a hospital's readiness to handle crises and its ability to provide comprehensive care (Chen et al., 2017; Turer et al., 2020). Ultimately, the financial stability of a healthcare institution is a key determinant of its preparedness for emergencies.

Healthcare financing is a crucial component, as highlighted by the World Health Organization among the pillars of Health Systems Management. Effective healthcare financing is essential for achieving universal health coverage (UHC) by ensuring efficient and equitable allocation of funds (Soucat, 2019). The finance unit plays a pivotal role in emergency preparedness. Timely allocation of funds during emergencies enables effective management and smooth implementation of programs, ensuring accountability and accurate management of emergencies. Adhering to proper procedures in finance allocation and procurement of resources for emergency preparedness enhances transparency (United Nations Educational, Scientific and Cultural Organization, 2017).

Containing financial loss, regardless of its cause, is a key objective of any organization's risk strategy. This strategy guides actions to avoid, mitigate, transfer, and retain risks across the enterprise. However, catastrophic events often result in losses that exceed management's expectations, underscoring the need for comprehensive financial disaster preparedness. Financial preparedness is a vital aspect of disaster planning, addressing the necessary actions to mitigate financial losses following a catastrophic event. These actions must be identified, understood, and addressed well before a disaster occurs, as initiating the process during a crisis is far from optimal (WHO, 2019). Recovery from a disaster can present numerous unexpected challenges that directly impact financial recovery, such as delays in restoration, operational continuity issues, unexpected costs, and challenging insurance claims. These challenges can complicate projecting the outcome of a catastrophe and managing expectations within the organization (Qiu et al., 2018).

2.3.4.1 Budgeting for Hospital Emergency Preparedness

Effective preparedness necessitates the development of emergency plans, the allocation of standby resources, and regular monitoring and evaluation of these measures. Resource allocation is crucial for a successful response to critical events (Qiu et al., 2018). Standby resources are essential for implementing processes in facilities according to accepted guidelines and standards (World Health Organization (WHO), 2019).

Adequate resource allocation facilitates the procurement of essential items, enhances knowledge for informed decision-making about risks, and engages stakeholders in dialogue to resolve disputes and reach consensus (Covello, 2001). Identifying the resources different groups need is a key task in future preparedness (Qiu et al., 2018). Profiling resources for emergency preparedness in any setting is vital to understand the perceived influence of resource allocation on preparedness.

In Zambia, healthcare financing primarily comes from government budget appropriations, earmarked donor funding through the national treasury, the health sector basket under the Sector Wide Approach, donor support for specific projects and activities, and household health expenditure through user fees (PMRC, 2021). The Zambian Government also secures financial resources from cooperating partners via national platforms such as the National Epidemic Preparedness, Prevention, Control and Management Committee and the National Public Health Emergency Operations Centre.

Despite significant increases in funding to the health sector, the overall resource envelope remains insufficient to deliver an optimal package of healthcare and preparedness for epidemics and pandemics. External support is predominantly directed towards vertical programs like HIV/AIDS, malaria, and TB, which are characterized by rigidities that prevent funds from being reallocated to other priority areas less favoured by donors. Therefore, it is crucial to increase budgetary funding for the health sector to meet international standards and ensure adequate financing for epidemic and pandemic response.

The proposed establishment of the National Emergency Fund through the enactment of the Zambia National Public Health Bill aims to complement existing funding mechanisms. This fund will be essential in addressing the current shortfall in funding for epidemics and pandemics in the country (PMRC, 2021).

Various studies have highlighted gaps in emergency preparedness plans due to insufficient financial resources. For example, Covello (2001) found that inadequate financial allocations in health facilities contributed to poor performance. Over half of the respondents (63%) in the study reported that poor budgeting and financial allocations led to low procurement of quality products needed for emergency preparedness. Less than 15% supported the finances allocated to the emergency preparedness department, while 22% had no clear stance.

Another study indicated that insufficient financial allocations to the emergency preparedness department hindered the acquisition of necessary equipment for emergencies. The lack of funds also prevented the development of proper plans, such as hiring experts to train staff on emergency response (Kiongo, 2015).

While the literature provides insights into the financial aspects of hospital emergency preparedness, there remains a gap in understanding how these financial determinants specifically impact preparedness in Lusaka District, Zambia. Most studies have either taken a general or global approach or focused on other regions. This study aims to address this gap by conducting a quantitative assessment of the financial determinants of hospital preparedness for emergency disease outbreaks in Lusaka District. Understanding these financial challenges in a localized context will provide specific and actionable recommendations for improving financial strategies and resource allocation for disaster preparedness in Zambian hospitals.

2.3.5 Hospital Infrastructure

2 3.5.1 Resilient Physical Infrastructure

The physical infrastructure of hospitals is fundamental to their preparedness and ability to manage emergencies effectively. Research underscores that hospitals with robust and modern infrastructure are better positioned to handle crises. The WHO's 2014 checklist highlights the necessity for resilient infrastructure, including the integration of disaster-resistant features in hospital design and regular maintenance and structural upgrades (WHO, 2014). A study by Birnbaum et al. (2018) supports this, noting that hospitals with updated buildings and resilient designs are more capable of maintaining operations and ensuring patient and staff safety during emergencies.

Resilient infrastructure includes features such as reinforced structures, backup power systems, and flood-resistant designs, which help hospitals withstand various types of emergencies, from natural disasters to disease outbreaks (Perry et al., 2017). According to the study by Perry et al. (2017), incorporating these features into hospital design not only improves immediate safety but also supports long-term operational continuity during emergencies.

2.3.5.2 Intensive Care Unit (ICU) Surge Capacity

ICU surge capacity is a critical component of hospital preparedness, especially during outbreaks requiring intensive care for severe cases. The WHO's 2014 checklist emphasizes expanding ICU facilities, repurposing existing spaces, and training additional staff to accommodate increased patient volumes (WHO, 2014). Research by Ranney et al. (2020) highlights the importance of flexible ICU setups, noting that hospitals with adaptable ICU spaces are better equipped to manage surges in patient numbers, thereby improving patient outcomes during crises.

Ranney et al. (2020) suggest several strategies for enhancing ICU surge capacity, including modular ICU units that can be quickly deployed and expanded as needed. These flexible solutions help hospitals scale their services rapidly in response to sudden increases in patient demand, ensuring that critical care needs are met during emergencies.

2.3.5.3 Space for Patient Care

Adequate space for patient care, including beds and isolation rooms, is crucial for handling patient surges effectively. The WHO's 2014 checklist discusses the importance of scalable infrastructure, including flexible bed arrangements and additional isolation units (WHO, 2014). A study by Antonelli et al. (2016) underscores the need for adaptable hospital spaces, noting that hospitals with the capability to quickly reconfigure their facilities are better prepared to manage fluctuations in patient volume during emergencies.

Antonelli et al. (2016) recommend implementing scalable solutions such as portable isolation units and expandable patient wards to accommodate increased patient loads. These adaptations ensure that hospitals can provide safe and effective care even during periods of high demand.

2.3.5.4 Waste Disposal Systems

Proper waste disposal systems are essential for infection control, particularly during outbreaks. The WHO's 2014 checklist emphasizes the importance of stringent waste segregation, handling, and disposal protocols (WHO, 2014). Effective waste management practices are crucial for minimizing the risk of disease transmission and maintaining a hygienic healthcare environment.

Research by Alvim et al. (2021) highlights the role of effective waste disposal in controlling infections, noting that hospitals with well-managed waste systems are better equipped to handle the increased waste generated during outbreaks. Alvim et al. (2021) advocate for comprehensive waste management plans that include regular training for staff and adherence to strict protocols to ensure safety and hygiene.

While the existing literature provides valuable insights into the importance of resilient infrastructure, ICU surge capacity, patient care space, and waste disposal systems, there remains a need for research specifically focused on the context of Lusaka District, Zambia. Most studies have been conducted in high-income settings, and there is limited data on how these infrastructure components are managed in low-resource environments. This research aims to address the gap by evaluating the current state of hospital infrastructure in Lusaka District. It will assess the resilience of physical infrastructure, the adequacy of ICU surge capacity, the availability of space for patient care, and the effectiveness of waste disposal

systems in the context of local conditions. By focusing on Lusaka District, the study will provide insights into the unique challenges and opportunities for improving hospital infrastructure in low-resource settings, informing strategies to enhance preparedness and response capabilities during emergency disease outbreaks.

2.4 Challenges in Hospital Disaster/Emergency Preparedness

Hospitals face numerous challenges that hinder their preparedness for emergencies. These include a lack of education and training drills for emergency scenarios (Veenema, 2018), insufficient resources (McEntire, 2021), poor management practices (Baack & Alfred, 2013), financial constraints (Bullock et al., 2017), inadequate laboratory facilities (Samsuddin et al., 2018), and weak surveillance systems (Bullock et al., 2017). Additionally, the absence of well-defined plans or strategies for emergencies (Canton, 2019) further exacerbates these issues.

Financial constraints remain one of the most significant obstacles to hospital preparedness (Sheikhbardsiri et al., 2017). Hospital administrators are tasked with ensuring smooth daily operations, which often requires substantial funding. Public health institutions, in particular, face greater financial challenges compared to their private counterparts, which limits their ability to fund programs such as training. Public hospitals rely heavily on internally generated income to sustain operations, which often leaves little room for allocating resources toward emergency preparedness activities.

The issue of funding also impacts hospitals' ability to hire and retain staff, provide education and training, and procure necessary supplies (Howe et al., 2021). Without adequate financial resources, hospitals cannot acquire essential medical supplies or hire qualified personnel. Furthermore, bureaucratic constraints on grant utilization and challenges in financial decision-making complicate resource allocation, making it difficult to prioritize emergency preparedness.

Training and drills for healthcare staff are critical to equipping them with the necessary skills and knowledge to handle emergencies. However, due to financial limitations, especially in the public sector, such training sessions are often neglected (Veenema, 2018). Studies have emphasized the importance of providing healthcare workers with the expertise to address biological hazards, as this plays a vital role in saving lives (Rim & Lim, 2014). Without

training, healthcare personnel are ill-prepared to respond effectively to emergencies, leading to chaos and poor patient outcomes during crises.

Inadequate resource capacity, such as limited hospital beds, medical equipment, and trained personnel, also hinders emergency preparedness (Sheikhbardsiri et al., 2017). Public healthcare facilities, in particular, often lack the physical infrastructure needed to accommodate growth or handle emergencies. The absence of strategic plans to increase resource capacity, such as hiring additional staff or expanding infrastructure, further limits hospitals' ability to respond effectively to emergencies (Kwon et al., 2016).

A shortage of medical supplies, including vaccines and antibiotics, is another challenge that highlights the unpreparedness of healthcare systems. Hospitals often struggle to stockpile these essential items, leaving them vulnerable during emergencies. Furthermore, many hospitals lack critical facilities such as laboratories, which play a pivotal role in detecting diseases, conducting experiments, and developing vaccines (Chen et al., 2017; Turer et al., 2020).

Timely detection of biological hazards is also hampered by the lack of surveillance systems and other essential monitoring devices. The COVID-19 pandemic exposed the unpreparedness of many healthcare systems, demonstrating the importance of advanced surveillance technologies to detect and control the spread of infectious diseases (Whitelaw et al., 2020). Nations and healthcare systems without these systems faced significant challenges in tracking cases and managing outbreaks, highlighting the need for investment in such infrastructure.

Lastly, the difficulty in updating emergency operational plans, such as the Hazard Vulnerability Analysis (HVA), poses another challenge. HVA is a framework used to evaluate the likelihood of disasters and assess organizational risks and preparedness levels (Du et al., 2015). Despite its proven benefits in promoting hospital emergency preparedness, its application remains limited, particularly in the public health sector. Regular updates and effective use of tools like HVA are crucial for improving hospitals' ability to anticipate and manage risks.

2.5 Empirical Studies

Kahare, Mwangi, and Njuguna (2020) conducted a study on the determinants of hospital emergency preparedness in Machakos County, Kenya, focusing on Machakos Level 5 and Kangundo Level 4 Hospitals. The study assessed the factors influencing hospital emergency preparedness in these facilities. The findings revealed a high understanding of emergency preparedness, with a mean score of 4.29 (SD = 0.67), and 74% of respondents considering themselves prepared for emergencies. The mean score for key leadership figures in emergency preparedness was 3.67 (SD = 1.06), with 64% of respondents identifying themselves as such. Additionally, 88% of respondents agreed that training on emergency preparedness should be conducted quarterly (M = 4.27; SD = 0.95).

Respondents also agreed that the emergency tray was well-equipped with various equipment for managing emergencies (M = 3.51; SD = 1.101) and that the hospital had a drug supply system with reliable suppliers (M = 3.51; SD = 1.108). The majority of respondents supported increasing financial allocations for emergency preparedness (M = 4.07; SD = 1.195) and acknowledged the facility's transport and logistics support in case of emergencies (M = 3.4; SD = 1.231). Furthermore, 72% of respondents agreed that the hospital had a policy in place for emergency preparedness, and 65% confirmed a clear chain of command during emergencies.

The study demonstrated strong and positive relationships between commodity availability, financial resources, policies, and emergency preparedness, with correlation coefficients of $r=0.619$ ($p<0.001$), $r=0.626$ ($p<0.001$), and $r=0.702$ ($p<0.001$), respectively. Policy formulation and implementation, commodities, and finances were found to significantly influence emergency preparedness. The study concluded that emergency preparedness would be more effective if these variables were considered. Hospital management should establish a stable drug supply system with adequate suppliers, allocate resources for modern equipment, and develop clear mechanisms for accessing emergency commodities. Staff participation in policy formulation, guidelines, emergency plans, and lobbying for preparedness is also essential. Regular emergency drills and safety inspections should be institutionalized.

While the study by Kahare, Mwangi, and Njuguna (2020) provides valuable insights into the determinants of hospital emergency preparedness in Machakos County, Kenya, there is a notable gap in the literature regarding similar assessments in other regions, particularly in

Zambia. The current study aims to fill this gap by conducting a quantitative assessment of the determinants of hospital preparedness for emergency disease outbreaks in Lusaka District, Zambia. This research will provide a comparative analysis and contribute to a broader understanding of emergency preparedness in different geographical and healthcare contexts.

Ayenewa, Tassew and Workneh (2022) conducted a study to assess the level of emergency and disaster preparedness in public hospitals in the East Gojjam zone of Northwest Ethiopia. The study highlights the increasing magnitude and variety of health emergencies and disasters, noting that hospital preparedness in many low- and middle-income countries, including Ethiopia, is still in its early stages.

The researchers used a census method to include ten hospitals in the East Gojjam zone in a cross-sectional descriptive study. They employed an adapted World Health Organization observation checklist to evaluate disaster and emergency preparedness. Each question was scored on a scale of one to three, with one indicating low readiness and three indicating the highest level of preparation. Preparedness levels were classified as “low” if the average percentage score ranged from 33.3% to 66.6%, and “high” if the score ranged from 66.7% to 100%. The results were presented in texts, tables, and percentages.

The study found that the overall level of emergency and disaster preparedness in the evaluated hospitals was low, with an average preparedness score of 54.75%. The domain with the lowest preparedness was logistics and finance (43.33%), while the highest preparedness was in patient care and support services (60%). The study concluded that the level of emergency and disaster preparedness in the hospitals studied is inadequate. It recommended that the Ministry of Health, regional health bureaus, and hospital administrators collaborate to develop appropriate intervention strategies to address this issue.

While the study by Ayenewa, Tassew, and Workneh (2022) provides valuable insights into the level of emergency and disaster preparedness in public hospitals in Northwest Ethiopia, there is a notable gap in the literature regarding similar assessments in other regions, particularly in Zambia. The current study aims to fill this gap by conducting a quantitative assessment of the determinants of hospital preparedness for emergency disease outbreaks in Lusaka District, Zambia. This research will provide a comparative analysis and contribute to a broader understanding of emergency preparedness in different geographical and healthcare contexts.

Samei et al. (2024) conducted a qualitative study to explore the factors influencing hospital functional preparedness in response to disasters in a lower middle-income country. Recognizing that medical services are critical for disaster-affected populations, the study aimed to identify key factors that contribute to effective hospital preparedness.

The researchers collected data through 17 semi-structured interviews with disaster management authorities, selected via purposive sampling. Content analysis was used to analyze the data, resulting in 138 codes categorized into ten main categories and 34 subcategories. The main categories identified were: Leadership, command, and coordination (4 subcategories); Risk assessment (3 subcategories); Legislating and developing protocols, guidelines, and programs (3 subcategories)Estimating and storing necessary supplies and equipment (3 subcategories); Human resource management (4 subcategories); Education, training, and development of staff (6 subcategories); Vital routes and facilities (3 subcategories); Communication (3 subcategories); Security, safety, and locating safe zones (3 subcategories) and Underlying disaster risk factors (2 subcategories). The study concluded that these ten categories significantly impact hospitals' functional preparedness. Hospital managers and decision-makers should consider these factors to ensure the effective provision of medical services during disasters.

While Samei et al. (2024) provide valuable insights into the factors influencing hospital functional preparedness in a lower middle-income country, there is a notable gap in the literature regarding similar assessments in Zambia. The current study aims to fill this gap by conducting a quantitative assessment of the determinants of hospital preparedness for emergency disease outbreaks in Lusaka District, Zambia. This research will provide a comparative analysis and contribute to a broader understanding of emergency preparedness in different geographical and healthcare contexts.

Susanti et al. (2023) conducted a systematic review to investigate the factors influencing hospital disaster preparedness and resilience in facing emerging infectious disease threats. Hospitals play a crucial role during outbreaks, managing the surge of patients while continuing essential health services. The study aimed to identify key factors that contribute to hospital preparedness and resilience. Using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) method, the researchers reviewed international electronic databases, including PubMed, Science Direct, ProQuest, and SAGE, for studies

published between 2001 and 2022 in English. The inclusion and exclusion criteria were set to extract relevant factors or indicators influencing hospital disaster preparedness and resilience.

Out of the initial 672 articles, 16 were identified that specifically addressed the aims of the review. The analysis revealed seven factors influencing hospital preparedness, with human resources and crisis management being the most significant. Additionally, hospital resilience was found to be influenced by 18 factors classified according to the disaster phase. Hospital resilience encompasses all phases of a disaster (mitigation, preparedness, response, and recovery), not just operational management during a disaster.

While Susanti et al. (2023) provide valuable insights into the factors influencing hospital preparedness and resilience for emerging infectious diseases, there is a notable gap in the literature regarding similar assessments in Zambia. The current study aims to fill this gap by conducting a quantitative assessment of the determinants of hospital preparedness for emergency disease outbreaks in Lusaka District, Zambia. This research will provide a comparative analysis and contribute to a broader understanding of emergency preparedness in different geographical and healthcare contexts.

Bintabara and Mpondo (2018) conducted a study to assess the preparedness of lower-level health facilities for outpatient primary care of hypertension in Tanzania. Sub-Saharan Africa is experiencing a rapid rise in non-communicable diseases, and data on health system preparedness to manage these conditions remain scarce. This study aimed to fill that gap.

Using data from the 2014–2015 Tanzania Service Provision Assessment survey, the researchers evaluated the preparedness of health facilities based on three domains: staff training and guidelines, basic diagnostic equipment, and basic medicines. A facility was considered prepared if it reported at least 50% of the items listed in each domain, as identified by the World Health Organization-Service Availability and Readiness Assessment manual. Data were analysed using Stata 14, with logistic regression models assessing the association between preparedness and various explanatory variables.

The study included 725 health facilities, of which 68% were public and 73% were located in rural areas. Only 28% of the facilities were considered prepared for outpatient primary care of hypertension. About 9% of the facilities had at least one trained staff member, and 42% had guidelines for hypertension. Multivariate analysis revealed that private facilities (AOR = 2.7, 95% CI; 1.2–6.1), urban location (AOR = 2.2, 95% CI; 1.2–4.2), health centers (AOR =

5.2, 95% CI; 3.1–8.7), and routine management meetings (AOR = 2.6, 95% CI; 1.1–5.9) were significantly associated with preparedness.

While Bintabara and Mpondo (2018) provide valuable insights into the preparedness of lower-level health facilities for managing hypertension in Tanzania, there is a notable gap in the literature regarding similar assessments in Zambia. The current study aims to fill this gap by conducting a quantitative assessment of the determinants of hospital preparedness for emergency disease outbreaks in Lusaka District, Zambia. This research will provide a comparative analysis and contribute to a broader understanding of emergency preparedness in different geographical and healthcare contexts.

Tang (2015) conducted a comprehensive study on the evaluation of hospital preparedness for public health emergencies (PHEP) in Sichuan, China. The research developed a conceptual model for PHEP, identifying five key metrics: staff, stuff, service, space, and system. These metrics were structured around the stages of disaster management (pre-incident, during incident, and post-incident) and were intricately linked to core emergency preparedness competencies for hospitals. The model outlines activities for hospitals to prepare for, respond to, and recover from public health emergencies. In a two-round Delphi study, the evaluation indicator system achieved a Kendall's coefficient of convergence W of 0.610, with mean values of all indicators close to 3.0, indicating consensus after two rounds. Reliability and validity were confirmed using Cronbach's Alpha and Spearman's correlation coefficient, demonstrating good results.

The final validated evaluation framework included nine key elements: emergency plan, PHE detection and identification, laboratory diagnosis capacity, training and drills, communication and cooperation, medical treatment capacity, command system, and a fully staffed workforce. A survey of hospitals in rural Sichuan was conducted to test this framework and assess the current status of hospital PHEP in the region. Using factor analysis and establishing a statistical model (F=0.518F1+0.173F2+0.160F3+0.150F4), four major contributing factors were identified: hospital service capacity, human resources, stockpiles and facilities, and management, direction, and coordination (MDC). The study revealed that most hospitals in rural Sichuan had the capacity to respond to public health emergencies but faced challenges and shortcomings. Additionally, the comparison of hospital preparedness capacity using these four factors showed that tertiary-grade, teaching, and general hospitals performed better than

secondary-grade, non-teaching, and non-general hospitals, with statistically significant differences.

While Tang (2015) provides valuable insights into hospital preparedness for public health emergencies in Sichuan, China, there is a notable gap in the literature regarding similar assessments in Zambia. The current study aims to fill this gap by conducting a quantitative assessment of the determinants of hospital preparedness for emergency disease outbreaks in Lusaka District, Zambia. This research will provide a comparative analysis and contribute to a broader understanding of emergency preparedness in different geographical and healthcare contexts.

2.6 Chapter Summary

This chapter offers a thorough review of the relevant literature pertaining to the study's objectives. It delves into various aspects of hospital preparedness, identifying the key determinants that influence emergency preparedness in hospitals. The chapter also explores the challenges faced by hospitals in achieving effective emergency preparedness. Additionally, it examines related studies to highlight existing gaps in the literature. The chapter concludes with a summary that encapsulates the main findings and insights derived from the reviewed literature.

CHAPTER THREE

THEORETICAL AND CONCEPTUALIZATION FRAMEWORK

3.1 Introduction

This chapter presents the theoretical and conceptual framework guiding the study, illustrating the connections between key concepts and constructs. It aims to develop a conceptual model addressing the research problem and questions, offering insights and answers to enhance understanding of hospital preparedness for emergency disease outbreaks in Lusaka District, Zambia.

3.2 Theoretical Framework

A theoretical framework serves as a model or guide for research (Grant & Osanloo, 2018). It provides a foundation for the study by utilizing an existing theory within a specific research area that aligns with the study's hypothesis and objectives. Acting as a blueprint, it helps the researcher design and structure their study while drawing insights from previously established concepts. This framework serves as the cornerstone of the research process, offering direction and coherence. In this study, the focus was on emergency management.

3.2.1 Emergency Management Theory

The Disaster Research Centre developed one of the most prominent typologies in the field of emergency management research (Dynes, 2015). This theory emphasizes that professional emergency management requires more than just skills and tactics. It highlights the importance of understanding the nature of disasters and how individuals and organizations respond to crises. The theory examines organizational tasks and structures along various dimensions, showcasing the unique characteristics of both established and emergent groups.

The field of emergency management has significantly evolved from its origins in civil defense, where expertise was primarily defined by military and emergency service experience. According to this theory, disasters are more likely to occur when planning is inconsistent, policies are poorly implemented, disaster management equipment is inadequate, and preparedness measures are neglected. Additionally, challenges faced by institutions and vulnerable populations or other at-risk groups can exacerbate disaster impacts (George et al.,

2011). This theoretical perspective is valuable for understanding the complexities of disasters and the challenges of executing effective emergency management operations.

Jonathan et al. (2017) highlighted that adherence to disaster management policies, implementation of mitigation strategies, and preparedness for response and recovery are crucial in defining various emergency management functions. The range of issues and responsibilities considered in hazard and vulnerability analysis for disaster management includes mass fatality management, warnings, evacuations, and media coordination. McEntire (2014) emphasized key interrelated factors in emergency management, such as defining disasters, understanding emergency management, and focusing on hazards and vulnerabilities. He argued that policymakers alone cannot adequately protect communities from natural or technological hazards.

FEMA (2013) noted that the level of mitigation and challenges faced by a community could hinder disaster preparedness and recommended emphasizing resilience and adherence to disaster management policies as key principles of emergency management. This theory integrates principles of disaster prevention, preparedness, and adaptability. It also aligns with the Incident Management System, demonstrating how a unified command structure can function across multiple organizations and how individuals within an agency can work effectively under planning, operations, logistics, and finance.

Disaster preparedness is inherently unpredictable, reflecting the uncertainty of its causes. Developing a disaster preparedness plan has become the primary guiding framework for emergency management (Jensen, 2014). As such, regulatory requirements often shape the consistency of preparedness strategies. Contributions to emergency management theory aim to establish a comprehensive approach to disaster preparedness, making it an appropriate framework for this study. While distinguishing best practices and theoretical foundations can be challenging, there are measurable indicators for disaster preparedness (Koliba, Mills, & Zia, 2014).

The Emergency Management Theory provided a robust foundation for the current study on hospital preparedness for emergency disease outbreaks in Lusaka District, Zambia. This theory guided the research by offering a framework to assess the determinants of preparedness in healthcare institutions, focusing on key aspects such as adherence to policies, resource allocation, hazard identification, and the implementation of mitigation strategies.

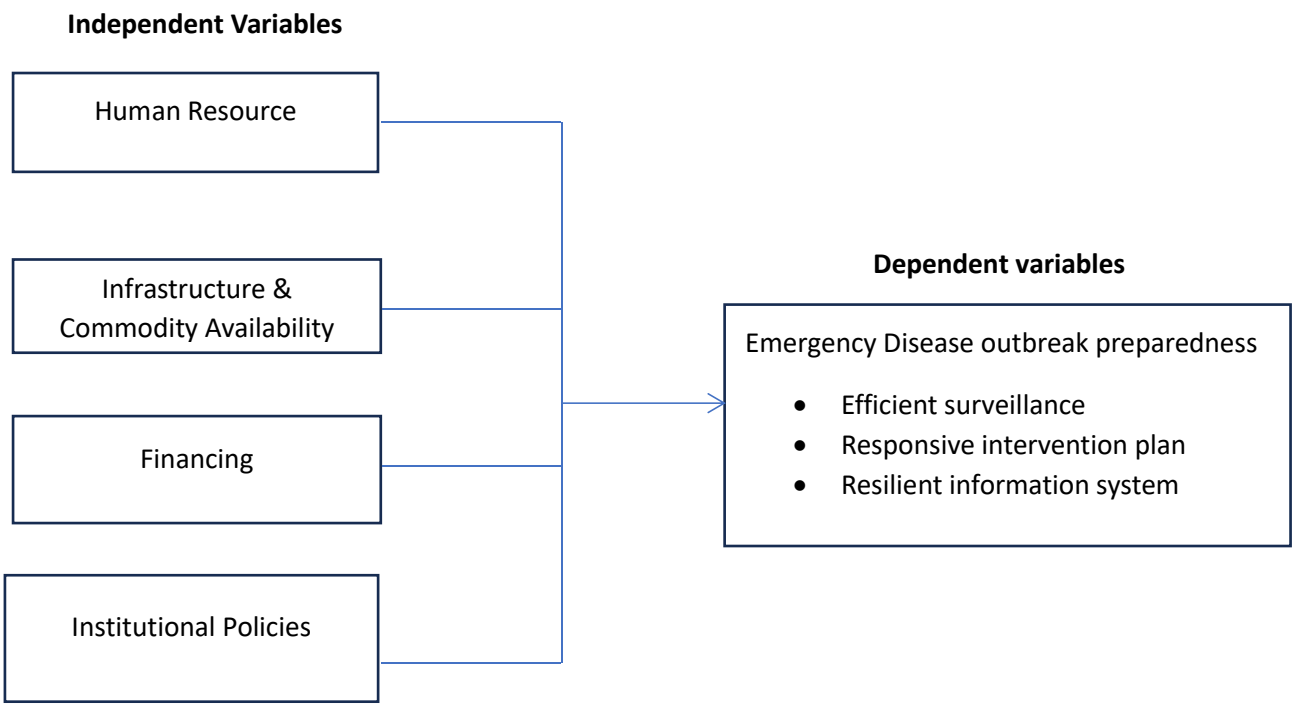
Specifically, the theory helped examine how Matero Level 1 Hospital and Chipata First-Level Hospital prepare for emergencies by analyzing their compliance with disaster management policies, the availability of resources and infrastructure, and the capacity of healthcare personnel. Additionally, the principles of disaster prevention and adaptability informed the study's evaluation of institutional policies and practices in managing disease outbreaks. By using this theoretical framework, the study will provide insights into improving hospital preparedness and resilience in the face of emergencies.

3.3 Conceptual Framework

The study utilized a modification of competency model as used by Gebbie and company (Gebbie et al., 2013). The model was founded on the theory of planned behaviour. It is postulated that Health worker's capacity policies blended by finance and commodities inform level of preparedness. Use of services can be influenced and improved through training, support, involvement and conducive environment (WHO, 2007). Below is a diagrammatic representation of a modified model. Figure 1.1 below shows the conceptual framework that conceived that emergencies preparedness (dependent variable) was influenced by a multiplicity of contextual factors. Health worker capacity (skills, training and knowledge), commodities (supplies products, and medicine), finance (budget, accountability, and allocations), and institutional policies (legislations, guidelines, and communitarian pathways).

The study aimed to conduct a quantitative assessment of the determinants of hospital preparedness for emergency disease outbreaks in Zambia. To achieve this, a conceptual framework based on a modification of the competency model used by Gebbie et al. (2013) was employed. The model was built upon the theory of planned behaviour, positing that the capacity of health workers, influenced by policies related to finance and commodities, plays a crucial role in determining the level of preparedness. Additionally, the utilization of healthcare services can be enhanced through training, support, involvement, and the provision of a conducive environment (WHO, 2007).

Figure 1.1: Conceptual framework



Source: *Modified by the research, 2023*

The diagram in Figure 1.2 showcases the modified conceptual framework, which suggests that the preparedness for emergencies (dependent variable) is influenced by various contextual factors. These factors include the capacity of health workers (skills, training, and knowledge), availability of commodities (supplies, products, and medicine), financial considerations (budget, accountability, and allocations), and institutional policies (legislations, guidelines, and communitarian pathways).

3.4 Chapter Summary

In this chapter, the theoretical and conceptual frameworks guiding the study on hospital preparedness for emergency disease outbreaks in Lusaka District are presented. The Emergency Management Theory serves as the foundation, emphasizing adherence to disaster management policies, resource allocation, and hazard identification. Additionally, a modified competency model based on the theory of planned behaviour highlights the impact of health worker capacity, commodities, finance, and institutional policies on preparedness levels, providing a comprehensive approach to understanding and improving emergency preparedness in healthcare institutions.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

This chapter presents the study methodology, including the research design, study site, study variables, study population, sample size determination, and sampling procedure. Additionally, this chapter outlines the research instruments used, data collection procedures, ethical considerations, and data analysis.

4.2 Research Design

A cross-sectional design was used in the study to explore the determinants of hospital preparedness for emergency disease outbreaks in Lusaka District, Zambia. A cross-sectional design refers to a formal, objective and systematic process of describing and testing relationships and examining cause-and-effect interactions between variables (Burns, Grove & Gray, 2015). It was cross-sectional in that the study involved the administration of questionnaires and interviews once only to the sample, and the data generated on the measured characteristics will be limited to the specific period of the study.

4.3 Location of the Study

This research was conducted in Lusaka District, Zambia, with a specific focus on Matero Level 1 Hospital and Chipata First-level Hospital. Lusaka District serves as the primary geographical context for this study, providing a targeted examination of hospital preparedness within this urban setting. Matero Level 1 Hospital and Chipata First-level Hospital are chosen as the focal points within Lusaka District, allowing for an in-depth analysis of emergency

disease outbreak preparedness at different levels of the healthcare system. Matero Level 1 Hospital represents a higher-tier healthcare facility, while Chipata First-level Hospital represents a facility at the primary level. This selection enables a comprehensive understanding of determinants influencing hospital preparedness across diverse healthcare settings within the Lusaka District. The insights and recommendations derived from this study was specifically tailored to these locations, contributing valuable information to enhance emergency preparedness in the specified healthcare institutions.

4.4 Target Population

The target population included all outpatient health workers in Matero Level 1 and Chipata First-level hospitals. The study targeted all cadres of health workers working in the outpatient department, including but not limited to doctors, clinical officers, pharmacists, laboratory technicians, and public health and management professionals. The study population consisted of 50 outpatient health workers in Chipata First-level hospital and 100 in Matero Level 1 hospital.

4.5 Sample Size Determination

In order to determine the sample size, Yamane's 2008 sample size formula was applied, considering a population size of 50 outpatient health workers at Chipata First-level and 100 at Matero Level 1 hospitals, respectively. The required data was obtained from the existing human resource records at both Matero Level 1 and Chipata First-level 1 hospitals.

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

Where:

The notation was such that:

- n was the desired sample size,
- N was the population size for the targeted individual hospitals in Lusaka district,
- e Level of precision i.e 0.05 with 95% confidence interval

Matero Level 1

$$n = \frac{100}{1 + 100(0.05)^2}$$

$n = 80\ Respondents$

Chipata First-level

$$n = \frac{50}{1 + 50(0.05)^2}$$

$n = 45\ Respondents$

Total of 125 respondents will be interviewed.

4.6 Sampling Technique

The researcher obtained a comprehensive list of all 125 health workers from the management of both hospitals. A stratified sampling method was employed to select participants from various cadres of the workforce. To ensure equal opportunity, a simple random probability sampling method was used in each department. The sample was selected using a table of random numbers. The researcher assigned numbers to 100 health workers in the outpatient department of Matero and 50 health workers in the Chipata first level, ranging from 1 to 50 and 1 to 100 respectively. The respondents were chosen randomly by selecting one number at a time until the desired number was reached.

4.7 Research Instruments

A structured self-administered questionnaire was used for data collection in the two hospitals (see appendix II). A questionnaire was a research instrument which comprised of a series of questions designed to gather information from respondents (Nukpezah & Souja, 2018). The questions in the questionnaire were divided into sections according to the study objectives.

4.8 Validity and Reliability

4.8.1 Validity of the Instrument

Validity refers to the degree to which the research instrument measures what it was intended to measure. Ensuring validity guarantees that the data collected was reliable, accurate, and truthful (Pickard, 2012). After designing the questionnaire, the researcher carried out a pre-test at Matero level 1 hospital to ascertain the feasibility of the tool. Any ambiguity and non-

clarity in the questionnaire were revised to fit the exact purpose of the study. To ensure the validity of the questionnaire, the researcher made changes on the questionnaire as instructed by the research supervisor. This was to ensure that the questions in the questionnaire answer the research questions of the study. To enhance the validity of the questionnaire, the necessary modification and revision were done.

4.8.2 Reliability Test

A reliability test was conducted to evaluate the consistency of measurements across various factors or items (questions/statements). According to Kumar (2014), a Cronbach's Alpha coefficient greater than 0.7 indicates acceptable reliability, while anything below is deemed unacceptable. Many researchers further assert that a Cronbach's Alpha higher than 0.7 is optimal for conducting further factor analysis.

The reliability test results are presented in Table 3. The Institutional Policy variable, with a Cronbach's Alpha of 0.7273, passed the reliability test, indicating consistency and validity for further analysis. Similarly, the Financial Resources variable achieved a Cronbach's Alpha of 0.729, meeting the threshold for reliability.

The Human Resource Capacity variable also demonstrated high reliability with a Cronbach's Alpha of 0.7296, rendering it suitable for further analysis. The Infrastructural Capacity and Commodities Availability variable showed a Cronbach's Alpha of 0.7295, confirming its reliability for subsequent analysis.

Finally, the Hospital Emergency Preparedness variable, with a Cronbach's Alpha of 0.73, passed the reliability test, affirming its consistency. Overall, all measured variables exhibited high reliability, with Cronbach's Alpha coefficients ranging from 0.7273 to 0.73, indicating the robustness of the assessment.

Table 1. 1: Reliability Results

Variables	No. of items	Cronbach's Alpha
Institutional Policy	7	0.73
Financial Resources	6	0.73
Human Resource Capacity	5	0.73
Infrastructural capacity and Commodities Availability	6	0.73

Hospital Emergency Preparedness	5	0.73

Source: (Survey data, 2024)

4.9 Data Collection Procedure

The researcher approached health professionals at Matero Level 1 and Chipata First-Level hospitals after obtaining their consent. Using questionnaires, the researcher asked closed-ended questions with a provided list of possible answers. This method simplified the process for respondents, who selected responses from the list. Data collection was completed over a two-month period.

4.10 Data Collection Procedure

Self-administered questionnaires were administered to the respondents at each hospital from an identified point. The respondents had the option to drop off the completed questionnaires at the same location at a pre-arranged time. This time was chosen to be convenient for the respondents, mostly during the early morning when they had sufficient time to focus on the questions before the patients start arriving. After data collection, the completed questionnaires were manually reviewed to ensure completeness, accuracy, and consistency.

4.11 Data Analysis

Data was coded and entered into Stata version 19. The process included data cleaning and analysis. Descriptive analysis was conducted for demographic data and study variables. Mean and standard deviation scores were obtained from the 5-point Likert Scale (1-5), where strongly disagree = 1, disagree = 2, undecided = 3, agree = 4, and strongly agree = 5. Indicators with a mean cut-off above 3.4 indicated agreement, while those below 3.4 indicated disagreement. To facilitate understanding, the descriptive statistics were combined from a five-point Likert scale (Strongly agree, Agree, Undecided, Disagree, and Strongly disagree) into a two-point Likert scale (Agree and Disagree). Strongly agree and agree were merged into Agree, and Undecided, Disagree, and Strongly disagree were merged into Disagree. Bivariate analysis used Pearson's product method at a 0.05 (5%) level of significance to compare the independent variables and the dependent variable individually.

The coefficient of correlation (r) was used to determine the degree of the relationship. Multiple regressions were conducted to estimate a model explaining the effect of the

independent variables on the dependent variable in a combined relationship. The regression analysis was also based on a 5% level of significance (P-value = 0.05). A Goodness of Fit test for the proposed model, using Analysis of Variance (ANOVA), established the model's suitability for estimation. Multiple regression analysis determined the nature of the relationship based on the model equations.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Where;

$Y\ represents Hospital\ Emergency\ Preparedness\ (HEP),$

$X_1\ is\ Institutional\ policies,$

$X_2\ is\ financial\ capability,$

$X_3\ is\ Human\ resource\ capacity.$

$and\ X_4\ Infrastructure\ \&\ Commodity$

β_0 is a constant (which represents the value of the dependent variable when all the independent variables; X_1, X_2 , X_3 and X_4 are held constant).

β_{1-4} is the regression coefficients or changes induced by X_1, X_2, X_3 and X_4

4.11 Ethical Consideration

The relationship established with the participants was grounded in research ethics. Ethical considerations are integral to all research endeavours, and it was critical for the researcher to address these thoroughly. Participants were encouraged to participate voluntarily, understanding that both interviews and survey completion required a significant amount of their time and effort.

The researcher ensured that the study's objectives and relevance were clearly communicated to the participants, allowing them to exercise their right to voluntary participation. All information provided by the participants was treated confidentially, and any data that could reveal their identities was excluded to maintain privacy. An introductory letter was included

at the beginning of the questionnaire, seeking the respondents' cooperation in providing essential information for the study.

4.14. Chapter Summary

This chapter looked at methodology which included research design, target population, and selection of respondents, sample and sampling procedure, data collection methods and data analysis. The chapter also provided details on the different approaches used in data collection and analysis as well as the presentation of findings. Finally, the chapter presented the ethical issues that have been taken into account when conducting as well as the validity and reliability of instruments.

CHAPTER FIVE

DATA PRESENTATION AND ANALYSIS

5.1. Introduction

This chapter presents the findings of the study based on the data collected and analysed. It begins with the response rate and demographic features of the respondents. Subsequently, the findings are organized according to the specific objectives of the study. The chapter includes opinions on the results and discusses the implications. It starts by restating the research questions posed in the introduction and then answers them, providing explanations of the results in relation to the initial expectations.

5.2 Response Rate

Out of the 125 questionnaires administered, 87 questionnaires were returned. This translated to 79% response rate.

Table 5.1: Response Rate

Response	**Number**	**Percentage** (%)
Responded	87	70
Not Responded	38	30
Total	**125**	**100**

Source: (Survey Data, 2024)

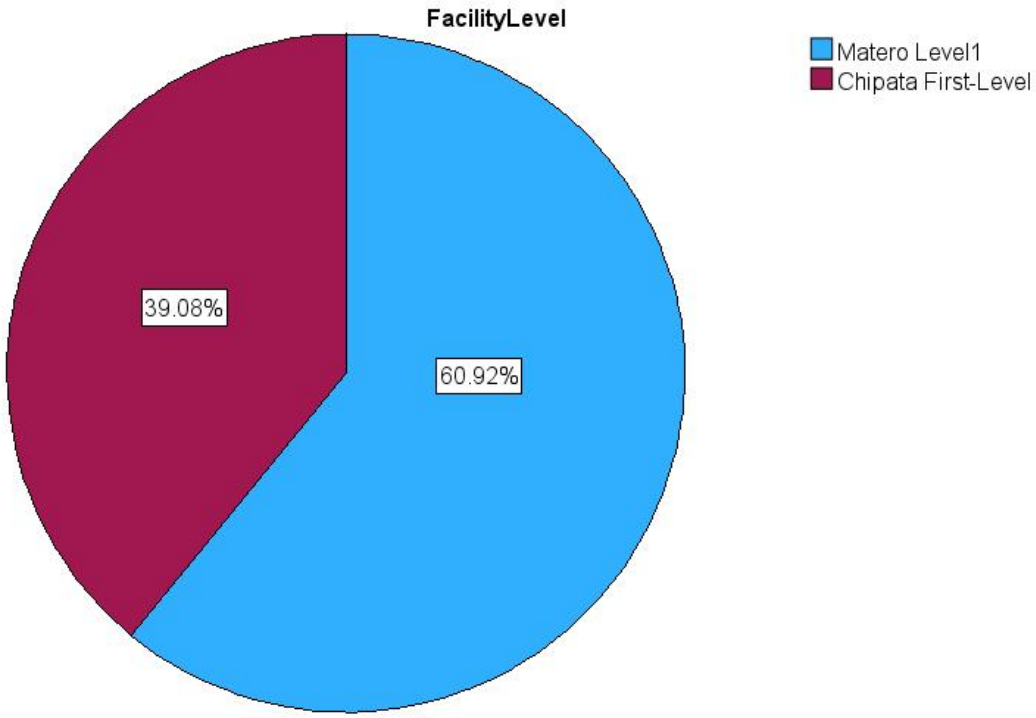
In Table 4.1, the study achieved a response rate of 70%, which is relatively high and thus deemed sufficient to address the study's concerns. As per Babbie (2012), a response rate of 50% is considered adequate for analysis. The high response rate was attributed to the researcher's efforts to engage in face-to-face interactions with respondents, providing necessary clarifications when needed.

5.3. Demographic characteristics

This section covers the respondents' background characteristics, including gender, age, level of education, job category, and number of years working in the hospital.

5.3.1 Facility Level

Figure 5.1: Distribution of Respondents by Facility Level



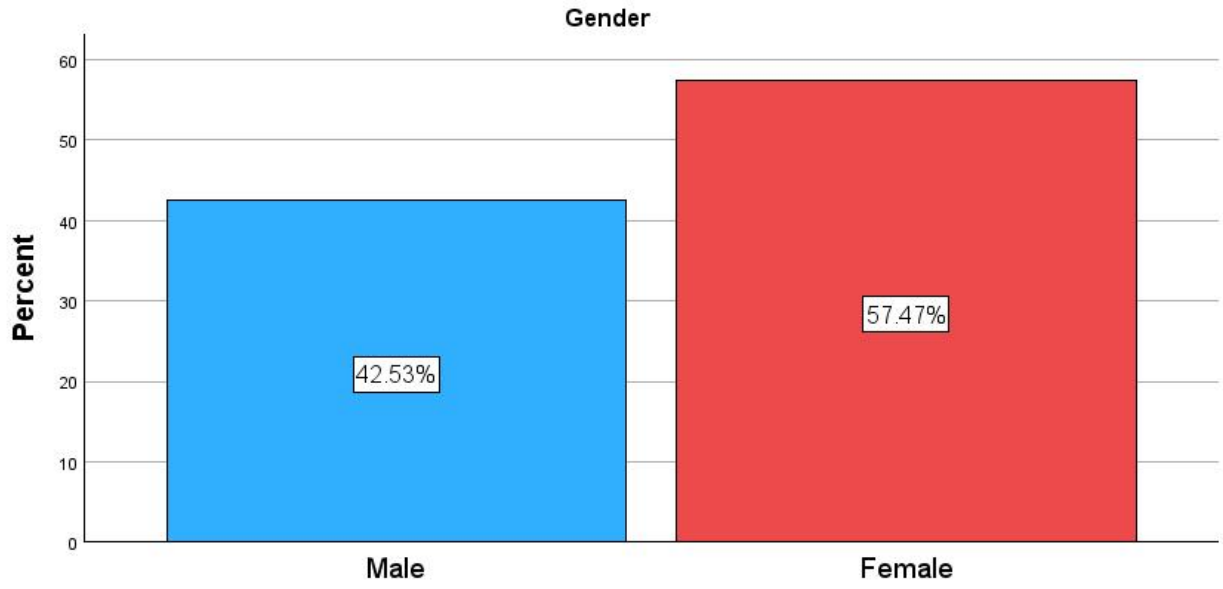
Source: (Survey Data, 2024)

The majority of respondents, 53 (60.9%), were from Matero Level 1, and 34 (39.1%) were from Chipata First-Level, representing a proportionate distribution based on staff numbers per facility.

5.3.2 Gender

The research focused on identifying the gender distribution of staff at Matero Level 1 and Chipata First-Level hospitals. Gender plays a significant role in how workers experience and respond to disasters. According to UNDP (2016), men and women have distinct vulnerabilities that shape their responses to crises. Ashraf & Azad (2015) further explain that gender influences roles, responsibilities, access to resources, and societal opportunities. Therefore, it was crucial to determine the gender distribution of staff at these facilities. The results are presented in Figure 4.2.

Figure 5.2: Distribution of respondents by **Gender**



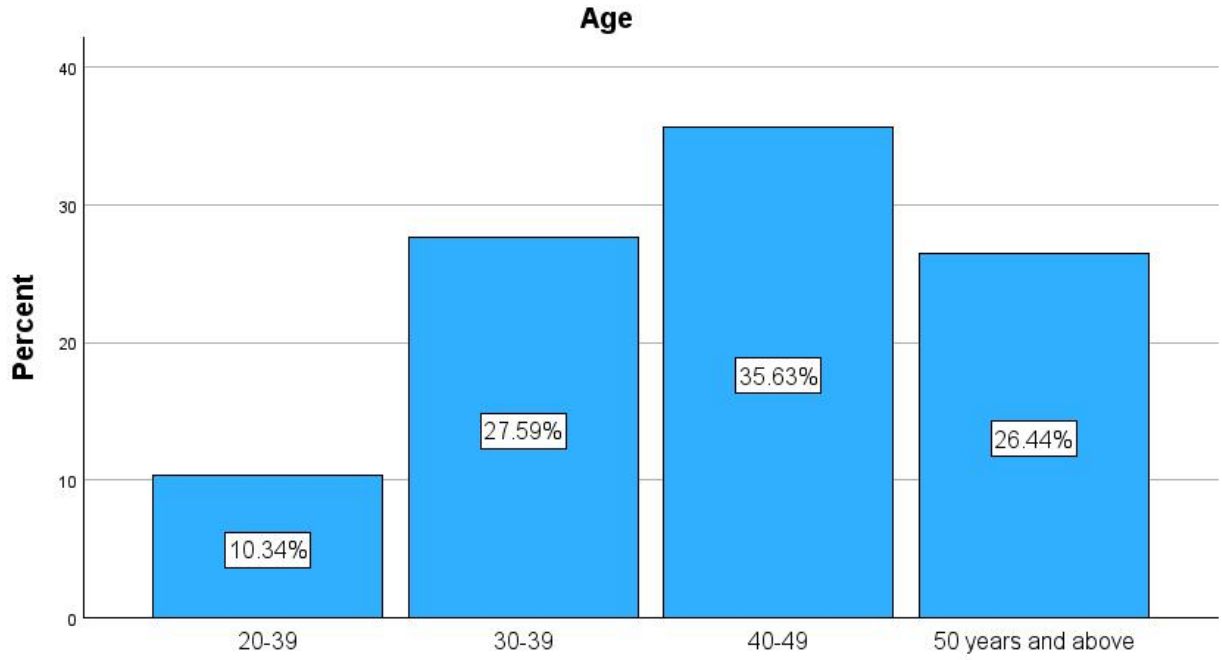
Source: (Survey Data, 2024)

Regarding the gender of the respondents, the majority (50), representing 57.47%, were females, whilst 37 (42.53%) were males as illustrated in Table 4.3. This indicates that majority of the workers at Matero Level 1 and Chipata First-Level hospitals are women as compared to men.

5.3.3 Age

For the purpose of obtaining a broader perspective, the study aimed to collect data from various age groups. Respondents were asked to specify their age range, and the results are illustrated in Table 4.1 below.

Figure 5.3: Distribution of respondents by **Age**



Source: (Survey Data, 2024)

Concerning the age of respondents, the majority (31), representing 35.63%, were between 40-49 years, whilst a few (9), representing 10.34%, were between 20-29 years. Additionally, 24 (27.59%) of the respondents were between 30-39 years old, and 23 (26.44%) were 50 years and above as illustrated in figure 4.3 above.

5.3.4 Educational Level

The study aimed to identify staff at Matero Level 1 and Chipata First-Level hospitals with the highest academic qualifications. Raja and Wirapon (2012) suggest that formal education enhances emergency response by improving intellectual and learning skills, as well as access to knowledge. Furthermore, a high level of education indicates a readiness and willingness to embrace new ideas and knowledge.

Table 5.2: Distribution of respondents by Education Qualification

Educational Level					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Diploma/Certificate	27	31.0	31.0	31.0
	Undergraduate Degree	37	42.5	42.5	73.6

	Master's	16	18.4	18.4	92.0
	PhD	7	8.0	8.0	100.0
	Total	87	100.0	100.0	

Source: (Survey Data, 2024)

Based on the study results obtained, it was established that, the majority (64), representing 73.56%, had an undergraduate degree as their highest level of education qualification, 27(31.03%) had certificate/diploma and 16 (18.39%) had a master's degree, while 7 (8.05%) of respondents had post-graduate education level as their highest education level.

5.3.5 Job Category

Table 5.3: Distribution of respondents by Job Category

Job Category					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Nurse	22	25.3	25.3	25.3
	Doctor	14	16.1	16.1	41.4
	Midwife	19	21.8	21.8	63.2
	Administration	12	13.8	13.8	77.0
	Lab Technician	8	9.2	9.2	86.2
	Pharmacist	12	13.8	13.8	100.0
	Total	87	100.0	100.0	

Source: (Survey Data, 2024

Regarding the job category of respondents, the majority (22), representing 25.29%, were nurses, whilst a few (8), representing 9.20%, were lab technicians. Additionally, 19 (21.84%) were midwives, 14 (16.09%) were doctors, 12 (13.79%) were administrators, and 12 (13.79%) were pharmacists.

5.3.6 Number of Working Years

The study aimed to determine the length of time staff at Matero Level 1 and Chipata First-Level hospitals had been employed. Roman and Raya (2017) suggest that longer job tenure brings unique experiences gained over time. Past experiences help in preparing for future disaster responses. However, prolonged tenure may also lead to a sense of complacency,

where staff become overly confident in their abilities and less motivated to strive for improvement.

Table 5.4: Distribution of respondents by Number of Working Years

Years of Working					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 2 years	6	6.9	6.9	6.9
	2-5 Years	13	14.9	14.9	21.8
	6-10 years	18	20.7	20.7	42.5
	11-15 years	19	21.8	21.8	64.4
	16-19 years	20	23.0	23.0	87.4
	20 years and above	11	12.6	12.6	100.0
	Total	87	100.0	100.0	

Source: (Survey Data, 2024

From the study findings, it was observed that in terms of the number of years working in the hospital, most respondents (20), representing 22.99%, had worked in their hospital for 16-19 years, whilst few (6), representing 6.90%, had worked in their hospital for less than two years. Additionally, 19 (21.84%) of the respondents had worked in their hospital for 11-15 years, 18 (20.69%) for 6-10 years, 13 (14.94%) for 2-5 years, and 11 (12.64%) for 20 years and above. The study results are an indication that most respondents had worked in the hospital for quite some times thus they had knowledge on the hospital operations, infrastructure and policies.

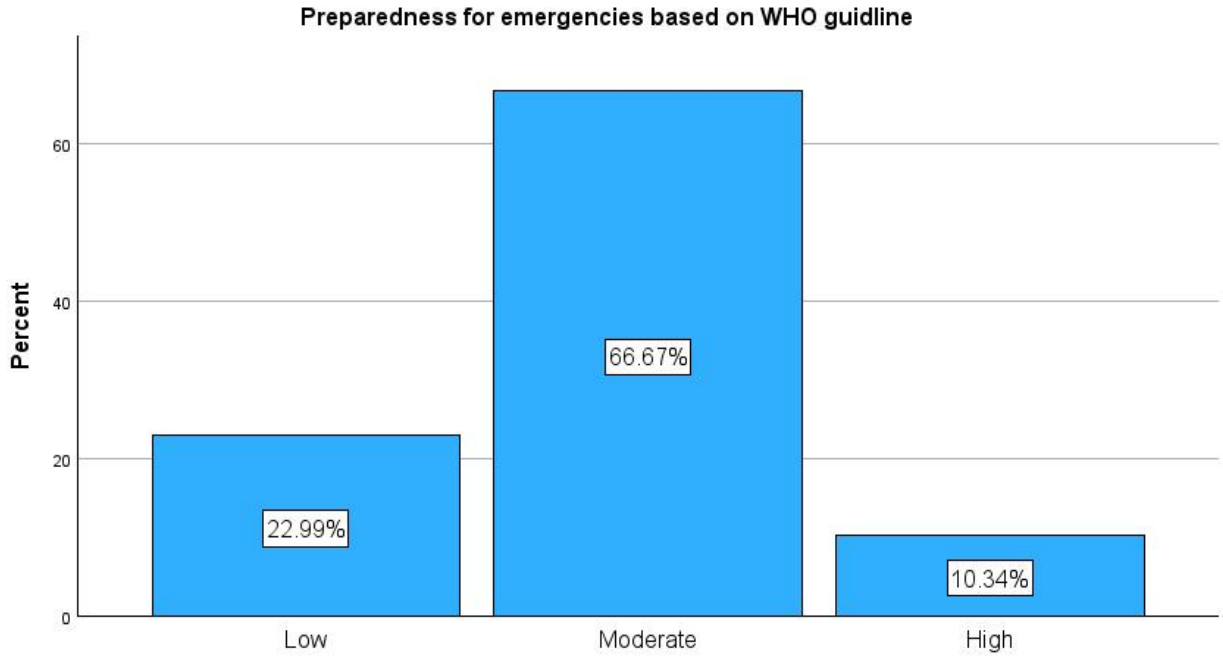
5.4 What is the level of disaster preparedness for emergency disease outbreak among hospitals in Lusaka District?

The primary objective was to evaluate the level of disaster preparedness among hospitals in Lusaka District. Recognizing the unpredictability of disasters, institutions must be ready to avoid being caught off guard. Respondents were asked to rate their preparedness based on WHO (2011) standards. The lowest level indicates no additional supplies or preparations, leaving institutions unprepared for emergencies. The intermediate level reflects some additional equipment, supplies, and personnel, allowing for basic disaster management. The highest level signifies comprehensive preparedness, including a 72-hour emergency kit and a

year's stock of essential supplies. The study's findings are illustrated in the accompanying figure.

5.4.1 Preparedness for emergencies based on WHO guideline

Figure 5.4: Level of Disaster Preparedness



Source: (Survey Data, 2024

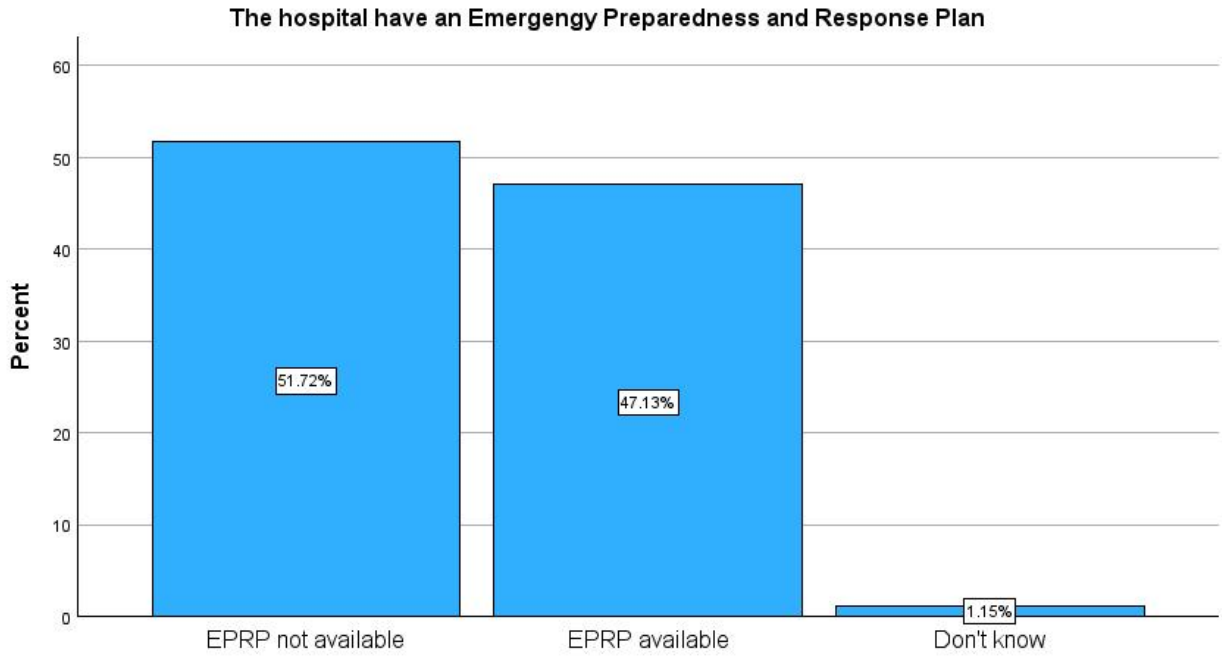
The table indicates the level of disaster preparedness at Matero Level 1 and Chipata First-Level hospitals. It shows that 23% of respondents rated their preparedness as high, meaning these hospitals are well-equipped with sufficient supplies, equipment, and staff to handle any disaster. A majority, 66.7%, rated their preparedness as moderate, suggesting that while these hospitals can manage disasters, they do so with some limitations. Lastly, 10.3% of respondents (9 out of 87) rated their institutions as poorly prepared. These hospitals lack extra supplies or preparations, making every emergency a potential disaster.

Overall, the findings highlight that while some hospitals are well-prepared, a significant proportion still needs to improve their preparedness levels to effectively manage emergency disease outbreaks.

5.4.2 Availability of Emergency Preparedness and Response Plan (EPRP)

Participants were asked about their awareness of the availability of an Emergency Preparedness and Response Plan (EPRP). According to the survey data: 51.7% (45/87) of respondents indicated that the EPRP was not available at their hospital. 47.1% (41/87) of respondents stated that the EPRP was available. 1.1% (1/87) of respondents were unsure about the existence of the EPRP.

Figure 5.5: Availability of Emergency Preparedness and Response Plan (EPRP)



Source: (Survey Data, 2024

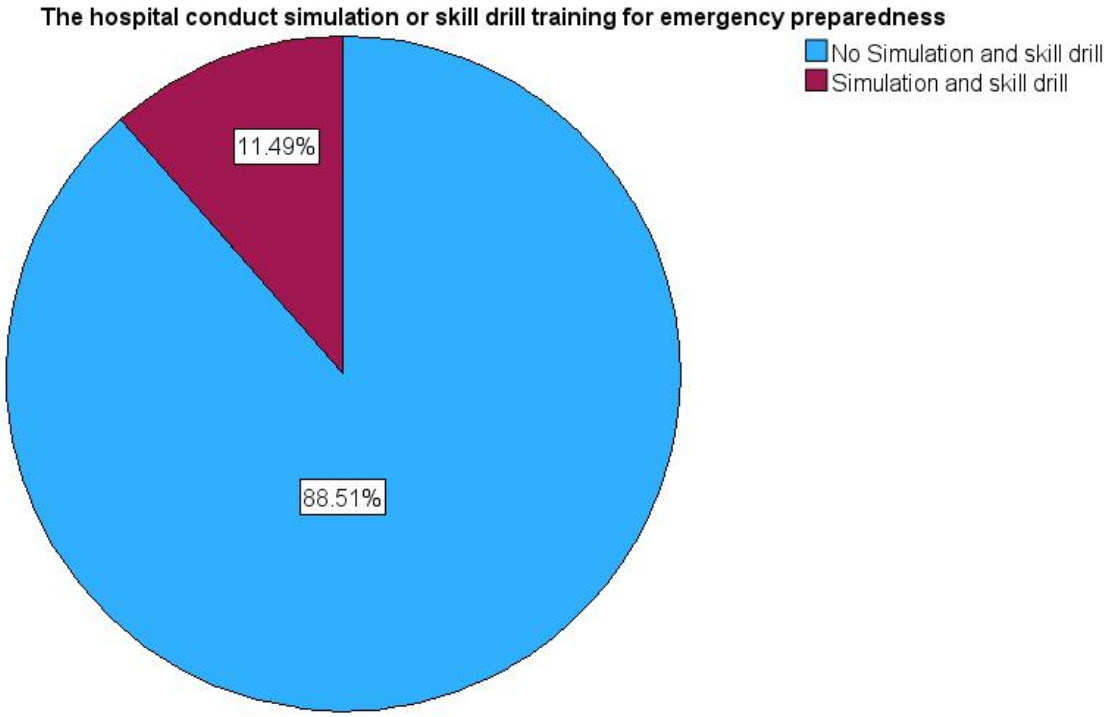
Figure 5.5 displays the responses of study participants regarding the availability of the EPRP in Matero Level 1 and Chipata First-Level hospitals in Lusaka District, Zambia.

5.4.3 Simulation and Skill Drill of Emergency Preparedness

A significant majority of healthcare workers (HCWs), 88.5% (77), indicated that no simulation exercises or skill drills were conducted at their hospitals for emergency preparedness. Only 11.5% (10) of the respondents reported that such simulations and skill drills were conducted. These simulations focused on areas such as triaging cases, surveillance

and case detection, nosocomial infection management, case holding, transportation of cases, and case management.

Figure 5.6: Responses on Simulation and Skill Drill of Emergency Preparedness



Source: (Survey Data, 2024

Figure figure 5.6 illustrates the responses of participants regarding the implementation of simulation and skill drills for emergency preparedness in Matero Level 1 and Chipata First-Level hospitals in Lusaka District, Zambia.

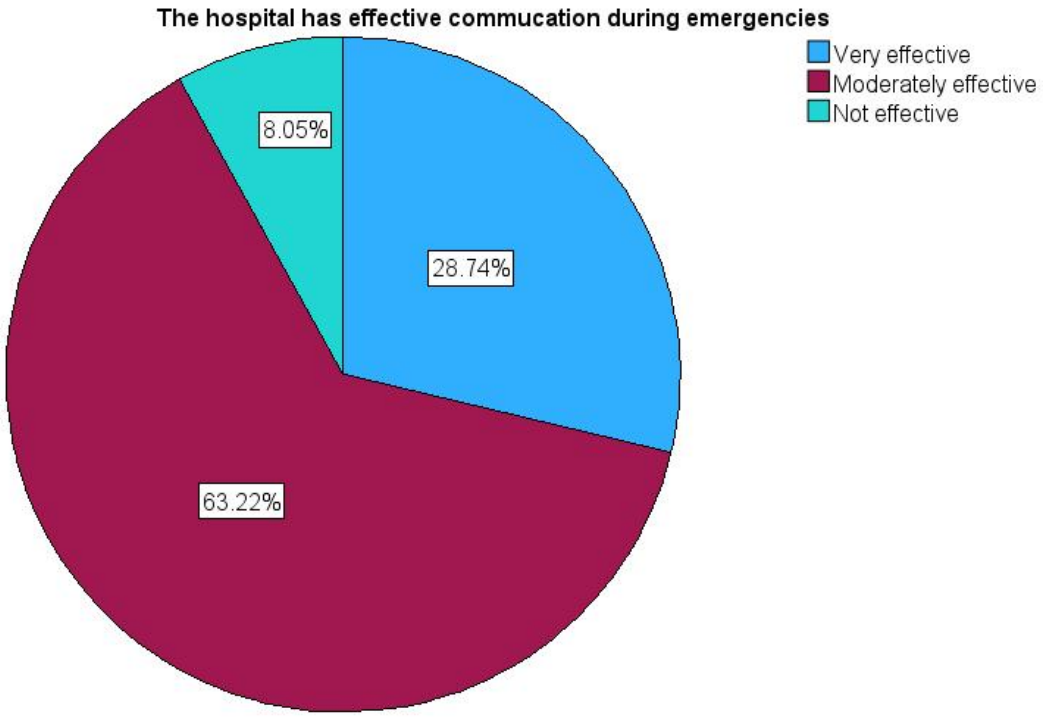
5.4.4 Effectiveness of Communication During Emergencies

Effective communication is a vital component of emergency preparedness in hospitals, ensuring that information is accurately disseminated and actions are efficiently coordinated. The survey results indicate the following: 28.7% (25/87) of respondents rated the hospital's communication during emergencies as very effective. 63.2% (55/87) of respondents felt that communication was moderately effective and .0% (7/87) of respondents considered communication to be not effective.

The majority of healthcare workers, 63.2% (55/87), believe that communication during emergencies is moderately effective, highlighting room for improvement in the emergency

communication protocols. While a significant portion, 28.7% (25/87), rated the communication as very effective, a smaller percentage, 8.0% (7/87), found it to be insufficient.

Figure 5.7: Responses on effectiveness of communication during emergencies



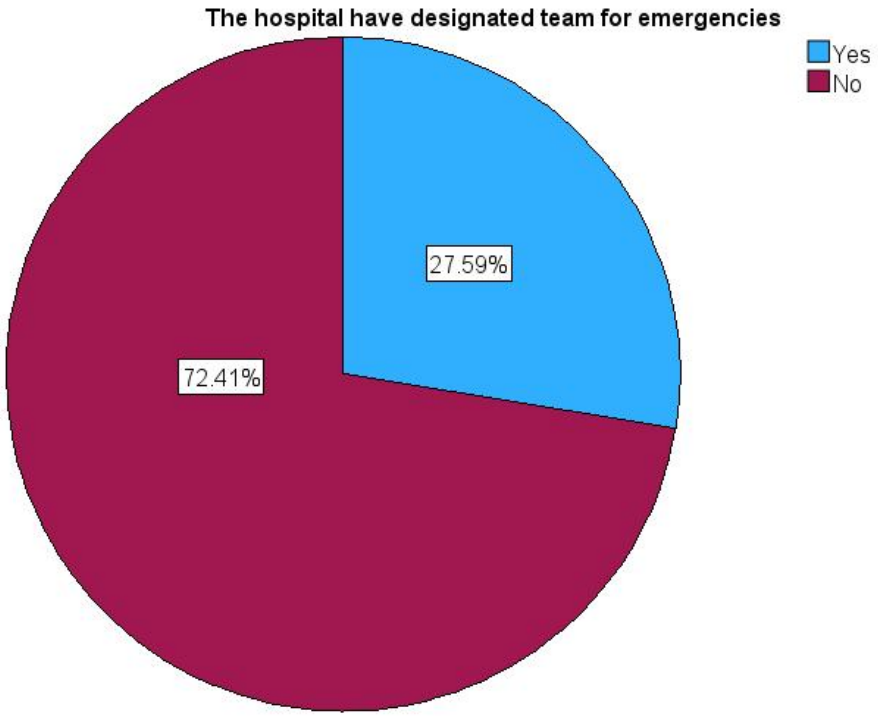
Source: (Survey Data, 2024

Figure 5.7 illustrates the participants' responses regarding the effectiveness of communication during emergencies at Matero Level 1 and Chipata First-Level hospitals in Lusaka District, Zambia.

5.4.5 Designation of Emergency Teams

Having a designated team for emergencies is crucial for coordinated and timely responses to disease outbreaks. Survey results reveal the following: 27.6% (24/87) of respondents indicated that their hospital has a designated emergency team. 72.4% (63/87) of respondents stated that their hospital does not have a designated emergency team. The data indicates a significant gap in the preparedness of hospitals in Lusaka District, with only 27.6% (24/87) having a designated team for emergencies. This leaves a substantial majority, 72.4% (63/87), without a specific team in place, which could hinder effective emergency response.

Figure 5.8: Response on existence of designated emergency teams



Source: (Survey Data, 2024

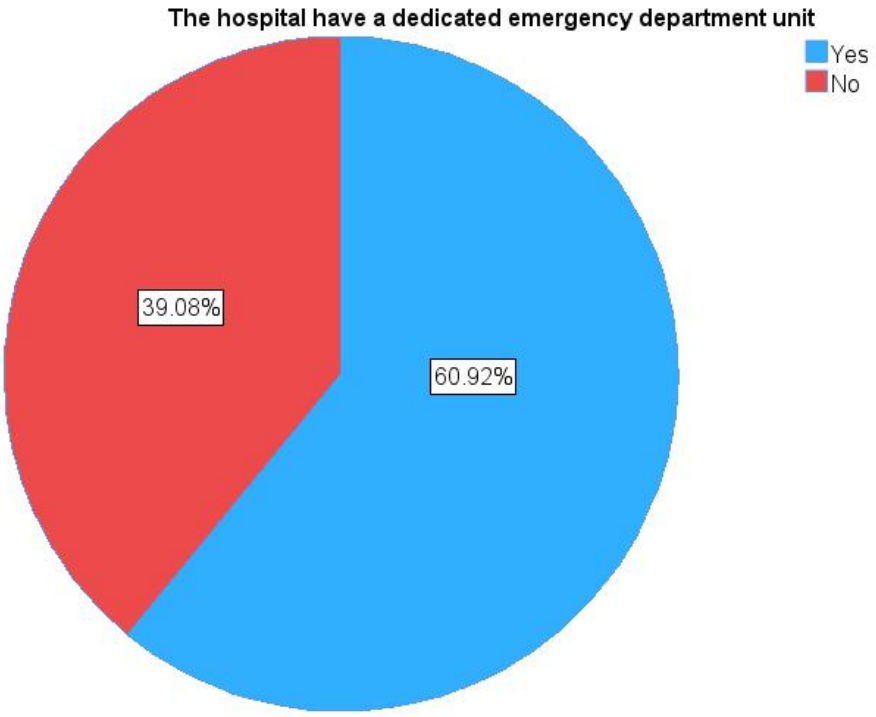
Figure 5.8 shows the responses of participants regarding the existence of designated emergency teams at Matero Level 1 and Chipata First-Level hospitals in Lusaka District, Zambia.

5.4.6 Dedicated Emergency Department Unit

The presence of a dedicated emergency department unit is a critical aspect of hospital readiness for managing emergency disease outbreaks. According to the survey results: 60.9% (53/87) of respondents confirmed that their hospital has a dedicated emergency department unit. 39.1% (34/87) of respondents indicated that their hospital does not have a dedicated emergency department unit.

These findings suggest that a majority of hospitals in Lusaka District, represented by 60.9% (53/87) of respondents, have the infrastructure in place to handle emergencies. However, the data also highlights that 39.1% (34/87) of hospitals lack a dedicated emergency department unit, which could impede their ability to effectively manage emergency situations.

Figure 5.9: Responses on the availability of Emergency Department Unit



Source: (Survey Data, 2024

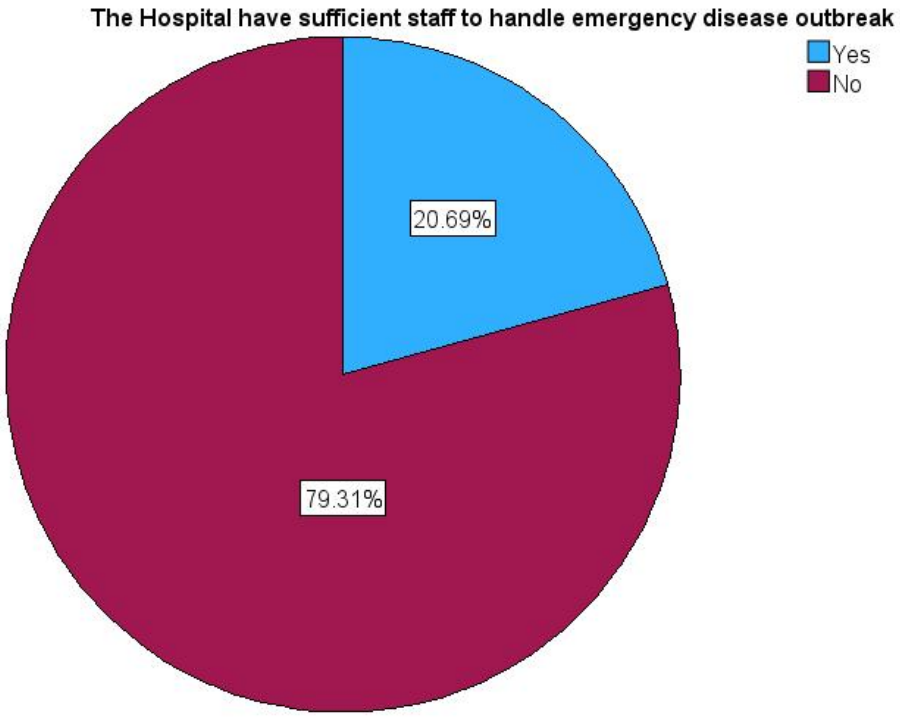
Figure 5.9 illustrates the participants' responses regarding the presence of dedicated emergency department units at Matero Level 1 and Chipata First-Level hospitals in Lusaka District, Zambia.

5.4.7 Sufficiency of Staff to Handle Emergency Disease Outbreaks

Adequate staffing is essential for hospitals to effectively manage emergency disease outbreaks. The survey results indicate: 20.7% (18/87) of respondents stated that their hospital has sufficient staff to handle emergency disease outbreaks. 79.3% (69/87) of respondents reported that their hospital does not have sufficient staff.

These findings reveal a critical gap in hospital preparedness, with only a small proportion, 20.7% (18/87), indicating sufficient staffing levels. The majority, 79.3% (69/87), highlighted a lack of adequate staff, which could significantly impair the hospital's ability to respond effectively to emergency situations.

Figure 5.10: Responses on availability of trained Staff to Handle Emergency Disease Outbreaks



Source: (Survey Data, 2024

Figure 5.10 illustrates the responses of participants regarding the sufficiency of staff at Matero Level 1 and Chipata First-Level hospitals in Lusaka District, Zambia.

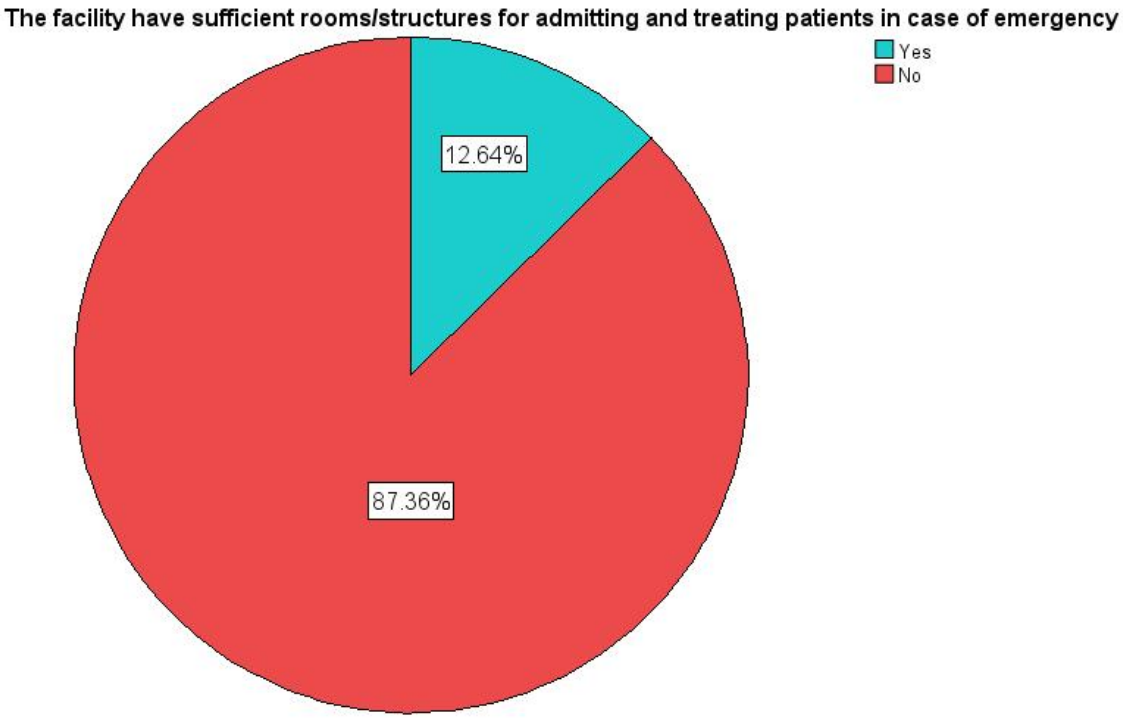
5.4.8 Sufficiency of Rooms/Structures for Admitting and Treating Patients

Adequate infrastructure is a key component of hospital preparedness for emergency situations, ensuring that there are enough rooms and structures to accommodate and treat patients. The survey results show the following: 12.6% (11/87) of respondents indicated that their hospital has sufficient rooms and structures for admitting and treating patients during emergencies.87.4% (76/87) of respondents reported that their hospital does not have sufficient rooms and structures.

These findings highlight a significant shortfall in hospital preparedness, with only 12.6% (11/87) of respondents confirming that their hospital has the necessary infrastructure. The majority, 87.4% (76/87), pointed out that their facilities do not have adequate rooms and

structures, which could severely limit the hospital's capability to manage a surge in patient numbers during an emergency.

Figure 5.11: Responses on availability of Rooms/Structures for Admitting and Treating Patients



Source: (Survey Data, 2024

Figure 5.11 illustrates the responses of participants regarding the sufficiency of rooms and structures for admitting and treating patients at Matero Level 1 and Chipata First-Level hospitals in Lusaka District, Zambia.

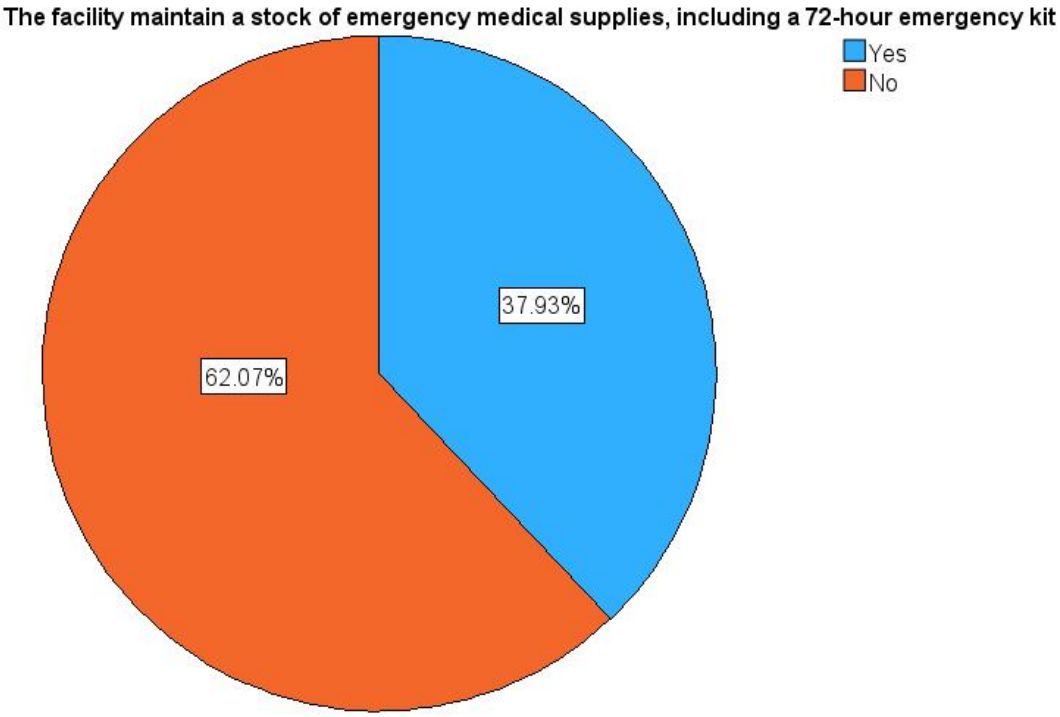
5.4.9 Maintenance of Emergency Medical Supplies, Including a 72-Hour Emergency Kit

Having a well-maintained stock of emergency medical supplies, including a 72-hour emergency kit, is crucial for hospitals to effectively handle emergency situations. The survey results reveal the following: 37.9% (33/87) of respondents indicated that their hospital maintains a stock of emergency medical supplies, including a 72-hour emergency kit. 62.1% (54/87) of respondents reported that their hospital does not have such supplies.

These findings highlight a significant gap in emergency preparedness, with only 37.9% (33/87) of respondents confirming that their hospital is prepared with the necessary

emergency medical supplies. A majority of respondents, 62.1% (54/87), indicated that their hospital lacks a maintained stock of emergency supplies, including a 72-hour emergency kit, which could critically impair the hospital's capability to respond effectively to emergencies.

Figure 5.12: Responses on Maintenance of Emergency Medical Supplies, Including a 72-Hour Emergency Kit



Source: (Survey Data, 2024

Figure 5.12 illustrates the responses of participants regarding the maintenance of emergency medical supplies at Matero Level 1 and Chipata First-Level hospitals in Lusaka District, Zambia.

Table 5.9: Descriptive Statistics on Emergency Preparedness

	N	Min	Max	Mean	Std. D
The hospital has an Emergency Preparedness and Response Plan	87	1	3	1.49	.525
The hospital conducts simulation or skill drill training for emergency preparedness	87	1	2	1.11	.321
The hospital has effective communication during emergencies	87	1	3	1.79	.573

The hospital has designated team for emergencies	87	1	2	1.72	.450
The hospital has a dedicated emergency department unit	87	1	2	1.39	.491
The Hospital have sufficient staff to handle emergency disease outbreak	87	1	2	1.79	.407
The facility has sufficient rooms/structures for admitting and treating patients in case of emergency	87	1	2	1.87	.334
The facility maintains a stock of emergency medical supplies, including a 72-hour emergency kit	87	1	2	1.62	.488
Valid N (listwise)	87				

Source: (Survey Data, 2024

The data shows varying levels of emergency preparedness in Lusaka hospitals. With a mean of 1.49, only around half have an Emergency Preparedness and Response Plan. A low mean of 1.11 indicates infrequent simulation drills. Communication during emergencies is moderately effective, with a mean of 1.79. Approximately half have designated emergency teams and dedicated units. Staffing and room sufficiency means are 1.79 and 1.87, respectively, suggesting limitations. Emergency medical supply stock maintenance is also moderate, with a mean of 1.62.

5.5: What are the determinants factors that influence healthcare emergency preparedness?

The study examines the determinants factors influencing healthcare emergency preparedness. The Five-point Likert scales were used to measure the opinions of the respondents on the factors that influence the determinants of hospital emergency preparedness, with the lowest score being 1 (strongly disagree) and the highest 5 (strongly agree).

5.5.1 Institutional Policies on Hospital Emergency Preparedness

Table 5.5: Descriptive Statistics on Institutional Policies

	N	Min	Max	Mean	Std. D
Our hospital has comprehensive policies in place for emergency preparedness.	87	1	5	3.75	1.183
I participated in emergency policy formulation.	87	1	5	1.72	.885

The hospital has a clear chain of command system in case of emergencies.	87	1	5	3.91	1.041
The hospital has an emergency operations committee.	87	1	5	3.55	1.292
There are procedures for expanding usable space, including the availability of extra beds.	87	1	5	3.60	1.253
Regular safety inspections are conducted by the appropriate authority.	87	1	5	3.84	1.160
I have participated in creating new guidelines, emergency plans, and lobbying for preparedness.	87	1	5	2.00	1.201
Valid N (listwise)	87				

Source: (Survey Data, 2024

The findings provide a comprehensive assessment of institutional policies on hospital emergency preparedness in Lusaka District. Most respondents agreed that the hospital has comprehensive policies in place for emergency preparedness, with a mean score of 3.75 (SD = 1.183). However, a significant gap was observed participation in emergency policy formulation was rated low, with a low mean score of 1.72 (SD = 0.885).

A clear chain of command system in case of emergencies was strongly agreed upon by respondents, with a mean score of 3.91 (SD = 1.041). The presence of an emergency operations committee was also recognized, with a mean score of 3.55 (SD = 1.292). Procedures for expanding usable space, including the availability of extra beds, were rated moderately (mean = 3.60, SD = 1.253).

Regular safety inspections conducted by the appropriate authority received a high rating, with a mean score of 3.84 (SD = 1.160), reflecting a commitment to maintaining safety standards. However, participation in creating new guidelines, emergency plans, and lobbying for emergency preparedness was low, with a mean score of 2.00 (SD = 1.201).

Overall, these findings indicate that while policies and structures are in place, there is a need for increased staff involvement in policy formulation and strategic planning to enhance overall preparedness.

5.5.2 Financial capability on Hospital Emergency Preparedness

5.6 Descriptive Statistics on Financial capability

	N	Min	Max	Mean	Std. D
Our hospital has adequate funding allocated for emergency preparedness.	87	1	5	1.98	1.078
Our hospital receives external funding or grants for emergency preparedness.	87	1	5	3.40	1.333
The financial allocation for emergencies preparedness should be increased.	87	1	5	4.06	1.082
The hospital caters for training logistics for staff/training fees.	87	1	5	2.14	1.143
The facility has transport and logistics support in case of an emergency.	87	1	5	3.86	1.058
There are no delays to emergency response due to financial allocation.	87	1	5	2.64	1.303
Valid N (listwise)	87				

Source: (Survey Data, 2024

The findings highlight financial capability as a critical determinant of hospital preparedness for emergency disease outbreaks in Lusaka District. The majority of respondents strongly agreed that financial allocation for emergency preparedness needs to be increased (Mean = 4.06, SD = 1.082). Additionally, the availability of transport and logistics support for emergencies received a relatively favourable rating (mean=3.86, SD=1.058), suggesting that some logistical resources are in place.

However, significant challenges remain. Respondents largely disagreed that financial resources for emergencies are adequately allocated (mean=1.98, SD=1.078), indicating substantial funding gaps. Similarly, hospitals rarely receive financial support from external funding or grants for emergency preparedness, with a mean score of 3.40 (SD=1.333). Staff training logistics and fees also scored low (mean=2.14, SD=1.143), reflecting insufficient investment in capacity building. Delays in emergency responses due to inadequate financial allocation were also noted (mean = 2.64, SD=1.303), further highlighting the financial challenges faced by hospitals.

These results underscore the urgent need for increased and timely financial investment to enhance hospital preparedness and response capacity during emergency disease outbreaks in Zambia.

5.5.3 Human resource capacity on Hospital Emergency Preparedness

5.7 Descriptive Statistics on Human resource capacity

	N	Min	Max	Mean	Std. D
All hospital staff are well equipped with knowledge on emergency preparedness	87	1	5	2.28	1.158
The hospital management organizes training in emergency preparedness among its staff	87	1	5	3.44	1.188
I am trained to train other staff and stakeholders on emergency preparedness	87	1	5	2.03	1.351
Training on emergency preparedness should be conducted quarterly	87	1	5	4.07	1.032
Emergency preparedness training should be included in all medical training curricula	87	1	5	4.44	.803
Valid N (listwise)	87				

Source: (Survey Data, 2024

The findings highlight critical gaps in human resource capacity for hospital emergency preparedness in Lusaka District. Notably, the majority of respondents strongly agreed that emergency preparedness training should be included in all medical training curricula (mean = 4.44, SD = 0.803). This underscores the recognition of healthcare professionals' pivotal role in enhancing day-to-day operations and preparing for emergencies.

While there was considerable agreement that training on emergency preparedness should be conducted quarterly (mean = 4.07, SD = 1.032), this reflects the need for consistent and regular training schedules to keep staff updated and ready to manage emergencies effectively. However, significant deficiencies were observed in staff knowledge and preparedness. The mean score for the statement that all hospital staff are well-equipped with knowledge on emergency preparedness was only 2.28 (SD = 1.158), indicating that a large proportion of hospital staff lack adequate training or awareness about their roles during emergencies.

Hospital management's efforts to organize training programs in emergency preparedness were rated moderately (mean = 3.44, SD = 1.188). This suggests that while training initiatives exist, they are neither sufficiently frequent nor comprehensive enough to address the needs of the

staff. Furthermore, the capacity to train other staff and stakeholders on emergency preparedness was rated even lower (mean = 2.03, SD = 1.351). This highlights a critical gap in cascading knowledge and skills, which is essential for a coordinated emergency response.

The findings emphasize the urgent need to strengthen human resource capacity by investing in comprehensive training programs and capacity-building initiatives. Training sessions should be well-structured, frequent, and tailored to the specific needs of hospital staff to ensure they are well-prepared for emergencies. Additionally, incorporating emergency preparedness into medical training curricula, as strongly suggested by the respondents, is vital for building a knowledgeable and skilled workforce from the onset of their careers.

Addressing these gaps will significantly enhance the readiness of hospitals in Lusaka District to manage emergency disease outbreaks. A well-prepared workforce is critical for ensuring that hospitals can respond effectively, minimize the impact of emergencies, and ultimately save lives.

5.5.4 Infrastructural capacity and Commodities Availability on Hospital Emergency Preparedness

Table 5.8 Descriptive Statistics on infrastructural capacity and Commodities Availability

	N	Min	Max	Mean	Std. D
There are sufficient medical supplies and equipment for emergency outbreaks.	87	1	5	2.07	1.043
Our hospital has adequate infrastructure to support emergency situations.	87	1	5	2.15	1.215
There is a robust system for rapid procurement of necessary commodities during emergencies.	87	1	5	3.49	1.337
There are designated areas for emergencies, including an emergency department unit.	87	1	5	2.66	1.363
The emergency tray is well-equipped with various equipment for the management of emergencies.	87	1	5	3.46	1.345
The emergency tray is accessible by all staff.	86	1	5	3.23	1.395
Valid N (listwise)	86				

Source: (Survey Data, 2024

The findings underscore the significance of infrastructural capacity and commodities availability as crucial determinants of hospital emergency preparedness in Lusaka District. The analysis presents a mixed picture of preparedness levels across various parameters.

The system for rapid procurement of necessary commodities during emergencies received a relatively high rating (mean = 3.49, SD = 1.337), indicating effective processes for accessing critical supplies. The adequacy of the emergency tray, equipped with the necessary tools for emergency management, was also rated high (mean = 3.46, SD = 1.345), reflecting readiness in this aspect. Furthermore, the accessibility of the emergency tray to all staff was rated moderately high (mean = 3.23, SD = 1.395), indicating that essential emergency equipment is reasonably accessible.

The availability of designated areas for emergencies, including an emergency department unit, infectious disease department, and inpatient units, showed moderate adequacy (mean = 2.66, SD = 1.363). However, the adequacy of general commodity supply scored low (mean = 2.07, SD = 1.043), with the majority of respondents disagreeing those hospitals have sufficient supplies for emergency situations. Additionally, the availability of infrastructural capacity, including triaging systems, isolation facilities, and bed capacity, was rated poorly (mean = 2.14, SD = 1.219), suggesting notable deficiencies in physical infrastructure necessary to manage emergencies effectively.

Overall, the findings highlight the need for significant improvements in commodity supplies, infrastructure, and the equipping of emergency units to enhance hospital preparedness for disease outbreaks in Zambia

4.3.5 Hospital Emergency Preparedness

5.7 What are the Challenges of Hospital Emergency Preparedness

Table 5.10: Descriptive Statistics on challenges of hospital emergency preparedness

	N		Mean	Std. Deviation
	Valid	Missing		
Inadequate staff or health professionals	87	0	4.17	1.173
Lack of education and training drills	87	0	4.21	1.122
Inadequate resource capability	87	0	4.13	1.065
Improper management	87	0	4.17	1.173

Inadequate finance	87	0	4.21	1.122
Lack of crucial healthcare facilities and equipment	86	1	4.19	1.079
Poor surveillance systems	87	0	4.11	1.146
Lack of laid down plan or strategy for emergencies	87	0	4.13	1.065

Source: (Survey Data, 2024

The findings indicate that the majority of respondents strongly agreed that inadequate staff or health professionals is a major challenge to hospital emergency preparedness (mean = 4.17, SD = 1.173). Similarly, the majority found that improper management also poses significant difficulties (mean = 4.17, SD = 1.173). A lack of education and training drills was identified as another critical challenge (mean = 4.21, SD = 1.122). Inadequate finance was also highlighted as a major barrier (mean = 4.21, SD = 1.122). Moreover, the lack of essential healthcare facilities and equipment was noted as a considerable challenge (mean = 4.19, SD = 1.079). Poor surveillance systems (mean = 4.11, SD = 1.146) and inadequate resource capability (mean = 4.13, SD = 1.065) were identified as major issues as well. Finally, the absence of a laid-down plan or strategy for emergencies was reported as a significant hurdle (mean = 4.13, SD = 1.065).

5.8 Measures to improve Hospital Emergency Preparedness

The study identified the measures to improve hospital emergency preparedness. The Five-point Likert scales were used to measure the opinions of the respondents on the measures to improve hospital emergency preparedness, with the lowest score being 1 (strongly disagree) and the highest 5 (strongly agree). Table 6: Measures to improve Hospital Emergency Preparedness

Table 5.11: Descriptive Statistics on Measures to improve Hospital Emergency Preparedness

	N			
	Valid	Missing	Mean	Std. Deviation
Increasing staff or health professionals	87	0	4.49	.888
Adequate education and training drills	87	0	4.54	.775
Adequate resource capability	87	0	4.51	.791
Proper management	87	0	4.51	.791

Adequate finance	87	0	4.53	.775
Availability of crucial healthcare facilities and equipment	87	0	4.48	.887
Effective surveillance systems	87	0	4.45	.789
Effective and efficient strategy or plan execution	87	0	4.53	.775

As indicated in Table 6, the majority of respondents strongly agreed that increasing staff or health professionals enhances hospital emergency preparedness (mean= 4.91, SD= 1.956). Additionally, most respondents strongly agreed and agreed that adequate education and training drills contribute to improved preparedness (mean= 4.87, SD= 1.823). Furthermore, it was also strongly agreed by most respondents that effective strategy or plan execution is crucial for preparedness (mean= 4.85, SD= 1.819). The availability of essential healthcare facilities and equipment was also seen as highly important (mean= 4.85, SD= 1.819). Similarly, adequate finance and resource capabilities were both rated highly by respondents (mean= 4.85, SD= 1.819 and mean= 4.81, SD= 1.803 respectively). Proper management also received significant support as a key factor (mean= 4.81, SD= 1.803). Finally, the effective surveillance systems were also noted as vital for emergency preparedness (mean= 4.64, SD= 1.745).

5.9 Inferential Statistics

5.7.1 Correlation Analysis

The study conducted a correlation analysis to measure the strength of association between variables and the direction of the relationship. In terms of the strength of the relationship, the correlation coefficient's value varies between +1 and -1.

Correlations

		Institutional Policies	Financial Capability	Human Resource Capacity	Infrastructure and Commodity	Emergency Preparedness
Institutional Policies	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	87				

Financial Capability	Pearson Correlation	.555**	1			
	Sig. (2-tailed)	<.001				
	N	87	87			
Human Resource Capacity	Pearson Correlation	.063	.043	1		
	Sig. (2-tailed)	.563	.692			
	N	87	87	87		
Infrastructure and Commodity	Pearson Correlation	.183	.200	.215*	1	
	Sig. (2-tailed)	.090	.063	.045		
	N	87	87	87	87	
Emergency Preparedness	Pearson Correlation	.666**	.480**	.053	.044	1
	Sig. (2-tailed)	<.001	<.001	.628	.685	
	N	87	87	87	87	87

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The study aimed to determine the relationship between the independent variables and hospital emergency preparedness through correlation analysis. The findings reveal significant positive correlations between hospital emergency preparedness and several independent variables: Institutional Policies ($r = .666$, $p < .001$), Financial Capability ($r = .480$, $p < .001$), Infrastructure and Commodity Availability ($r = .044$, $p = .685$) and Human Resource Capacity had a weaker, non-significant correlation ($r = .053$, $p = .628$).

These results highlight the importance of institutional policies, financial resources, and infrastructure and commodity availability in enhancing hospital preparedness for emergency disease outbreaks in Lusaka District. The data suggest that these factors significantly influence the ability of hospitals to respond effectively to emergencies, underscoring the critical role they play in strengthening emergency response capabilities.

5.7.2 Regression Model Analysis

5.7.2.1 Model Summary

Table 5.13: Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.686[a]	.471	.445	.40137

a. Predictors: (Constant), Infrastructure and Commodity, Institutional Policies, Human Resource Capacity, Financial Capability

The regression model analysis reveals that 47.1% of the variance in hospital emergency preparedness in Lusaka District can be explained by the predictors: infrastructure and commodity availability, financial resources, human resource capacity, and institutional policies ($R^2 = .471$). The adjusted R^2 value of 0.445 indicates a good fit for the model, with a standard error of 0.40137. These findings highlight the significant impact of the identified predictors on hospital preparedness for emergency disease outbreaks, while also suggesting that other unexplored factors may contribute to the remaining variance in preparedness. Further research is needed to identify and analyze these additional determinants.

The present researcher also utilized the ANOVA model to evaluate the robustness of the applied model for this research. The results are summarized and presented in Table 5.14 below.

5.7.2.1 ANOVA Model Analysis

Table 5.14: Analysis of Variance

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	11.751	4	2.938	18.236	<.001[b]
	Residual	13.210	82	.161		
	Total	24.961	86			

a. Dependent Variable: Emergency Preparedness
b. Predictors: (Constant), Infrastructure and Commodity, Institutional Policies, Human Resource Capacity, Financial Capability

The ANOVA table shows a significant relationship between the predictors and hospital emergency preparedness, with an F ratio of 18.236 and a p-value of <.001. This indicates that the model, which includes infrastructure and commodity availability, financial capability,

human resource capacity, and institutional policies, is statistically significant in predicting hospital emergency preparedness in Lusaka District. These findings highlight the importance of the identified predictors in enhancing hospital preparedness for emergency disease outbreaks.

5.7.2.1 Multiple Linear Regression Analysis

Table 5.15: Coefficient's determinants factors that influence healthcare emergency preparedness

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.233	.414		2.978	.004
	Institutional Policies	.561	.093	.586	6.046	<.001
	Financial Capability	.181	.101	.174	1.787	.078
	Human Resource Capacity	.033	.089	.031	.375	.709
	Infrastructure and Commodity	-.103	.083	-.104	-1.241	.218
a. Dependent Variable: Emergency Preparedness						

In Table 5.15, the regression coefficients clarify the average amount of change in hospital emergency preparedness (HEP) caused by a unit change in the respective determinants.

Institutional Policies is the most significant contributing factor with a beta value of 0.586 ($p < .001$). This indicates that strong institutional policies have a significant positive impact on HEP. Financial Capability is the second most contributing factor, with a beta value of 0.174 ($p = .078$). This suggests that financial resources play a crucial role in enhancing HEP. Human Resource Capacity has a beta value of 0.031 ($p = .709$), indicating that human resource capacity does not significantly impact HEP in this model. Infrastructure and Commodity Availability has a beta value of -0.104 ($p = .218$), showing a negative but not statistically significant impact on HEP.

Given that the predictors in this study are multiple, a multiple linear regression model was employed to explain and quantify the level of influence each determinant factor has on healthcare emergency preparedness. The multiple linear regression model used is as follows:

Hospital Emergency Preparedness = 1.233 + 0.561(Institutional Policies) + 0.181(Financial Capability) + 0.033(Human Resource Capacity) - 0.103(Infrastructure & Commodity Availability)

$$Y = 1.233 + 0.561X_1 + 0.181X_2 + 0.033X_3 - 0.103X_4$$

Where;

$Y\ represents Hospital\ Emergency\ Preparedness\ (HEP),,$

$X_1\ is\ Institutional\ policies,$

$X_2\ is\ financial\ capability,$

$X_3\ is\ Human\ resource\ capacity.,$

$and\ X_4\ Infrastructure\ \&\ Commodity$

The constant 1.233 refers to the intercept on the 'Y'-axis where the regression line crosses the axis. Overall, the results emphasize the importance of institutional policies and financial resources as significant determinants of hospital emergency preparedness, while human resource capacity and infrastructure & commodity availability are less impactful in this model.

CHAPTER SIX

DISCUSSION AND IINTERPRETATION OF RESULTS

6.1 Introduction

The chapter presents the discussion and interpretation of the research finding. This section relates the quantitative findings and interprets them according to the literature review and according to researchers' observation. The findings were analysed according to research questions and objectives.

6.2. The level of disaster preparedness for emergency disease outbreak

The study found that 23% of respondents rated their preparedness as high, meaning these hospitals are well-equipped with sufficient supplies, equipment, and staff to handle any disaster. The fact that 23% of the institutions are self-sufficient, with sufficient supplies, equipment, and staff, aligns with the Hyogo Framework for Action (2015), which emphasizes the importance of being well-prepared for disasters. This level of readiness is crucial, as it allows for a timely, effective, and efficient response (WHO, 2017).

A majority, 66.7%, rated their preparedness as moderate, suggesting that while these hospitals can manage disasters, they do so with some limitations. This suggests that while some progress has been made, there is still a need for continuous development (Tabish, 2019). WHO (2017) highlights that achieving readiness in disaster management is a continuous process of establishing, strengthening, and maintaining a multisectoral response infrastructure.

Lastly, 10.3% of respondents (9 out of 87) rated their institutions as poorly prepared. These hospitals lack extra supplies or preparations, making every emergency a potential disaster. Overall, the findings highlight that while some hospitals are well-prepared, a significant proportion still needs to improve their preparedness levels to effectively manage emergency disease outbreaks. The fact that 10.3% of the hospitals rated their preparedness as low indicates significant gaps that need to be addressed. WHO (2017) observes that many developing nations still experience challenges in the health sector, which can impact their readiness for emergencies.

The findings indicate a need for continuous improvement in hospital disaster preparedness in Lusaka District. While some hospitals have achieved high preparedness levels, a majority still

need to enhance their capabilities. This aligns with the WHO's observation that achieving readiness is a continuous process. Investments in infrastructure, training, and resources are crucial to ensure that hospitals can effectively manage and respond to emergency disease outbreaks. The moderate level of preparedness should be seen as encouraging, but there is no room for complacency. Hospital authorities must strive to achieve higher levels of preparedness to ensure the safety and well-being of their communities during emergencies.

The findings of this study highlight significant gaps in the level of hospital emergency preparedness in Lusaka District, with critical insights into resource availability, simulation exercises, communication effectiveness, and staffing levels. These results align with and diverge from various studies, shedding light on the determinants of preparedness.

The availability of an Emergency Preparedness and Response Plan (EPRP) is foundational for hospital readiness. However, only 47.1% of respondents confirmed its presence, leaving more than half of the hospitals without a formal plan. This aligns with the WHO (2012) emphasis on the importance of healthcare professionals having structured guidelines to deliver health services efficiently. Without an EPRP, hospitals lack a standardized approach to managing emergencies, increasing their vulnerability during outbreaks.

Simulation and skill drills, a critical component of preparedness, were conducted in only 11.5% of the surveyed hospitals. This is contrary to Kiongo (2015), who argued that emergency drills are essential for testing and refining response plans, enabling healthcare institutions to respond effectively. Tang (2015) also emphasized that mock exercises are vital for evaluating plans and implementing corrective measures. The lack of such drills in Lusaka hospitals suggests inadequate preparation for real-life scenarios, leaving healthcare workers untrained in vital emergency response skills like triage, case management, and nosocomial infection control.

Communication during emergencies was rated as moderately effective by 63.2% of respondents, with only 28.7% rating it as very effective. This finding aligns with Pickton and Broderick (2021), who highlighted communication as a cornerstone of emergency preparedness. Effective communication ensures accurate information dissemination and efficient coordination, as emphasized by Friedman and Kelman (2016). However, the moderate rating suggests the need for improvement in communication protocols to enhance response efficiency.

Regarding infrastructure, 60.9% of respondents reported having a dedicated emergency department unit, reflecting some level of readiness. However, 39.1% of hospitals lacked such facilities, which is critical for managing emergency outbreaks. This agrees with the WHO (2012) findings that infrastructure like emergency and infectious disease units is vital for hospital operations. Similarly, sufficient staffing, reported by only 20.7% of respondents, and the availability of rooms for admitting patients, reported by just 12.6%, highlight significant resource deficiencies. This underscores the critical role of financial capacity, as noted by WHO (2012), in equipping hospitals with the necessary resources to handle emergencies effectively.

Finally, only 37.9% of hospitals maintained emergency medical supplies, including 72-hour kits, indicating resource shortages. These gaps resonate with Djalali et al. (2014), who noted the lack of internationally accepted standards for preparedness and response measures. Addressing these gaps requires strategic investments in infrastructure, training, and resource allocation to enhance hospital readiness for emergencies.

6.3 The determinants factors that influence healthcare emergency preparedness

6.3.1 Institutional policies and Hospital Emergency Preparedness

The study examines the determinants factors influencing healthcare emergency preparedness. On institutional policies as a determinant factor influencing healthcare emergency preparedness, the findings reveal a mixed picture of hospital emergency preparedness with respect to institutional policies. The majority of respondents agreed that hospitals have policies in place for emergencies, with a mean score of 3.75 and a standard deviation of 1.183. This aligns with Kim (2014), who emphasized that effective emergency preparedness policies require comprehensive approaches, including emergency response, adaptability, stakeholder participation, and action-based strategies. The presence of these policies indicates a foundational level of preparedness.

However, the low mean score of 1.72 (SD = 0.885) for participation in emergency policy formulation highlights a significant gap. Employee involvement in policy creation is crucial for effectiveness and efficiency (Perry, 2013). When employees from different departments engage in policy formulation, they bring diverse knowledge, skills, and interests to enhance hospital preparedness (Tang, 2015). This diversity is essential for developing robust and comprehensive policies.

A significant majority of respondents agreed that the hospital has a clear chain of command system in emergencies, with a mean score of 3.91 (SD = 1.041). This finding aligns with the Emergency Management Theory (Dynes, 2015), which underscores the importance of having a clear organizational structure to facilitate effective disaster response. Effective communication and a well-defined chain of command are critical components of disaster management, reducing confusion and enhancing coordination during emergencies (Jonathan et al., 2017).

The presence of an emergency operations committee was also recognized by respondents, with a mean score of 3.55 (SD = 1.292). This indicates that hospitals have established structures to coordinate emergency preparedness and response efforts. Regular safety inspections by appropriate authorities were affirmed with a mean score of 3.84 (SD = 1.16), reflecting a commitment to maintaining safety standards and readiness for emergencies (WHO, 2017).

However, the low mean score of 2.00 (SD = 1.201) for participation in creating new guidelines, emergency plans, and lobbying for emergency preparedness indicates a need for improvement. Engaging staff in the development of these plans fosters a sense of ownership and ensures that the policies are practical and effective (Perry, 2013). The involvement of employees in policy formulation not only enhances the quality of the policies but also promotes compliance and effective implementation (Kim, 2014).

The study's theoretical framework builds on the Emergency Management Theory, which emphasizes the importance of understanding the nature of disasters and the response strategies required (Dynes, 2015). Compliance with disaster management policies, mitigation strategies, preparedness, response, and recovery are crucial components of effective emergency management (Jonathan et al., 2017). The findings of this study align with the theory's emphasis on the need for robust institutional policies and the involvement of stakeholders in policy formulation and implementation.

Institutional policy was identified as the most significant determinant of hospital emergency preparedness, with a beta value of 0.430 ($p < .001$). This finding underscores the critical role of strong policies in enhancing hospital readiness for emergencies. Policies provide a structured framework for action, ensuring that all aspects of emergency preparedness are addressed comprehensively (Jonathan et al., 2017). The significant positive impact of

institutional policies on hospital emergency preparedness highlights the importance of continuous development and improvement of these policies (WHO, 2017).

The expansion of usable space, including extra beds, was also highlighted as a critical factor, with a mean score of 3.60 (SD = 1.253). This finding aligns with the Hyogo Framework for Action (2015), which emphasizes the importance of having adequate infrastructure and resources to manage disasters effectively. The availability of sufficient space and resources ensures that hospitals can accommodate an increased number of patients during emergencies (WHO, 2017).

In conclusion, the findings of this study highlight the importance of institutional policies in enhancing hospital emergency preparedness. The presence of policies and structures indicates a foundational level of preparedness, but there is a need for increased staff involvement in policy formulation and strategic planning. Engaging employees in the development of emergency plans and guidelines fosters a sense of ownership and ensures that the policies are practical and effective. Continuous improvement and development of institutional policies are essential to ensure that hospitals remain prepared for emergencies. The study's theoretical framework aligns with the findings, emphasizing the importance of understanding the nature of disasters and implementing comprehensive response strategies. By addressing the identified gaps and leveraging the strengths of institutional policies, hospitals in Lusaka District can enhance their preparedness for emergency disease outbreaks.

6.3.2 Financial capability and Hospital Emergency Preparedness

Furthermore, the findings highlight financial capability as a crucial determinant of hospital preparedness for emergency disease outbreaks in Lusaka District. Financial resources are fundamental to the sustainability and effectiveness of healthcare systems, particularly in the context of emergency preparedness (Olu et al., 2018). The majority of respondents strongly agreed that financial allocation for emergency preparedness needs to be increased (Mean = 4.06, SD = 1.082). This sentiment aligns with Olu et al. (2018), who emphasize that well-financed health systems are resilient and better equipped to respond to disasters.

The relatively favourable rating for the availability of transport and logistics support (mean = 3.86, SD = 1.058) indicates that some logistical resources are in place. Effective logistics are vital for rapid response during emergencies, ensuring that supplies and personnel can be

mobilized quickly (McEntire, 2014). The presence of logistical support enhances the overall preparedness and responsiveness of hospitals (Jonathan et al., 2017).

Despite some positive indicators, significant challenges remain. Respondents largely disagreed that financial resources for emergencies are adequately allocated (mean = 1.98, SD = 1.078). This finding highlights substantial funding gaps, which can hinder the ability of hospitals to effectively manage emergency situations. The lack of adequate financial resources is a critical barrier to enhancing hospital preparedness and response capacity (WHO, 2020).

The rating for financial support from NGOs or well-wishers (mean = 3.40, SD = 1.333) suggests that while some external support exists, it is not sufficient. External financial support can play a significant role in bridging funding gaps and enhancing the preparedness of hospitals (Tabish, 2019). However, reliance on inconsistent external funding can also pose challenges to sustainable preparedness efforts (Olu et al., 2018).

The low rating for staff training logistics and fees (mean = 2.14, SD = 1.143) reflects insufficient investment in capacity building. Training is a critical component of emergency preparedness, as it equips healthcare workers with the knowledge and skills needed to respond effectively to emergencies (Kim, 2014). Inadequate investment in training can leave staff unprepared and undermine the overall preparedness of hospitals (Perry, 2013).

The rating for delays in emergency responses due to inadequate financial allocation (mean = 2.64, SD = 1.303) further highlights the financial challenges faced by hospitals. Delays in emergency response can have severe consequences, including increased morbidity and mortality (WHO, 2017). Addressing financial constraints is essential to ensuring timely and effective response during emergencies (Jonathan et al., 2017).

The study's theoretical framework builds on the Emergency Management Theory, which emphasizes the importance of understanding the nature of disasters and implementing comprehensive response strategies (Dynes, 2015). Financial capability is a crucial aspect of this framework, as it directly impacts the ability of hospitals to prepare for, respond to, and recover from emergencies (Jonathan et al., 2017). The theory also highlights the need for compliance with disaster management policies, mitigation strategies, and preparedness measures (Jonathan et al., 2017).

The findings underscore the urgent need for increased and timely financial investment to enhance hospital preparedness and response capacity during emergency disease outbreaks in Zambia. Financial resources are a key determinant of hospital emergency preparedness, as they enable the procurement of necessary supplies, infrastructure, and training (Olu et al., 2018). The study highlights the importance of sustainable financing for preparedness and response activities, as advocated by WHO (2020).

Overall, while some progress has been made in terms of logistical support and the existence of certain policies, significant gaps in funding allocation and investment in training remain. These gaps must be addressed to ensure that hospitals in Lusaka District are adequately prepared to handle emergency disease outbreaks. Strengthening financial capability is essential for building a resilient healthcare system that can effectively respond to emergencies and protect public health (Tabish, 2019).

By addressing the identified financial challenges and leveraging the strengths of existing support systems, hospitals in Lusaka District can enhance their preparedness for emergency disease outbreaks. This will involve continuous efforts to secure adequate funding, improve logistical support, and invest in staff training to build a robust and capable healthcare system (WHO, 2020). Implementing these measures will ensure that hospitals are better equipped to manage emergencies, reduce vulnerabilities, and safeguard the health and well-being of the population (Jonathan et al., 2017).

The findings highlight financial capability as a critical determinant of hospital preparedness for emergency disease outbreaks in Lusaka District. Financial resources are fundamental to the sustainability and effectiveness of healthcare systems, particularly in the context of emergency preparedness (Olu et al., 2018). The majority of respondents strongly agreed that financial allocation for emergency preparedness needs to be increased (mean = 4.06, SD = 1.082). This sentiment aligns with Olu et al. (2018), who emphasize that well-financed health systems are resilient and better equipped to respond to disasters.

The relatively favorable rating for the availability of transport and logistics support for emergencies (mean = 3.86, SD = 1.058) indicates that some logistical resources are in place. Effective logistics are vital for rapid response during emergencies, ensuring that supplies and personnel can be mobilized quickly (McEntire, 2014). The presence of logistical support enhances the overall preparedness and responsiveness of hospitals (Jonathan et al., 2017).

Despite some positive indicators, significant challenges remain. Respondents largely disagreed that financial resources for emergencies are adequately allocated (mean = 1.98, SD = 1.078), highlighting substantial funding gaps. This finding aligns with WHO's assertion that sustainable financing is crucial for preparedness and response activities (Board, World, & Assembly, 2020). The lack of adequate financial resources is a critical barrier to enhancing hospital preparedness and response capacity (WHO, 2020).

The rating for financial support from NGOs or well-wishers (mean = 3.40, SD = 1.333) suggests that external support exists but is not sufficient. External financial support can play a significant role in bridging funding gaps and enhancing hospital preparedness (Tabish, 2019). However, reliance on inconsistent external funding can pose challenges to sustainable preparedness efforts (Olu et al., 2018).

Training is a critical component of emergency preparedness as it equips healthcare workers with the knowledge and skills needed to respond effectively to emergencies (Kim, 2014). The low rating for staff training logistics and fees (mean = 2.14, SD = 1.143) reflects insufficient investment in capacity building. Inadequate investment in training leaves staff unprepared, undermining the overall preparedness of hospitals (Perry, 2013).

The rating for delays in emergency responses due to inadequate financial allocation (mean = 2.64, SD = 1.303) further highlights the financial challenges faced by hospitals. Delays in emergency response can have severe consequences, including increased morbidity and mortality rates (WHO, 2017). Addressing financial constraints is essential to ensure a timely and effective response during emergencies (Jonathan et al., 2017). Financial resources play a crucial role in enabling hospitals to stockpile necessary drugs, acquire medical tools, and perform experiments to understand biological hazards (Simou & Koutsogeorgou, 2014). A strong and stable financial capability allows hospitals to acquire personal protective equipment (PPE), ventilators, and other essential materials, enhancing their preparedness for emergencies (Turer et al., 2020).

The theoretical framework for this study is built on the Emergency Management Theory, emphasizing the importance of understanding the nature of disasters and implementing comprehensive response strategies (Dynes, 2015). Financial capability directly impacts hospitals' ability to prepare for, respond to, and recover from emergencies (Jonathan et al., 2017). Compliance with disaster management policies, mitigation strategies, and

preparedness measures are crucial components of effective emergency management (Jonathan et al., 2017).

Overall, the findings highlight the critical role of financial capability in hospital emergency preparedness. Adequate and timely financial resources are essential for ensuring that hospitals can effectively prepare for and respond to emergency disease outbreaks. Financial sustainability and stability allow hospitals to maintain necessary supplies, infrastructure, and trained personnel, which are vital during emergencies (Khan et al., 2018). Hospitals with strong financial capabilities are better prepared to handle emergencies and protect public health (Chen et al., 2017).

By addressing the identified financial challenges and leveraging the strengths of existing support systems, hospitals in Lusaka District can enhance their preparedness for emergency disease outbreaks. This involves continuous efforts to secure adequate funding, improve logistical support, and invest in staff training to build a robust and capable healthcare system (WHO, 2020). Implementing these measures will ensure that hospitals are better equipped to manage emergencies, reduce vulnerabilities, and safeguard the health and well-being of the population (Jonathan et al., 2017).

Financial resources are a key determinant of hospital emergency preparedness. Essential components of financial capability for emergency preparedness include funding allocation, training, logistics support, and external financial aid. Ensuring sustainable financing and addressing existing funding gaps are crucial to enhance hospital preparedness and response capacity in Lusaka District (WHO, 2020). By strengthening financial capability, hospitals can better prepare for and respond to emergency disease outbreaks, ultimately improving healthcare outcomes and protecting public health (Olu et al., 2018).

6.3.3 Human resource capacity and Hospital Emergency Preparedness

The research findings on human resource capacity as a determinant of hospital emergency preparedness in Lusaka District underscore notable gaps that align with existing literature and theoretical frameworks. This discussion will explore these findings, emphasizing the need for improved human resource capacity to enhance emergency preparedness, and incorporate relevant literature and theories.

A significant portion of respondents (mean = 4.44, SD = 0.803) indicated the presence of a dedicated emergency response team in their hospitals, highlighting the critical role of healthcare professionals in daily operations and emergency readiness. This aligns with the World Health Organization (WHO, 2012), which underscores the essential services healthcare professionals provide in maintaining community health through a primary healthcare approach. Studies by Turer et al. (2020) and Hutchison et al. (2011) further confirm the pivotal role of healthcare professionals in both routine operations and emergency scenarios.

Notably, the moderate agreement regarding staff awareness of their roles during an emergency outbreak (mean = 4.07, SD = 1.032) suggests a need for more comprehensive training programs. This supports Farley et al. (2017) and Koinis et al. (2019), who found that hospitals with higher numbers of trained professionals are better equipped to handle emergencies. Sheikhbardsiri et al. (2017) emphasize the importance of emergency preparedness training to ensure that hospital staff can effectively manage increasing service demands during emergencies.

The significant deficiency in staff knowledge on emergency preparedness (mean = 2.28, SD = 1.158) highlights a critical area for improvement. This discrepancy underscores the need for regular and comprehensive training, as emphasized by the National Institute of Disaster Management (NIDM, 2013), which advocates for creating an enabling environment with appropriate policy and legal frameworks, continuous personnel development, and strengthening managerial systems.

Hospital management's moderate efforts to organize training sessions in emergency preparedness (mean = 3.44, SD = 1.188) suggest that while initiatives exist, there is substantial room for improvement in their consistency and effectiveness. Walsh et al. (2012) argue that documented efforts have often been limited to specific specialties or targeted professionals, resulting in a lack of uniformity across professions in education, training, and best practices within public health.

The low confidence among staff in their ability to train others (mean = 2.00, SD = 1.320) indicates a critical training gap that needs to be addressed. This is consistent with the Emergency Management Theory proposed by the Disaster Research Center (Dynes, 2015), which posits that knowledge and understanding of disaster policies are as crucial as skills and

tactics in effective emergency management. Jonathan et al. (2017) also highlights the importance of compliance with disaster management policies, mitigation strategies, and preparedness in categorizing distinct emergency management functions.

Overall, the findings indicate that human resource capacity does not significantly impact hospital emergency preparedness in the current model, as evidenced by the negative beta value (-0.113, p = .274). This suggests that other factors might be influencing emergency preparedness, and improving human resource capacity alone may not be sufficient.

In conclusion, the research highlights significant gaps in human resource capacity and hospital emergency preparedness in Lusaka District. The findings emphasize the urgent need for comprehensive training programs, better organization of emergency response teams, and enhanced capacity-building initiatives to strengthen emergency preparedness. By addressing these gaps, it is possible to ensure a well-prepared and knowledgeable workforce capable of managing emergency disease outbreaks effectively. Creating an enabling environment for continuous learning and investing in human resource development will significantly enhance hospital emergency preparedness and resilience in Lusaka District. This aligns with theories and literature emphasizing the importance of training, capacity building, and a comprehensive understanding of disaster management in improving emergency preparedness.

6.3.4 Infrastructural Capacity and Commodities availability and Hospital Emergency Preparedness

The findings underscore the significance of infrastructural capacity and commodities availability as crucial determinants of hospital emergency preparedness in Lusaka District. The analysis presents a mixed picture of preparedness levels across various parameters, highlighting both strengths and areas needing improvement.

The system for rapid procurement of necessary commodities during emergencies received a relatively high rating (mean = 3.49, SD = 1.337), indicating effective processes for accessing critical supplies. This aligns with Tang (2015), who emphasized that preparedness is futile without the availability of resources to support response activities. Hospitals must have efficient logistics planning to ensure timely access to essential medical materials, personnel, and equipment (Özdamar, 2004; Kiongo, 2015).

The adequacy of the emergency tray, equipped with necessary tools for emergency management, was also rated high (mean = 3.46, SD = 1.345), reflecting readiness in this aspect. The accessibility of the emergency tray to all staff was rated moderately high (mean = 3.23, SD = 1.395), indicating that essential emergency equipment is reasonably accessible. Such preparedness dimensions, including the classification, storage, and distribution of resources, are vital for effective emergency response (Özdamar, 2004).

However, significant gaps were noted in the availability of designated areas for emergencies, including an emergency department unit, infectious disease department, and inpatient units, which showed moderate adequacy (mean = 2.66, SD = 1.363). The adequacy of general commodity supply scored low (mean = 2.07, SD = 1.043), with the majority of respondents disagreeing those hospitals have sufficient supplies for emergency situations. Ventola (2014) highlights that the abundance of resources at the disposal of a hospital determines its preparedness for emergency crises.

The availability of infrastructural capacity, including triaging systems, isolation facilities, and bed capacity, was rated poorly (mean = 2.14, SD = 1.219), suggesting notable deficiencies in physical infrastructure necessary to manage emergencies effectively. This finding resonates with McEntire (2014), who identified significant interrelated concerns in hazard and vulnerability analysis for disaster emergency management, including mass fatality management, warning, evacuation, and media relations.

The importance of commodities in emergency medical situations is well-documented. Özdamar (2004) and Kiongo (2019) both emphasize that commodities are central to emergency medical scenarios and significantly impact the scope of services offered, as well as the behavior of healthcare providers and facilities. Hospitals need to ensure that they have adequate supplies of vaccines, antitoxins, and other critical resources to handle emergencies (Ventola, 2018).

The theoretical framework for this discussion is grounded in the Emergency Management Theory proposed by the Disaster Research Center (Dynes, 2015). This theory suggests that skills and tactics alone are not sufficient for effective emergency management. Understanding the nature of disasters, reaction strategies, and compliance with disaster management policies play crucial roles in categorizing emergency management functions. Compliance with these

policies, along with implementing mitigation strategies, preparedness, response, and recovery efforts, is vital for effective emergency management (Jonathan et al., 2017).

The availability of resources, including staff, buildings, equipment, information, and medications, is essential for hospital preparedness (Ventola, 2014). The ability to rapidly procure and distribute necessary commodities during emergencies is a critical determinant of how prepared a healthcare facility can be (Tang, 2015). Hospitals with strong financial capacity and the ability to produce large amounts of antibiotics or vaccines independently are better positioned to manage emergency situations (Ventola, 2014).

Overall, the findings highlight the need for significant improvements in commodity supplies, infrastructure, and the equipping of emergency units to enhance hospital preparedness for disease outbreaks in Lusaka District. Addressing the identified gaps in infrastructural capacity and commodities availability is crucial for strengthening the overall readiness and response capacity of hospitals. By leveraging the theoretical framework of Emergency Management Theory and ensuring compliance with disaster management policies, hospitals can improve their preparedness for emergencies (Dynes, 2015).

Implementing comprehensive logistics planning, enhancing resource availability, and ensuring that staff are well-trained and equipped with necessary tools are critical steps towards achieving effective hospital emergency preparedness (Özdamar, 2004; Jonathan et al., 2017). By addressing these areas, hospitals in Lusaka District can enhance their readiness for emergency disease outbreaks and ensure the well-being of their communities.

6.5 Challenges of Hospital Emergency Preparedness

The study findings align with those of Otoo, Chen, and Kwaku Duah (2022), who identified the challenges of hospital emergency preparedness as inadequate staff, insufficient management, lack of education and training drills, insufficient financing, lack of necessary healthcare facilities and equipment, poor surveillance systems, lack of a laid down plan or strategy for emergencies, and inadequate resource capability.

It was discovered that inadequate staffing constitutes a significant challenge to hospital emergency preparedness (mean = 4.91, SD = 1.956). These findings align with Farley et al. (2017) who revealed insufficient staffing in hospitals undermines crucial day-to-day tasks, curbing their capability to maintain robust healthcare systems and manage emergencies

effectively. Similarly, the study indicates improper management is another key challenge (mean = 4.91, SD = 1.956). This confirms Baack & Alfred's (2013) observation that management issues hinder hospital preparedness to address emergencies effectively.

Additionally, the study identified the lack of education and training drills as a critical challenge (mean = 4.87, SD = 1.823). This result echoes Veenema's (2018) conclusions that inadequate training and education for hospital staff create obstacles for effective healthcare preparedness. This issue is especially prevalent in financially constrained public sectors. The study further highlights insufficient financing (mean = 4.87, SD = 1.823) as a considerable barrier to emergency preparedness. This corroborates Khan et al. (2018) and Bullock et al. (2017) findings, suggesting that limited budgets, especially in public healthcare sectors, pose significant challenges.

The study also points out the absence of crucial healthcare facilities and equipment as a major challenge (mean = 4.64, SD = 1.745). This aligns with observations made by Chen et al. (2017), and Turer et al. (2020), that most hospitals, especially in developing countries, require essential infrastructure and tools for their operations. Furthermore, poor surveillance systems (mean = 4.60, SD = 1.731), have been identified as another critical barrier to emergency preparedness. These findings support Bullock et al.'s (2017) observations that lack of effective systems such as surveillance monitors and detection devices hamper timely response and control of biological hazards.

Inadequate resource capability also presents significant challenges (mean = 4.45, SD = 1.512) to hospital emergency preparedness. This result corresponds with Sheikhbardsiri et al. (2017), who highlighted the constrained capacities in terms of beds, health personnel, and equipment pose obstacles to emergency readiness, particularly in the public sector where physical space is often limited. Finally, the study points to the lack of established plans or strategies for emergencies as a significant hurdle (mean = 4.45, SD = 1.512). This aligns with Canton's (2019) view that without predefined plans or strategies, hospital administrators face difficulties implementing comprehensive preparedness planning.

These findings can be analyzed through the lens of the Emergency Management Theory by the Disaster Research Center (Dynes, 2015). This theory posits that having skills and tactics is not enough for effective professional emergency management. Understanding the nature of disasters and the appropriate reactions are crucial. Jonathan et al. (2017), emphasize that

adherence to disaster management policies, mitigation strategies, and preparedness and recovery measures play vital roles in defining emergency management functions. This theory underscores the need for comprehensive hazard and vulnerability analysis, considering several interrelated factors such as mass fatality management, warning systems, evacuation plans, and media relations, as highlighted by McEntire (2014).

In conclusion, the study's findings reinforce the multifaceted nature of challenges faced by hospitals in preparing for emergencies. Inadequate staffing, insufficient management, lack of education and training, insufficient financial resources, absence of essential facilities and equipment, poor surveillance systems, and inadequate resource capabilities are significant barriers. Addressing these challenges requires adopting a comprehensive approach informed by emergency management theories and existing literature. Hospitals must focus on enhancing staffing, management strategies, education and training programs, financial support, facility and equipment availability, and surveillance systems to improve emergency readiness and resilience.

6.6 Measures to improve Hospital Emergency Preparedness

The study revealed various measures to improve hospital emergency preparedness, which align with existing literature and theories. Koinis et al. (2015) emphasize that increasing staff or health professionals enhances emergency preparedness by ensuring adequate personnel for emergency situations. This is supported by our findings, where the majority of respondents strongly agreed on this measure (mean= 4.91, SD= 1.956).

Adequate education and training drills were also highlighted as crucial for preparedness (mean= 4.87, SD= 1.823), aligning with Khan et al.'s (2018) study, which emphasizes the importance of training for healthcare staff in emergency scenarios. Effective strategy or plan execution was another key measure identified (mean= 4.85, SD= 1.819), supporting Veenema's (2018) observation that strategic planning is essential for effective emergency responses.

Moreover, the availability of crucial healthcare facilities and equipment was deemed vital (mean= 4.85, SD= 1.819), consistent with Rose et al.'s (2017) findings that highlight the importance of resource availability in preparedness. Adequate finance was also noted as a significant factor (mean= 4.85, SD= 1.819), in line with Turer et al.'s (2020) study, which

suggests that well-funded hospitals can acquire necessary materials and equipment for emergencies.

In addition, adequate resource capability (mean= 4.81, SD= 1.803) was supported by Rose et al.'s (2017) findings, emphasizing the need for resource generation to ensure rapid response capabilities. This aligns with Kwon et al.'s (2016) observation that increased resources are crucial for managing disasters and pandemics.

Proper management was also highlighted (mean= 4.81, SD= 1.803), supporting Mulyasari et al. (2013), who stress the importance of strategic preparation and effective change management during crises. Lastly, effective surveillance systems were noted as vital for preparedness (mean= 4.64, SD= 1.745), aligning with Whitelaw et al. (2020), who emphasize the role of surveillance in controlling biological hazards.

These findings can be analyzed through the lens of the Emergency Management Theory by the Disaster Research Center (Dynes, 2015). The theory posits that understanding the nature of disasters and implementing skills and tactics are crucial for professional emergency management. Jonathan et al. (2017) reiterate that compliance with disaster management policies, mitigation strategies, and preparedness to respond and recover are essential. This theory aligns with our study's emphasis on the importance of increasing healthcare capacity, resource availability, proper management, and strategic planning to enhance hospital emergency preparedness.

In conclusion, our study suggests that a multifaceted approach, incorporating increased staffing, education, strategic planning, resource availability, financial support, proper management, and effective surveillance, is pivotal for improving hospital emergency preparedness. These measures, supported by existing literature and theories, underscore the complexity and importance of comprehensive preparedness strategies.

6.7 Chapter Conclusion

While hospital emergency preparedness is essential to public health, it's still an under-researched area. Given the complexity, this is not surprising. The core concepts behind hospital emergency preparedness are not well understood, and integrating determinant factors into this preparedness sparks broader discussions about its definitions and scope.

This study uncovered that institutional policies, financial resources, human resource capacity, and the availability of infrastructure and commodities significantly enhance emergency preparedness for disease outbreaks in Lusaka District. Government oversight, national policies, regulations, and community standards all contribute to a hospital's disaster readiness and response capabilities, independent of the hospital's affiliation. However, proper financing and having experience in handling emergencies markedly improve a hospital's preparedness and response efficiency.

Since it's difficult to predict which hospitals will be called upon during disaster response, it's vital that all hospitals are ready to handle disaster casualties. Preparing adequately for emergencies ensures that any hospital can effectively contribute to managing public health crises.

CHAPTER SEVEN

CONCLUSION AND RECOMMENDATION

7.1 Introduction

This chapter makes a final say on this research, meaning that this chapter presents the final analysis for this research. That is because this chapter seeks to summarise all the findings such that it would be easier for the readers of this research to gain a better understanding of this research. Therefore, this chapter makes conclusions which are based on the objectives of this research.

7.2 Conclusion of Research Findings

The purpose of this study was to assess the determinants for hospital preparedness for emergency disease outbreaks in Lusaka District, Zambia, focusing on Matero Level 1 Hospital and Chipata First-Level Hospital. The specific objectives are as follows:

1. To determine the level of emergency preparedness within hospitals in Lusaka District.
2. To establish the determinant factors that influence hospital emergency preparedness.
3. To identify the challenges faced by hospitals in achieving optimal emergency preparedness.
4. To propose measures to improve hospital emergency preparedness based on the identified challenges and determinants.

Following the research findings, the conclusions are made based on the objectives that were set by the researcher to be achieved at the end of the study. Thus, concludes as follows: on the level of preparedness the findings reveal a mixed state of hospital disaster preparedness in Lusaka District. The study reveals significant variations in hospital disaster preparedness in Lusaka District. While 23% of hospitals report high preparedness, 66.7% have only moderate readiness, and 10.3% show low preparedness. Although some progress has been made, continuous improvement is essential, as highlighted by the moderate readiness levels and significant gaps in emergency preparedness plans, simulation exercises, communication protocols, infrastructure, and resource availability. Hospitals must prioritize developing comprehensive Emergency Preparedness and Response Plans (EPRPs), conducting regular drills, and enhancing communication. Investments in infrastructure and resources are critical

to achieve higher preparedness levels. The findings underscore that achieving disaster preparedness is an ongoing process requiring constant attention and improvement. Improved preparedness is crucial to ensure efficient and effective responses to emergency disease outbreaks, ultimately safeguarding the well-being of communities.

The study examines the determinants factors influencing healthcare emergency preparedness. On institutional policies as a determinant factor influencing healthcare emergency preparedness, the study highlights the crucial role of institutional policies in enhancing hospital emergency preparedness. While most respondents acknowledged the presence of emergency policies, indicating a foundational level of preparedness (mean = 3.75, SD = 1.183), the low participation in policy formulation (mean = 1.72, SD = 0.885) reveals a significant gap. Employee involvement in creating policies is vital for effectively enhancing preparedness.

A well-defined chain of command and established emergency operations committee were also noted, emphasizing structured frameworks for effective disaster response. However, the need for continuous improvement in creating new guidelines, emergency plans, and lobbying for preparedness was evident. The study's theoretical framework, rooted in the Emergency Management Theory, supports the importance of understanding disasters and implementing comprehensive response strategies. Institutional policies provide a structured framework for actions essential to hospital readiness.

In conclusion, to enhance emergency preparedness, hospitals in Lusaka District must focus on engaging staff in policy formulation, continuously developing policies, and addressing identified gaps. Strengthening institutional policies and leveraging their strengths will significantly improve emergency preparedness.

Financial capability is another determinant factor influencing healthcare emergency preparedness. The findings of this study underscore the significant influence of financial capability on healthcare emergency preparedness in Lusaka District. Adequate financial resources are critical for ensuring the sustainability and effectiveness of healthcare systems, particularly in managing emergency disease outbreaks. While some progress has been observed in logistical support and external funding, substantial gaps remain in financial allocation, staff training, and sustainable financing mechanisms. These gaps undermine

hospitals' ability to respond effectively to emergencies, leaving healthcare workers unprepared and emergency responses delayed.

The study emphasizes that financial investments are essential for acquiring necessary supplies, training personnel, and improving logistical infrastructure, all of which enhance the resilience and preparedness of hospitals. Addressing these financial challenges requires a collaborative approach involving government agencies, NGOs, and other stakeholders to ensure consistent and adequate funding. Strengthening financial capability will enable hospitals to mitigate vulnerabilities, respond promptly during emergencies, and safeguard public health. Ultimately, building a robust healthcare system with sustainable financing is paramount for improving emergency preparedness and achieving better health outcomes in Lusaka District.

On Human Resource capacity, the findings indicate that human resource capacity plays a critical role in hospital emergency preparedness, yet significant gaps remain. The presence of dedicated emergency response teams highlights the importance of healthcare professionals, while moderate agreement on staff role awareness suggests the need for comprehensive training programs. A considerable deficiency in staff knowledge points to an urgent requirement for regular and extensive training initiatives. The moderate efforts of hospital management in organizing training sessions, alongside low confidence in staff's ability to train others, underscore areas needing improvement. Theoretical frameworks emphasize the necessity for robust training and capacity-building initiatives to enhance preparedness. By addressing these gaps, hospitals in Lusaka District can ensure a well-prepared workforce capable of managing emergency disease outbreaks effectively. Continuous learning and human resource development are paramount to enhancing hospital emergency preparedness and resilience. This aligns with literature stressing training and capacity building as pivotal to improving emergency preparedness.

Infrastructural capacity and commodities availability is another determinant factor in a hospital institute's preparedness. The findings underscore the importance of infrastructural capacity and commodities availability in hospital emergency preparedness in Lusaka District. While certain areas, such as rapid procurement systems and emergency trays, received positive ratings, significant gaps remain in the availability of designated emergency areas and general commodities, including triaging systems and isolation facilities. The study highlights

the need for efficient logistics planning, adequate supply of essential medical materials, and well-equipped emergency units to enhance readiness.

Theoretical insights, especially from the Emergency Management Theory, emphasize that both resources and strategic planning are crucial for effective disaster management. To improve preparedness, hospitals must focus on addressing these infrastructural and commodity gaps, ensuring continuous development, and enforcing compliance with disaster management policies. Enhancing resource availability and training staff are critical steps towards achieving robust healthcare emergency preparedness, thereby ensuring the safety and well-being of the communities they serve.

Furthermore, the findings provide a comprehensive snapshot of hospital emergency preparedness in Lusaka District, identifying both strengths and areas for improvement. The presence of well-structured Emergency Preparedness and Response Plans highlights a strong foundation in planning. However, deficiencies in simulation drills and training practices indicate a need for consistent, hands-on preparedness. Effective communication is positively noted, yet gaps in resource allocation and the availability of dedicated emergency units underscore the need for greater investment. To bolster emergency readiness, hospitals must focus on continuous training, efficient resource management, and enhanced communication strategies. Addressing these gaps will ensure a more resilient healthcare system capable of effectively managing emergency disease outbreaks.

7.3 Recommendations

7.3.1 Recommendation for Improvement

Given that the study has established a significant influence of the determinants of hospital preparedness for emergency disease outbreaks in Lusaka District, Zambia, focusing on Matero Level 1 Hospital and Chipata First-Level Hospital. The following recommendations are made:

- Firstly, healthcare workers should undergo regular professional development through continuous training programs, workshops, and specialized courses. These initiatives will help equip staff with essential skills to handle emergencies effectively, thereby minimizing fatalities, reducing unnecessary patient referrals, and optimizing the use of resources and time.

- Efforts should also be made to establish a reliable drug supply system by partnering with dependable suppliers to ensure a consistent and adequate supply of medications during emergencies.
- Hospitals should allocate sufficient resources for the procurement of advanced medical equipment, such as modern alert systems and diagnostic tools, which are critical for efficient emergency response.
- Additionally, clear protocols for accessing emergency supplies should be developed, and hospital staff should be made fully aware of these procedures.
- Future planning should prioritize the development of effective recovery mechanisms, the establishment of a transparent feedback system, and measures to ensure accountability in emergency management.
- Staff involvement in the development of emergency policies, plans, and guidelines is essential to ensure smooth implementation.
- Hospitals should also conduct regular safety inspections, emergency drills, and simulations at least quarterly to improve readiness for future emergencies.

7.3.2 Recommendations for Further Research

- This study indicates that health workers did not fully perceive their roles in the emergency preparedness of health facilities. Future research should explore the reasons behind this disconnect.
- The study was conducted at Level 1 hospitals, it is recommended to undertake a similar study in higher-level hospitals to gain a comprehensive understanding.
- A comparative study should be conducted to examine the determinants of hospital emergency preparedness among health workers in public versus private hospitals.

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APPENDICES

Appendix II: Questionnaire

SECTION A: DEMOGRAPHIC CHARACTERISTICS

Please tick (✓) the appropriate box for each question.

1. Facility Level

☐ Matero Level 1

☐ Chipata First-Level

2. Gender

☐ Male

☐ Female

3. Age Group

☐ 20-29 years

☐ 30-39 years

☐ 40-49 years

☐ 50 years and above

4. Educational Qualification

☐ Certificate/Diploma

☐ Undergraduate Degree

☐ Master's Degree

☐ PhD

5. Job Category

☐ Nurse

☐ Doctor

☐ Midwife

☐ Administrator

☐ Lab Technician

☐ Pharmacist

6. Number of Years Worked

☐ Less than 2 years

☐ 2-5 years

☐ 6-10 years

☐ 11-15 years

☐ 16-19 years

☐ 20 years and above

SECTION B: LEVEL OF EMERGENCY PREPAREDNESS

5. **Preparedness for emergencies based on the WHO standards?**

   ☐ Low (No additional supplies or preparations)

   ☐ Moderate (Some additional equipment, supplies, and personnel)

   ☐ High (Comprehensive preparedness with essential resources and plans)

6. **Does your hospital have an Emergency Preparedness and Response Plan (EPRP)?**

   ☐ Yes

   ☐ No

7. **Does your hospital conduct simulation or skill drills for emergency preparedness?**

   ☐ Yes, regularly

   ☐ Occasionally

   ☐ Never

8. **How effective is communication during emergencies in your hospital?**

   ☐ Very effective

   ☐ Moderately effective

   ☐ Not effective

9. **Does your hospital have a dedicated emergency department unit, infectious disease department, and inpatient units?**

   ☐ Yes

   ☐ No

10. **Does your hospital have sufficient staff to handle emergency disease outbreaks?**

    ☐ Yes

    ☐ No

11. **Are there structures/rooms for admitting and treating communicable disease patients?**

    ☐ Yes

    ☐ No

12. **Does your hospital maintain a stock of emergency medical supplies, including a 72-hour emergency kit?**

    ☐ Yes

    ☐ No

13. **Is there an information center specifically for emergencies in your hospital?**

    ☐ Yes

    ☐ No

14. **Does your hospital have a designated team for managing emergency outbreaks?**

    ☐ Yes

    ☐ No

SECTION C: DETERMINANTS OF HOSPITAL EMERGENCY PREPAREDNESS

Institutional Policies on Emergency Preparedness

Instruction: Please indicate your level of agreement with the statements below by ticking (✓) the appropriate box.

Statement	Strongly	Disagree	Neutral	Agree	Strongly

	Disagree (1)	(2)	(3)	(4)	Agree (5)
Our hospital has comprehensive policies in place for emergency preparedness.	☐	☐	☐	☐	☐
I participated in emergency policy formulation.	☐	☐	☐	☐	☐
The hospital has a clear chain of command system in case of emergencies.	☐	☐	☐	☐	☐
The hospital has an emergency operations committee.	☐	☐	☐	☐	☐
There are procedures for expanding usable space, including the availability of extra beds.	☐	☐	☐	☐	☐
Regular safety inspections are conducted by the appropriate authority.	☐	☐	☐	☐	☐
I have participated in creating new guidelines, emergency plans, and lobbying for preparedness.	☐	☐	☐	☐	☐

Financial Capability on Emergency Preparedness

Instruction: Please indicate your level of agreement with the statements below by ticking (✓) the appropriate box.

Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Our hospital has adequate funding allocated for emergency preparedness.	☐	☐	☐	☐	☐
Our hospital receives external funding or grants for emergency preparedness.	☐	☐	☐	☐	☐
The financial allocation for emergencies preparedness should be increased.	☐	☐	☐	☐	☐
The hospital caters for training logistics for staff/training fees.	☐	☐	☐	☐	☐
The facility has transport and logistics support in case of an emergency.	☐	☐	☐	☐	☐
There are no delays to emergency response due to financial allocation.	☐	☐	☐	☐	☐

Human Resource Capacity on Emergency Preparedness

Instruction: Please indicate your level of agreement with the statements below by ticking (✓) the appropriate box.

Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
All hospital staff are well-equipped with knowledge on emergency preparedness.	☐	☐	☐	☐	☐
The hospital management organizes training in emergency preparedness among its staff.	☐	☐	☐	☐	☐
Our hospital has sufficient staff to handle emergency disease outbreaks.	☐	☐	☐	☐	☐
Staff are well-informed about their roles during an emergency outbreak.	☐	☐	☐	☐	☐
There is a dedicated emergency response team in our hospital.	☐	☐	☐	☐	☐

Infrastructural Capacity and Commodity Availability

Instruction: Please indicate your level of agreement with the statements below by ticking (✓) the appropriate box.

Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
There are sufficient medical supplies and equipment for emergency outbreaks.	☐	☐	☐	☐	☐
Our hospital has adequate infrastructure to support emergency situations.	☐	☐	☐	☐	☐
There is a robust system for rapid procurement of necessary commodities during emergencies.	☐	☐	☐	☐	☐
There are designated areas for emergencies, including an emergency department unit.	☐	☐	☐	☐	☐
The emergency tray is well-equipped with various equipment for the management of emergencies.	☐	☐	☐	☐	☐

The emergency tray is accessible by all staff.	☐	☐	☐	☐	☐

SECTION D: CHALLENGES OF HOSPITAL EMERGENCY PREPAREDNESS

Instruction: Please indicate your level of agreement with the statements below by ticking (✓) the appropriate box.

Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Inadequate staff or health professionals.	☐	☐	☐	☐	☐
Lack of education and training drills.	☐	☐	☐	☐	☐
Inadequate resource capability.	☐	☐	☐	☐	☐
Improper management.	☐	☐	☐	☐	☐
Inadequate finances.	☐	☐	☐	☐	☐
Lack of crucial healthcare facilities and equipment.	☐	☐	☐	☐	☐
Poor surveillance systems.	☐	☐	☐	☐	☐
Lack of laid-down plans or strategies for emergencies.	☐	☐	☐	☐	☐

SECTION E: MEASURES TO IMPROVE HOSPITAL EMERGENCY PREPAREDNESS

Instruction: Please indicate your level of agreement with the statements below by ticking (✓) the appropriate box.

Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Increasing staff or health professionals.	☐	☐	☐	☐	☐
Adequate education and training drills.	☐	☐	☐	☐	☐
Adequate resource capability.	☐	☐	☐	☐	☐
Proper management.	☐	☐	☐	☐	☐
Adequate finances.	☐	☐	☐	☐	☐
Availability of crucial healthcare facilities and equipment.	☐	☐	☐	☐	☐

Effective surveillance systems.	☐	☐	☐	☐	☐
Effective and efficient strategy or plan execution.	☐	☐	☐	☐	☐

Thank you for corporation!