ASSESSMENT OF HEALTH FACILITIES' LEVEL OF PREPAREDENESS IN HANDLING STUDENTS' MEDICAL EMERGENCIES; A STUDY OF PUBLIC UNIVERSITIES IN, CENTRAL KENYA

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DECLARATION AND APPROVAL

Declaration

This thesis is my original work and has never been presented for any academic award in any institution.

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Approval

This thesis is being submitted for examination with our approval as university supervisors.

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DEDICATION

I dedicate this thesis to my family members and mentors for their encouragement throughout the period of doing my research.

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ABSTRACT

A medical emergency is a sudden injury or serious illness that if not treated right away could cause death or serious harm to the patient. Many factors can cause or lead to an emergency, including an accident, a medical event, trauma, a natural disaster, or an act of violence. These emergencies are likely to happen in learning institution just as they can happen in other places. The purpose of this study was to assess the university's health facility level of preparedness in handling students' medical emergencies among public universities in Central Kenya. The study was guided by the following objectives; to assess the types of medical emergencies encountered in health facilities, to evaluate the healthcare management factors on the medical emergency preparedness, determine level of knowledge on medical emergency preparedness among students and to explore the influence of level of medical emergency preparedness in handling emergencies in health facilities of public universities in Central Kenya. The research employed descriptive cross-sectional research design. Simple random sampling technique was employed to select three universities from the seven public universities in Central Kenya. From the three sampled universities, stratified random sampling technique was employed to get a sample size arrived at by adopting Cochran (1963) formulae. Data collection was conducted by administering a questionnaire to the university students and an interview guide to the University top management and Key Health Facility Staff. Validity of the questionnaire was sort from the researcher's supervisor. Quantitative data was analyzed using mean, frequencies and percentages and presented in tables and pie chart while qualitative data was analyzed using thematic analysis. The findings of the research, conducted to assess the health facilities' level of preparedness in handling students' medical emergencies, reveal that 20.1% of the students, equivalent to 79 individuals, have experienced a medical emergency. In contrast, a significant majority of 79.1%, or 289 students, have not faced such situations. Medical emergencies are life threatening if handled after the lapse of the golden hour and may results in preventable health complications or death hence the study sought to assess the university's health facility level of preparedness in handling medical emergencies among public universities. In conclusion, the assessment of medical emergencies in public universities in Central Kenya reveals a range of encountered emergencies, underscoring the critical need for robust emergency preparedness in these institutions. Public universities should prioritize educating students on the content and procedures outlined in the emergency operation plans. This includes regular dissemination of information, training sessions, and workshops to ensure students are familiar with emergency response protocols and their roles during emergencies. Additionally, adequate staffing, regular training of key health facility staff and consistent inventory management is essential for enhancing the ability of university health facilities to manage medical emergencies efficiently thus improving the overall health care provision.

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LIST OF ABBREVIATIONS AND ACRONYMS

ACLS: Advanced Cardiac Life Support

AED: Automated External Defibrillator

BLS: Basic Life Support

CUE: Commission for University Education

DALYs Disability-Adjusted Life Years

DKA: Diabetic Keto Acidosis

DRM: Disaster Risk Management

DRR: Disaster Risk Reduction

DRS-ABC: Danger, Response, Send for help – Airway, Breathing,

CPR Cardio -Pulmonary Resuscitation

FAB: First Aid Boxes

FBAO: Foreign-Body Airway Obstruction

HCP: Health Care Provider

NEMIS: National Educational Management Information Systems

SCA: Sudden Cardiac Arrest

WHO: World Health Organization

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter focuses on the background information, statement of the problem, the purpose of the study, objectives of the study, research questions, justification of the study, scope of the study, limitations and delimitations of the study and finally the assumptions of the study.

1.1 Background to the study

A medical emergency refers to any acute illness or injury that poses an immediate risk to a person's life or long-term health, and it is critical that such conditions receive immediate attention and care. Emergency preparedness is therefore conceptualized as the comprehensive knowledge, skills, abilities, and actions required to prepare for and respond effectively to incidents such as chemical, biological, radiological, nuclear, or explosive events, as well as natural disasters and other crises (Canton, 2019). Planning for and responding to emergencies is an essential element of global health system resilience and risk management (WHO, 2018).

In the context of public universities, emergency preparedness is crucial in safeguarding student health. Various emergencies encountered in university health facilities include, but are not limited to: syncope (fainting), diabetic ketoacidosis (DKA), acute asthmatic attacks, poisoning, alcohol intoxication, seizures, choking, shock, open fractures, acute urinary retention, appendicitis, gastrointestinal perforation, peritonitis, bowel obstruction, head injury, burns, pancreatitis, gastrointestinal bleeding, perforated peptic ulcers, abortion complications, postpartum hemorrhage, and eclampsia (WHO, 2018; Ministry of Health Kenya, 2021). Effective management of these emergencies depends on the

availability of first aid boxes, resuscitation trays, essential medicines, and the promptness of care (WHO, 2019; Porsteinsson et al., 2021).

According to WHO's Health Systems Management pillars (Jamison et al., 2018), service delivery is the most critical for emergency preparedness. It emphasizes quality, accessibility, patient-centered care, safety, timeliness, and efficiency in service provision regardless of gender, ethnicity, or socioeconomic status (Mustafa et al., 2022). However, despite these international standards, emergency preparedness remains a weak link in many health systems, especially in developing countries. Globally, emergencies have caused substantial setbacks in development, with more than 70 to 80 million people added annually to those at risk (Peduzzi, 2019). For example, inadequate preparedness led to over 30,544 infections and 2,845 deaths during the Ebola outbreak in Guinea (World Disasters Report, 2016).

In Kenya, the situation in public universities mirrors these challenges. According to the Universities Standards and Guidelines (2014), institutions must maintain sanitary facilities that conform to national health and safety codes. However, many universities struggle to comply. Students are often forced to rely on informal food vendors due to inadequate catering services, exposing them to health risks (Hashim et al., 2021). The issue of student accommodation also worsens the risk. Many off-campus hostels fail to meet occupancy and health standards. These facilities are typically overcrowded, poorly ventilated, insecure, and structurally unsound (Nieftagodien, 2017; Dubey et al., 2022).

Additionally, most university health facilities are poorly equipped to handle emergencies. Either they lack ambulances, or the available ones do not have the necessary medical equipment. This severely limits timely patient transfers during emergencies (Broccoli et al., 2015). Referral systems between universities and nearby hospitals are also largely informal and ineffective. Many institutions lack formal Memoranda of Understanding

(MOUs) with referral hospitals, leading to bureaucratic delays in treatment and putting students at risk (Kenya, 2016; Kuye & Akinwale, 2021). These delays are often compounded by financial barriers, as hospitals demand payment before initiating care, thereby jeopardizing the "golden hour" needed to save lives (Omar, 2021).

Medical insurance coverage is another gap. While EduAfya was introduced in 2017 to provide comprehensive insurance for public secondary school students (Brief, 2018), no such scheme currently exists for university students. In the absence of insurance, students are forced to bear the cost of emergency care and referrals.

Knowledge and skills among university medical staff in handling emergencies also remain inadequate. Non-medical staff typically refrain from assisting during emergencies due to fear of legal consequences, which further delays intervention (African Journal of Emergency Medicine, 2017). Compounding these issues is community hostility toward students. Surrounding communities often view university students as disruptive due to cultural and behavioral differences, which can delay or discourage emergency response efforts from the public (Larkin, 2014).

In light of these issues—ranging from infrastructure and referral systems to human capacity and societal perceptions—it is evident that handling medical emergencies in public universities is a major challenge. The lack of preparedness threatens student safety and undermines public health goals. This study, therefore, aims to assess the level of preparedness of health facilities in public universities in Central Kenya in managing student medical emergencies (Naser & Saleem, 2018).

1.2 Statement of the problem

An emergency is a medical condition that demands immediate attention and effective management to prevent loss of life or severe complications (Fegert, 2020). These life-threatening incidents necessitate awareness and preparedness among practitioners to

reduce avoidable morbidity and mortality. Emergencies may include medical, surgical, obstetric/gynecologic, and dental situations. This study focuses on assessing the preparedness of university health facilities in managing student medical emergencies in public universities in Central Kenya.

Although emergencies may occur infrequently, their effective management is indispensable, necessitating continuous cycles of planning, training, equipping, and evaluation (Khadijah et al., 2017; Sabri, 2024). Training and drills are central to institutional emergency preparedness and are essential for readiness and effective response (Verheul, 2020). Despite the growth of higher education infrastructure in Kenya, public universities still face significant challenges in responding to medical emergencies due to inadequate medical infrastructure, essential equipment, drugs, and skilled personnel.

This challenge is largely attributed to limited per capita health financing and a mismatch between student population growth and health service investment. While the Kenyan government has prioritized education reforms to enhance enrolment and academic outcomes, much less attention has been paid to student welfare and emergency health services (Bold et al., 2018). As a result, the provision of emergency care remains suboptimal.

However, there exists a research gap in the understanding of the specific levels of emergency preparedness within university health facilities and the ability of such institutions to provide timely and adequate emergency response. Little empirical evidence exists to assess whether current university health systems are equipped with trained personnel, appropriate facilities, coordinated referral systems, or reliable emergency protocols. Moreover, student perceptions of these services, which are critical in evaluating accessibility and trust in the system, are largely undocumented. This study

seeks to address these gaps by systematically assessing emergency preparedness levels in public university health facilities in Central Kenya.

1.3 Purpose of the study

The purpose of this study was to assess the university's health facility level of preparedness in handling students' medical emergencies among public universities in Central Kenya. Thereafter, it drew out recommendations that may help public universities put up measures that may be used to minimize morbidity and mortality arising from medical emergencies.

1.4 Objectives of the study

1.4.1 Broad objective

The broad objective of the study was to assess the university's health facility level of preparedness in handling students' medical emergencies among public universities in Central Kenya.

1.4.2 Specific Objective

1. To assess the types of medical emergencies encountered in health facilities of public universities in Central Kenya.
2. To evaluate the healthcare management factors on the medical emergency preparedness among public universities in Central Kenya.
3. To determine level of knowledge on medical emergency preparedness among students in the public universities of Central Kenya
4. To explore the influence of level of medical emergency preparedness in handling medical emergencies in health facilities of public universities in Central Kenya.

1.5 Research Questions

1. What are the types of medical emergencies encountered in health facilities of public universities in Central Kenya.?

2. What is the influence of healthcare management factors on medical emergency preparedness among public universities in Central Kenya?
3. What is the level of knowledge on medical emergency preparedness among students in the public universities in Central Kenya?
4. What is the influence of the level of medical emergency preparedness on handling emergencies in health facilities of public universities in Central Kenya?

1.6 Justification of the study

The purpose of this study was to assess the level of preparedness of health university's health facilities in handling students' medical emergencies among public universities in Central Kenya. The study aimed to examine and evaluate various aspects of emergency response systems within these institutions. By doing so, it sought to identify the existing challenges, gaps, and areas of improvement in order to enhance the overall preparedness and response capabilities of the university's health facility.

There is always a risk of having medical emergency in the public University community and its environs. The greater the number of students, the greater the risk and thus the University community should be ready for such events bearing in mind that this can be encountered in the university's health facility, during sporting activities or any other place within the University and also in the University neighborhood.

Medical emergencies if not addressed promptly may result into preventable death or permanent disability(s). A death of a university student is likely to trigger students' unrest which may subsequently lead to damage and destruction of the universities and the neighboring community's property. The risk of mortality and morbidity from medical emergencies can be reduced by ensuring that the University is well prepared in case there arise any kind of medical emergency. This can be achieved when there is availability and adequacy of resources and facilities within the university's health facility. The study

endeavored to assess the availability of medical equipment, supplies, and medications necessary for handling medical emergencies. Additionally, the study examined the sufficiency of trained personnel and staff members, including their expertise and experience in emergency response. This will be achieved if the medical staff working in the university's health facility are regularly trained in Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS). In addition, First Aid and Basic Life Support (BLS) certificate from a recognized institution should be a mandatory requirement for employment during staff recruitment in public Universities. On the other hand, the university should also conduct regular training of students on First Aid and BLS. By identifying gaps in staff training and expertise, the study made a recommendation to enhance the skills and knowledge of the Key Health Facility Staff, ensuring a more efficient and effective response during medical emergencies. Furthermore, the study examined the communication and coordination mechanisms among relevant stakeholders during medical emergencies. This involved evaluating the existing communication channels between university's health facility, emergency services, security personnel, and university administration, ensuring the availability of a well-equipped ambulance and a clear referral system for cases that may not be managed within the University health facility. An emergency health line should be available and shared amongst university staff, students and the surrounding community to ensure rapid response within the golden hour. By identifying communication challenges and gaps, the study can provide insights into how to establish efficient communication systems, facilitating better coordination and faster response times. The study also aimed at assessing the existing emergency preparedness plans within the university's health facility. This involved evaluating the comprehensiveness and effectiveness of the emergency response protocols and procedures in place. By identifying shortcomings in emergency preparedness plans, the

study made recommendations to develop and improve protocols, ensuring a more structured and coordinated response to medical emergencies.

The study may provide valuable insights into the level of preparedness of university's health facility in Central Kenya's public universities in handling students' medical emergencies. The findings of this study will inform and guide the development of strategies, policies, and interventions aimed at enhancing the safety and well-being of students, faculty, and staff during critical situations.

1.7 Scope of the study

The scope of this study focused on assessing the level of preparedness of university health facilities in handling student medical emergencies, specifically within public universities in Central Kenya. The study concentrated on evaluating key aspects of internal emergency response systems within these institutions, including resource availability, staff training, communication systems, coordination mechanisms, and the existence of emergency preparedness plans. In addition, it assessed students' knowledge and awareness regarding emergency preparedness in their institutions.

Geographically, the study was confined to public universities located in Central Kenya, covering the counties of Kiambu, Murang'a, Kirinyaga, Nyeri, and Nyandarua. The region hosts seven public universities: Kenyatta University, Jomo Kenyatta University of Agriculture and Technology (JKUAT), Mama Ngina University College, Murang'a University of Technology, Karatina University, Dedan Kimathi University of Technology, and Kirinyaga University. The selection of these institutions allows for a focused analysis, considering the diverse capacities, resource constraints, and institutional frameworks specific to the region.

There is growing evidence that medical emergencies are a frequent concern in institutions of higher learning in Kenya. Public university health units regularly report cases of

syncope, seizures, asthmatic attacks, food poisoning, alcohol intoxication, diabetic complications, trauma from accidents, and mental health crises that require urgent intervention (Ministry of Health, 2021; WHO, 2018). A study by Burure, Norvy, and Mutisya (2022) observed that the lack of preparedness in university health services significantly delays initial emergency care, contributing to worsened health outcomes. Moreover, reports from university health departments, such as those from JKUAT and Kenyatta University between 2019 and 2022, indicate a rising trend in emergency cases due to increased student enrollment, poor sanitation in informal eateries, overcrowded hostels, and mental health challenges.

Despite this, anecdotal and documented reports suggest that many public universities are ill-equipped to handle such emergencies adequately. Health facilities within these institutions often lack essential equipment, emergency drugs, functioning ambulances, and trained personnel to offer timely response (African Journal of Emergency Medicine, 2017). Moreover, students often report a lack of confidence in the capacity of university clinics to handle serious cases, indicating a gap in both service provision and student awareness (Hashim et al., 2021).

While the study acknowledged the link between university facilities and external emergency health services, it focused primarily on internal preparedness mechanisms within university health facilities. Limited attention was given to the formal integration and coordination with external emergency services, though this may impact internal preparedness indirectly.

Importantly, this study did not evaluate the real-time performance of university health facilities during actual medical emergencies. Rather, it aimed to assess structural and procedural readiness, identify existing gaps, and provide recommendations for improving the capacity of university health services to handle future emergencies more effectively.

1.8 Study Limitations and Delimitations

While this study aimed to provide valuable insights into the level of preparedness of university's health facility in handling students' medical emergencies among public universities in Central Kenya, the following limitations were experienced:

Generalizability: The findings of this study may not be generalizable to other regions or types of universities outside of Central Kenya or public universities. Each region and institution may have unique characteristics, resources, and challenges that could impact their level of preparedness. Therefore, caution should be exercised when applying the study's findings to other contexts.

Sample Size and Selection: The study's findings depended on the sample size and selection of public universities within Central Kenya. Due to resource and time constraints, it was not feasible to include all public universities in the region. The selected sample did not fully represent the entire population of public universities, potentially limiting the generalizability of the findings.

Self-report Bias: The data collected through questionnaires and interviews was subjected to self-report bias. Participants provided responses that they perceived as desirable or in line with the expected standards. Efforts were made to mitigate this bias through anonymity, confidentiality, and triangulation of data from multiple sources.

Time Constraints: The study's scope limited the ability to capture changes or improvements in preparedness levels over time. The findings reflected on the state of preparedness at the specific period of data collection. It is important to consider that emergency preparedness is a dynamic process, and the findings may not capture recent or ongoing improvements implemented after the data collection phase.

Subjectivity of Assessment: The assessment of preparedness is inherently subjective and influenced by the researchers' interpretations and judgments. Despite efforts to maintain

objectivity, there may be variations in assessments due to different perspectives and criteria used. Robust methodologies and clear criteria were employed to minimize subjectivity, but some degree of interpretation may still be present.

External Factors: The study may not account for external factors that could impact the level of preparedness, such as changes in government policies, funding allocations, or unexpected events. These external factors may influence the findings and limit the extent to which the identified gaps and challenges can be solely attributed to the university's health facility actions or capabilities.

The researchers made efforts to address these limitations by providing a comprehensive analysis within the defined scope.

Focus on university's health facility: The study focused specifically on the preparedness of university's health facility within public universities. It did not encompass other departments or units within the universities that may also play a role in emergency response. The study delimited itself to the university's health facility as the primary unit of analysis.

Central Kenya's Public Universities: The study was limited to public universities located in Central Kenya. It did not include private universities or universities outside of this geographical area. The decision to focus on Central Kenya was primarily due to practical constraints and resource limitations. Therefore, the findings may not be generalizable to other regions or types of universities.

Medical Emergencies: The study specifically examines the preparedness of university's health facility in handling medical emergencies. It did not address other types of emergencies, such as natural disasters or security-related incidents. The scope was limited to medical emergencies that require immediate medical attention and response.

Evaluation of Preparedness, Not Response: The study aimed to assess the level of preparedness of university's health facility, focusing on the kinds and frequencies of occurrence, resources, training, communication, and emergency response plans. It did not evaluate the actual response during a medical emergency event. The study delimited itself to the assessment of preparedness rather than the evaluation of real-time response actions.

Research Methods: The study utilized interviews and questionnaires in collecting data. While these methods provided valuable insights, the study did not involve experimental or intervention-based research designs. It relied on data collected through self-report measures, which may be subject to bias or limitations associated with subjective interpretation.

Timeframe: The study was conducted within a specific timeframe and did not account for long-term changes or fluctuations in the level of preparedness. It provided a snapshot of the preparedness status during the period of data collection, but it didn't capture the full range of variations that could occur over time.

These delimitations provided a clear focus and helped to establish the context for the study's findings and recommendations.

The researcher sought an approval letter and an introduction letter from Mount Kenya University which assisted to gain entry in the selected universities and assured the participants that the data provided was strictly to be used for academic purpose only. The researcher also carried out a pilot test to get rid of any questions that would have brought any challenge to various participants. To increase the response rate, the researcher engaged two research assistants and developed questionnaires with simple and clear language.

1.10 Assumptions of the study

Assumptions are underlying beliefs or conditions that the researchers make for the purpose of conducting the study. In this study, the following assumptions were made:

Availability of Relevant Data: The study assumed that the necessary data required to assess the level of preparedness of university's health facility in handling students' medical emergencies among public universities in Central Kenya was available. It assumed that the universities had maintained records, policies, and protocols related to emergency preparedness that can be accessed and analyzed.

Compliance and Accuracy of Self-Reported Data: The study assumed that the participants, including university's key health facility staff and key stakeholders, provided accurate and truthful information during interviews and while responding to questionnaires. It assumed that respondents responded honestly and to the best of their knowledge, without intentionally providing misleading or inaccurate information.

Representative Sample: The study assumed that the selected sample of public universities in Central Kenya was representative of the larger population of public universities in terms of their characteristics, resources, and challenges. It assumed that the findings from the selected sample can be generalized to the broader population of public universities in the region.

Adherence to Ethical Guidelines: The study assumed that all research participants and stakeholders adhered to ethical guidelines, including informed consent, privacy, and confidentiality. It assumed that ethical considerations were upheld throughout the research process, ensuring the protection of participants' rights and integrity of the study.

Reliability of Documentation: The study assumed that the documentation, policies, and protocols obtained from the university's health facility and university administration was accurate, up-to-date, and reflected the actual practices and procedures followed during

medical emergencies. It assumed that these documents provided a reliable representation of the preparedness efforts of the university's health facility.

Consistency of Preparedness Practices: The study assumed that the preparedness practices within the university's health facility of public universities in Central Kenya are relatively consistent. It assumed that there was a shared understanding and implementation of preparedness measures and protocols, allowing for meaningful comparisons and evaluations across the sampled universities. These assumptions served as foundational beliefs for the study, allowing the researcher to proceed with the data collection, analysis, and interpretation.

1.11 Operational definition of key terms

Emergencies: An emergency is a medical condition handled in a university environment that demands immediate attention and successful management.

Handling medical emergencies: refers to a process of attending to an injury or illness that is acute and poses an immediate risk to a person's life or long-term health within a university health facility

University Health facility: is the location or place within a university where health care services are provided

Key Health Facility Staff: refers to employees designated to provide health care services in a university health facility.

Medical Emergency: Refers to an injury or illness that is acute and poses an immediate risk to a person's life or long-term health

Golden Hour: It refers to the emergency care that a patient must receive within the first one hour from appearance of symptoms.

Emergency Preparedness: Preparedness refers to a state of readiness to respond to any type of medical emergency situation in a university environment.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter focused on the theoretical and conceptual frameworks on which the study was grounded. It also covered literature on the kinds and frequency of occurrence of emergencies, level of preparedness to respond to emergencies, the knowledge level on preparedness to respond to emergencies among staff and students and communication strategies on emergency preparedness among public universities in Central Kenya.

2.1 Types of medical emergencies in public universities.

An emergency is a medical condition that demands immediate attention and successful management (Van den Heede, K., & Van de Voorde, C. 2016). These are the life-threatening situations of which every practitioner must be aware of so that needless morbidity and mortality can be avoided. Preparation for an emergency and sound knowledge about the management of all emergencies in general is of prime concern to medical practitioners. As always believed, prevention is the best medicine thus, being prepared for an emergency and believing that emergency is a real possibility in an institutional setup is of utmost importance (Power, 2018)

2.1.1. Medical emergencies

According to Khadijah et al. (2017), medical emergencies may be rare, but preparing for their management is indispensable. Medical emergencies, by their very nature, can occur at any time, without warning, and not necessarily in a clinical environment (Siniša, 2020). Many factors can lead to a medical emergency, including accidents, medical conditions, trauma, or acts of violence (World Health Organization [WHO], 2022). These emergencies include alcohol intoxication/coma, organophosphate poisoning, status asthmaticus, diabetic ketoacidosis, syncope/fainting, severe pneumonia (viral e.g.

COVID-19, bacterial), acute peptic ulcer disease, choking, meningitis, shock (septic, hypovolemic, anaphylactic & neurogenic), stroke, myocardial infarction, severe anemia, status epilepticus, and Addisonian crisis (Nesiama, McConnell, & Yen, 2020).

Among the listed emergencies, those most commonly encountered in public universities include alcohol intoxication/coma, which frequently occurs during student social events or weekends (Muchai & Mugambi, 2021); syncope/fainting, often due to stress, dehydration, or prolonged standing during long queues (Kimani & Mwangi, 2020); status asthmaticus, triggered by dust, cold weather, or allergens in dormitories (Njuguna et al., 2022); diabetic ketoacidosis (DKA) in students with poor glucose control (Otieno et al., 2018); status epilepticus, especially among students with epilepsy (Omondi & Nyaribo, 2019); and severe pneumonia, including past COVID-19 infections due to overcrowded living conditions (Ministry of Health, Kenya, 2021).

Other notable but less frequent emergencies include choking in dining areas (Wachira & Mburugu, 2020), shock from allergic reactions or injuries (Kibe & Karani, 2017), and meningitis, which can occur in crowded hostel environments (Okello et al., 2016). On the other hand, organophosphate poisoning, myocardial infarction, Addisonian crisis, and acute peptic ulcer perforation are relatively rare in university settings but cannot be completely ruled out (Achieng & Mutinda, 2019).

These patterns underscore the need for university health facilities to be adequately prepared to handle these common emergencies effectively. A lack of resources, trained personnel, or rapid response mechanisms could mean delayed care, worsening outcomes, or preventable fatalities among students (Bold et al., 2018; Chumba, 2019). Thus, this study seeks to evaluate the preparedness of university health facilities in Central Kenya, focusing on their capacity to respond to the types of medical emergencies most relevant to the university environment.

2.1.2 Surgical emergencies

Surgical emergency is a medical emergency for which immediate surgical intervention may be the only way to solve the problem successfully. This includes open fractures, acute urine retention, acute appendicitis, gastrointestinal perforation, peritonitis, bowel obstruction, head injury, burns, acute pancreatitis, gastrointestinal bleeding, perforated peptic ulcer, acute cholecystitis, hemothorax/tension hemothorax, flail chest, ruptured spleen, and testicular torsion. The World Health Organization's (WHO's) Global Health Estimates report global disability-adjusted life years (DALYs) lost from 163 specified disease causes (Tichenor & Sridhar, 2019). DALYs are a measure of the years of life lost or seriously impaired by disease, both overall and from specified disease entities (Tomeny et al., 2022). The Global Health Estimates do not specifically identify general surgical emergencies, but by combining the estimates for three categories (peptic ulcer disease, appendicitis, other digestive diseases) out of the 163, in which death or disability usually results from a general surgical emergency, an estimate of the worldwide rate of DALYs lost from these conditions can be created (Tomeny et al., 2022).

According to McCord et al. (2015), although several types of operations can be done in less-than-ideal conditions, the availability of basic facilities and supporting systems makes procedures simpler, safer, and more efficient.

In the context of public universities—particularly in Central Kenya—some surgical emergencies occur more frequently than others due to the youthful and active nature of the student population, environmental conditions, and lifestyle behaviors. The most common surgical emergencies reported among university students include open fractures often resulting from motorcycle accidents or sports injuries; acute appendicitis, which is prevalent among young adults; and head injuries sustained from falls, sports, or alcohol-related incidents (Wachira & Mburugu, 2020; Omondi & Nyaribo, 2019; Muchai &

Mugambi, 2021). Testicular torsion is also frequent among male students in the 18–25 age group and requires immediate surgical intervention (Kimani & Mwangi, 2020). Burns are not uncommon, often resulting from accidental cooking fires, faulty electrical connections in hostels, or incidents during student demonstrations (Chumba, 2019). Gastrointestinal complications such as perforated peptic ulcers may also present among students due to exam-related stress, irregular eating habits, and the overuse of non-steroidal anti-inflammatory drugs (NSAIDs) (Otieno, Nyaga, & Ogutu, 2018).

These emergencies highlight the urgent need for university health facilities to maintain high levels of preparedness and readiness, particularly in equipping staff, ensuring availability of emergency supplies, and maintaining functional referral systems to handle such incidents effectively.

2.1.3 Obstetrics/gynecology emergencies

Obstetrics/gynecology emergencies are emergencies that results from Abortion, post par tum hemorrhage, eclampsia, breach Presentation, uterine rupture, Ovarian mass torsion or rupture, acute pelvic inflammatory disease, uterine inversion, placenta previa, amniotic fluid embolism, ectopic Pregnancy, Tubo ovarian abscess (Masselli, et al., 2015).

Poor obstetric outcome in middle and low-income countries like Nigeria with the attendant problems of maternal mortality remains a depressing and challenging health concern worldwide. According to the latest UN estimates, 287,000 women still die each year from complications of pregnancy and childbirth, and millions remain disabled. Unfortunately, 99% of these deaths take place in developing countries, most of them in sub-Saharan Africa. Implicated in this ugly trend is inadequate obstetric care service, especially at the primary health care level Okoli, C. (2022).

The common obstetric emergencies in public universities are unsafe abortions. A study by Appiah-Agyekum, (2018) revealed that students were aware of safe medical abortion

services but were reluctant to use them because of cost, stigma, and proximity. Generally, medical abortions were more likely to be self-induced among students with misoprostol-based drugs administered orally or vaginally. However, students also used various over-the-counter drugs, and prescription drugs singly, in series, or in combinations to induce abortion. Students had relatively little knowledge on the inherent risks and long-term implications of unsafe medical abortions and were more likely to have repeat abortions through unsafe medical methods (Appiah-Agyekum, 2018).

A study in Ethiopia by Gelaye, et al., (2014), reported that a high rate of abortion was detected among the female students of Wolaita Sodo University and half of the abortions took place/initiated under unsafe circumstances. Knowledge of students on legal and safe abortion services was found to be considerably poor.

2.1.4 Dental emergencies

Dental emergencies typically arise from conditions such as bleeding and pain after tooth extraction, dental abscesses, fractured jaws, broken or avulsed teeth, local anesthetic reactions, drug interactions, and syncope attacks. These emergencies, though often considered minor, can escalate rapidly and require prompt medical intervention. A study by Manton et al. (2021) recommends comprehensive training for dental surgeons in the management of such emergencies, emphasizing that immediate and efficient care, along with the availability of emergency drugs and equipment in dental clinics, is crucial.

Evidence from university settings indicates that dental emergencies are not uncommon among students. In public universities, students frequently seek dental services for tooth extractions, which can lead to post-operative complications such as persistent bleeding or infections if not properly managed (Maina, Wambugu, & Muriithi, 2019). Furthermore, cases of fractured jaws and broken teeth are occasionally reported due to sports-related injuries, physical altercations, or accidents—especially in male-dominated

extracurricular activities such as rugby and basketball (Omondi & Njuguna, 2020). Dental abscesses have also been reported among students due to poor oral hygiene and limited access to routine dental care (Kinyua et al., 2022).

Despite the presence of these emergencies, many university health facilities lack the preparedness and necessary equipment to manage them effectively. Khadijah et al. (2017) stress that institutional preparedness should include developing emergency response plans, creating standardized protocols, ensuring regular staff training, and maintaining emergency supplies and equipment.

2.2 Healthcare management factors on medical emergency preparedness

Prompt recognition and efficient management of medical emergencies by a well-prepared medical team can significantly increase the likelihood of a satisfactory outcome. Adequate emergency response personnel and essential equipment are crucial for effective response to any medical emergency. During the SARS epidemic, for example, studies highlighted shortages of healthcare workers and equipment in some cities, affecting the quality of response (Wu, Chen, & Chan, 2020). McCabe et al. (2020) also observed that hospitals varied in their capacity to provide extra beds, reflecting disparities in preparedness levels. These disparities are similarly evident in public university health facilities in Central Kenya.

Many public universities in Kenya have implemented cost-cutting measures that have compromised the availability of essential emergency medical services. This has also slowed the implementation of training and sensitization programs on emergency response within university settings (Canton, 2019). Despite the large student populations and the high likelihood of medical emergencies—ranging from asthma attacks, allergic reactions, injuries, diabetic crises, and mental health breakdowns—most university health centers remain ill-equipped to manage emergencies beyond first aid. Basic emergency drugs,

defibrillators, trained personnel, and even ambulance services are lacking in several institutions (Mwangi & Wanjohi, 2021).

It is important that every member of a university community understands Basic Life Support (BLS) to improve emergency outcomes. Medical practitioners, non-medical staff, and students are likely to encounter life-threatening situations, and therefore, knowledge of BLS is vital (Jamalpour, Asadi, & Zarei, 2015). Trained and knowledgeable health personnel are central to effective emergency management in universities. Ghanem (2018) noted that there is limited data on CPR skills and knowledge among healthcare personnel, implying inadequacies in emergency preparedness. Furthermore, senior doctors were found to exhibit decreased CPR knowledge over time, likely due to infrequent practice and professional complacency (Vo & Cho, 2020).

Although this study is focused on assessing university health facility preparedness in Central Kenya, research by Hall (2015) suggests that medical staff sometimes take emergency situations lightly, failing to adhere strictly to protocols. Winfrida et al. (2018), in a study at Muhimbili National Hospital, found poor CPR service quality despite prior exposure, highlighting the need for continuous, structured training. Similar observations apply to university health centers in Kenya, where medical staff often lack regular refresher courses on emergency management (Njenga, Muriuki, & Mutiso, 2022).

A key gap in emergency preparedness in public universities is the lack of coordinated response plans and adequate funding. Studies by ESCAP (2017) highlight how disaster risk management and emergency response funding often fall between relief and development, which resonates with the Kenyan university context, where health budgets are often deprioritized.

BLS includes recognizing signs of sudden cardiac arrest, heart attack, stroke, and airway obstruction, performing CPR, and using automated external defibrillators (AEDs)

(Mayanlambam & Devi, 2016). Yet Almesned et al. (2014) found that 31% of participants did not understand the term BLS, and 66% were unfamiliar with AEDs. Gajjar and Gupta (2017) reported low awareness on key BLS components like compression depth, CAB sequence, and the EMS activation process. Such gaps are also present in Kenyan university settings, where limited health literacy among students and non-medical staff compromises timely intervention (Omondi & Gikonyo, 2020).

Early recognition of emergencies begins with awareness of symptoms and patient history. Sohrabi (2020) emphasizes that knowing a patient's medical background enhances early recognition and response. Medical staff should perform frequent assessments and minimize distractions to avoid delayed interventions. According to Cao et al. (2020), having an emergency plan in place—including positioning, airway, breathing, circulation, and definitive care (PABCD)—is crucial. Following DRS-ABC protocols helps standardize the response.

Emergency equipment required in university health facilities includes blood pressure monitors, pulse oximeters, glucometers, nebulizers, resuscitation trays, suction machines, IV access kits, and oxygen cylinders (Aditya, 2022). However, many university clinics lack these tools due to budget constraints and administrative neglect (Kariuki & Otieno, 2023). Preparedness, even for rare emergencies, is indispensable to avoid loss of life or complications.

When creating emergency response plans for university health facilities, the focus should be on the most probable emergencies. The goal is to stabilize the patient, prevent deterioration, and refer to higher-level facilities if necessary. Unfortunately, many public universities in Central Kenya lack functional referral systems and transport services such as ambulances, creating delays during the critical "golden hour." Effective response

planning requires pre-established protocols, staff role assignment based on job categories, and coordination with local emergency responders (Canton, 2019).

A major limitation faced by students is the lack of health insurance coverage. Most public universities in Central Kenya do not offer students comprehensive medical insurance. While the EduAfya scheme introduced in 2017 covers students in public secondary schools registered under NEMIS, no parallel insurance scheme exists for university students (Brief, 2018). As a result, students requiring specialized or emergency care often face financial and logistical barriers during referral and admission to external health facilities.

2.3 Level of knowledge on medical emergency preparedness among students.

Handling of medical emergencies is considered a key determinant in the outcome of a patient morbidity and mortality. Several studies around the world have made an impression that the level of preparedness is variable in regard to the ability to deliver the necessary life measures in cases of medical emergencies (Saquib, et al., 2019). Additionally, research has revealed that young students can become major healthcare supportive workforce for a community including cases of emergency (Ahmad, et al., 2018).

According to Reed, & Jo Okundaye, (2021) the basic algorithm for managing medical emergencies is designed to ensure that the patient's brain receives a constant supply of blood containing oxygen. Training on roles and responsibilities is beneficial if it includes community-level considerations, local context and past experience, which not only aid in cooperation and collaboration but also may address the issue of risk paradox tied to perception and experience.

According to Lu, and Xue, (2016), an emergency management plan is of paramount importance. Specific activities investigated were: Planning design and development,

Information dissemination, Training on roles, Responsibilities and tasks, conducting preparedness actions and Relationship building/bonding (Lu, & Xue, 2016)).

This underscores the need for all medical institutions, including clinics, to have well-structured management plans in place to handle emergencies effectively. This requires the implementation of basic training programs tailored to specific roles, ensuring timely communication with all relevant personnel, and conducting preparedness exercises to enhance emergency response efficiency.

The willingness of university students to participate in emergency education is generally high. 91.3% of university students in Shandong province believe that taking part in emergency education activities is necessary (Jie, et al., 2023). However, the participation rate of university students in emergency training and exercise activities is 65.8%, which is still a big gap with 91.3% willingness to participate in emergency education. As a result, those university students who think it is necessary to participate in emergency education activities but have not participated in them should become the focus of emergency education in universities at the next step, so as to better realize the "unity of knowledge and action" and improve the enthusiasm of university students to participate in emergency training and exercise activities.

According to Joseph, et al. (2014) At some point in medical curriculum students are taught how to handle emergencies in a hospital emergency setting where drugs and other necessities are available. However, the adequate knowledge required for handling an emergency without hospital setting at the site of the accident or emergency may not be sufficient. As the incidence of medical emergencies are on the rise in recent years it is important to ensure that health personnel are adequately trained to deal with such events. Very few studies have been performed about knowledge of first aid skills among medical students in India. This study by Joseph, et al (2014), identified the need for introducing

formal first aid training classes for medical students so that the trained students are competitive enough to provide first aid independently and spontaneously in real life situations (Joseph, et al., 2014).

2.4 Influences of level of medical emergency preparedness

2.4.1 Communication strategies on emergency

According to world health organization (WHO, 2017) failure to develop local risk communication capacities has led to reliance on outside experts being engaged in times of crisis. Rather than relying on outside assistance, risk communication capacity should be based at each geographical level – local, national, regional and global – with clearly defined roles, responsibilities and infrastructure, with particular focus on developing institutional and national capacities. With the increasingly useful role of ambulances and paramedics in the provision of emergency medical care, receiving hospitals are being forced to polish up their acts in ensuring that they review their investigational and treatment processes so as to maximize the benefits of patients arriving in hospital in a medically better condition than previously (Aringhieri, et al., 2017). The university's health facility should ensure availability of a dedicated emergency help line, personnel, Ambulance and a standby driver in case of an emergency. The Emergency help line should be communicated to all staff and student. Further, Kenyan public universities either lack a well-equipped ambulance with a dedicated driver and a nurse and also lack the essential equipment required during transportation of patients with medical emergencies. This endangers the lives of students with medical emergency cases that cannot be handled at the University health care units due to either delay or poor transport of the patients (Broccoli, et al., 2015).

According to Kenya, (2016) similarly, there is lack of clear referral system of students with medical emergency cases to the nearest referral hospitals. This is attributed to the

fact that most Kenyan public universities have not entered into a memorandum of understanding with the nearest referral hospitals on issues pertaining to student medical emergencies. As a result, there is delay in attending to these students once they are referred from universities due to bureaucratic procedures that most hospitals practice (Kuye, & Akinwale, 2021). Usually there is a delay in receiving these referred medical emergency cases because the patient is expected to pay some deposit to the receiving hospital before treatment commences. This puts the referred student at risk of developing life-threatening complications which may culminate into preventable deaths owing to lapse of the golden hour (Omar, 2021).

The study examined the communication and coordination mechanisms among relevant stakeholders during medical emergencies. This involved evaluating the existing communication channels between university's health facility, emergency services, security personnel, and university administration. By identifying communication challenges and gaps, the study will provide insights into how to establish efficient communication systems, facilitating better coordination and faster response times.

2.4.2 Training, Skills and Experience

Sufficient emergency response personnel and equipment are necessary to respond effectively to any medical emergency incident. Different cadres of personnel should be trained in health crises and risk communication, and refresher training should be provided at least annually, (De Roeck, 2017; Roeck, 2016; Francia, 2015). This allows the university's medical staff to acquire disaster risk reduction (DRR) skills necessary for the effective handling of emergencies among students (Dwinantoaji, et al., 2022). It is very important that every person in the university community knows about Basic Life Support to save lives and improve the quality of emergency health care service. Medical practitioners and non-medical staff are expected to know about it, as they are likely to

face life-threatening situations and therefore, knowledge of BLS will definitely be useful. Well trained and knowledgeable medical personnel is key to effective handling of medical emergencies among students and in any public setup for that matter. Ghanem, (2018), in regards to the knowledge and skills of the medical personnel, including students, doctors and paramedical staff in CPR, established that there was very little data pertinent to their study regarding this highly effective and easy maneuver.

2.4.3 Drugs and Equipment

Emergency drugs and essential equipment are important to successfully manage patients in case of medical emergency. A delay in response to an emergency may adversely affect the outcome (Wallis, & Guly, 2021). Early access to emergency drugs and essential equipment is important in increasing survival rate of the patient (Monsieurs, et al. 2015). The cornerstone therapy for treating diseases that pose a threat to one's life is having the very minimal criteria of necessary emergency equipment. The Emergency Medicine Society of South Africa (EMSSA) guideline recommends having access to vital equipment and emergency medications, such as tools for opening and protecting airways, confirming tracheal intubation, managing challenging intubations, delivering oxygenation and ventilation, diagnosing and treating cardiac arrhythmias, gaining vascular access, monitoring breathing and circulation and tools for managing difficult intubations. It has been demonstrated that uniformity in tools, medications, and emergency trolley parts enhances and facilitates familiarity (Soar, et al., 2015).

The study by Hunie, (2020), recommended carrying out of regular health care personnel awareness programs to improve checking, maintaining, restocking, and repairing the equipment in the emergency trolley. The study further recommended for the administrators of the hospitals to respond to the requests and fulfill the requirements of the essential equipment and emergency drugs.

2.5 Theoretical framework

2.5.1 Self-Efficacy Theory

This theory was proposed by Albert Bandura, a psychologist born in 1925 at Alberta, Canada. Bandura (1995, 2004) perceived self-efficacy as beliefs in one's capacity to organize and execute the courses of action required to manage prospective situations. A study by Roma, et al., (2020) reveals that self–efficacy, or the confidence in personal ability, has been shown to predict a variety of health behavior outcomes. Cook, & Artino Jr, (2016), states that people's level of motivation affective states and actions are based more on what they believe than what is objectively true and for this reason, how people behave can often be better predicted by the beliefs they hold about their capacities than by what they are actually capable of accomplishing. According to him therefore, self-efficacy perceptions help determine what individuals do with the knowledge and skills they have.

Bandura's theory is a pointer to an important situation that could emerge in universities in which established prevention programs may either be utilized by students or not. This dichotomous position is determined by the beliefs and attitudes they hold about the impact prevention programs create in their lives. Theory of Planned Behaviors (Ajzen, Fishbein, Lohmann, & Albarracín, 2018) describes attitude as a disposition to respond favorably or unfavorably to an object, behavior, person, institution or event. Wildman, et al. (2022), argues that an elemental support of the effect of attitude on self-regulation is a dynamic process in which the individual engages as he or she works towards a goal. Without feedback or reflection, adjustments cannot be made and regulation of behaviors will not take place. Bandura's theory views the environment as an influencer to self-regulation in either a positive or negative direction. If the environment provides no feedback or social cues, it is difficult for effective self-regulation to take place.

This assertion indicates a complementary relationship between attitude and factors within the environment. If students positively appraise prevention programs, they are most likely to utilize them for their benefit. Conceptualization of student self-efficacy dynamics plays a big role in student positive responsiveness and participation in prevention activities. In this regard, student participation plays a key role in the implementation and effectiveness of prevention programs.

Self-efficacy theory further postulates that, virtually all people can identify goals they want to accomplish, things they would like to change, and things they would like to achieve. However, most people also realize that putting these plans into action is not quite so simple. Cook, & Artino Jr, (2016), found that an individual's self-efficacy plays a major role in how goals, tasks, and challenges are approached. He argues that people with a strong sense of self-efficacy form a stronger sense of commitment to their interests and activities. Jugert, et al., (2016) argues that personal control depends on one's choices and actions that they can master, control or effectively alter the environment. Liu, & Dai, (2017), assert that choices affecting health are dependent on self-efficacy which determine whether health behavior change was initiated, how much effort was expended, and how long it was sustained in the face of obstacles and failures. Noworyta, Cieslik, & Rygula, (2022), in his cognitive bias theories argues that addiction is maintained by biases in the cognitive system, including beliefs, expectancies, self-efficacy, attributions and attention. The behavior change occurs in capability to perform the behavior or under a number of different circumstances like perceived self-efficiency and perceived behavioral control.

2.6 Conceptual framework

Independent Variable **Intervening Variable** **Dependent Variable**

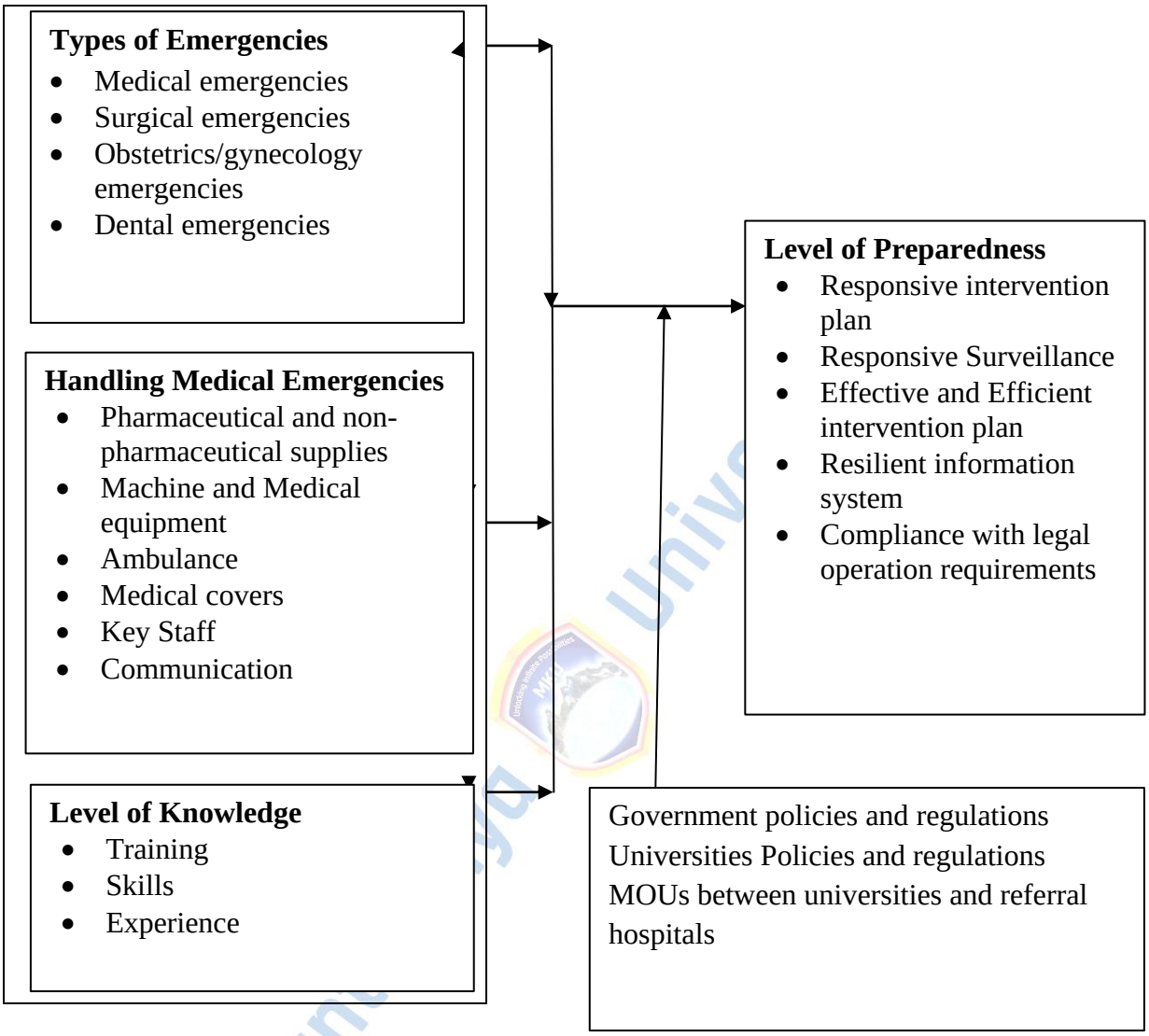

Figure 2. 1: Conceptual Framework

Researcher (2025)

2.7 Summary of the Literature Review

The literature review begins by focusing on the assessment of the level of preparedness by university administration in handling students' medical emergencies. The study recommends that for effective preparedness, the universities administration should ensure that university's health facility is always ready should a medical emergency occur, by

developing an emergency response plan, devise emergency protocols, staff training, and proper maintenance of emergency equipment and supplies

Though public universities may not have the capacity to handle some of the medical emergencies for example surgical, Obstetrics/gynecology emergencies and also dental emergencies, significant intervention should be put in place. For instance, a well-defined referral system should be in place to ensure that patients with medical emergencies are swiftly transferred to the nearest referral hospitals that have established a memorandum of understanding with the university to handle student emergencies. The study highlights the importance of equipping every member of the university community with Basic Life Support (BLS) knowledge to enhance life-saving efforts and improve emergency healthcare services. Both medical and non-medical staff, as well as students, should be trained in BLS, as they may encounter life-threatening situations where such skills could be crucial. Additionally, having well-trained and knowledgeable medical personnel is essential for the effective management of medical emergencies in any public institution.

While this study focuses on assessing the preparedness of university health facilities in handling student medical emergencies in public universities in Central Kenya, findings from other scholars suggest that medical staff often take emergencies lightly, failing to adhere to essential emergency protocols. Additionally, research has highlighted poor service delivery at Muhimbili National Hospital (MNH) in Tanzania, despite many providers having prior experience with cardiopulmonary resuscitation (CPR). According to the World Health Organization (WHO, 2017), the lack of local risk communication capacities has resulted in a dependence on external experts during crises. To enhance emergency preparedness, risk communication should be decentralized across local, national, regional, and global levels, with clearly defined roles, responsibilities, and infrastructure, emphasizing the development of institutional and national capacities.

Several studies revealed that majority of the universities in Kenya do not have medical emergency plans in place and where they were inexistence, they are partially implemented (Wachira, & Martin, 2017). Additionally, the medical emergency plans revealed deficiency in their evaluation and revision. Besides, all kinds of medical institutions need to communicate and cooperate with other local health agencies functioning as networked medical emergencies centers. The announcement by the government of Kenya to cut down the average student capitation allocation from Ksh. 135,244.88 by December 2021 down from Ksh. 170,861.63 in June 2020 has caused a serious financial constrain in public universities (Kiminza, Ogula, & Getui, 2021).

The chapter also highlights on the theory that will guide the study. The Self-Efficacy Theory (Bandura, 1986) which perceived self-efficacy as beliefs in one's capacity to organize and execute the courses of action required to manage prospective situations was found to be ideal for the study. Bandura's theory is a pointer to an important situation that could emerge in universities where by institutions establishes prevention programs that are either utilized by students or not. The chapter concludes by highlighting on the conceptual framework of the study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter focuses on the research methodology, research design, the target population, location of the study, sampling procedures and techniques that was employed, sample population and the research instruments. It also includes validity and reliability of the research instruments, data collection method, data analysis technique and concludes by highlighting the ethical consideration.

3.1 Research methodology

The research study employed descriptive cross sectional study design. This provided an over view of what happened with the study variables for the research problem. It is a type of descriptive study that involves collection of data on the presence of one or more variables as they are in a given population and in a particular period of time (Aggarwal and Ranganathan, 2019). The study adopted questionnaires and interview schedule to collect the data from the study respondents. A qualitative research method involves a study where answers to questions are sought by using well defined procedures to get evidence and findings which are not determined earlier. Quantitative research methods address an investigation that seeks to confirm hypotheses about phenomena and uses highly structured methods such as; questionnaire and structured observations (Creswell and Miller 2000). Both qualitative and quantitative methods were combined so that data was collected and analyzed statistically for quantitative data and through descriptive statements and explanation for qualitative data.

3.2 Research design

Cross sectional descriptive study design was used to assess the preparedness of public universities in Central Kenya while handling students' medical emergencies.

Questionnaires were administered to university students while Interview schedule was used to collect data from key health facility staff and universities top management. Data for the study was collected using both qualitative and quantitative methods where questionnaire and interview schedules were used as data collection tools.

3.3 Location of the study

The study was conducted among public universities in Central Kenya comprising of Kiambu, Murang'a, Kirinyaga, Nyeri and Nyandarua Counties. This region has got a total of seven public institutions which include: Kenyatta University, Jomo Kenyatta University of Agriculture and Technology and Mama Ngina University College in Kiambu County, Muranga University of Technology in Muranga County, Karatina University and Dedan Kimathi University of Technology in Nyeri County and Kirinyaga University in Kirinyaga County. Central Kenya covers an area approximately 11,449km^2 and is located in North of Nairobi and west part of Mount Kenya.

3.4 Target population

A target population is described as the sum of objects or the specific population from which the data is desired. According to Ngechu (2004) a population is a well-defined or set of people, services, elements and events, group of things or households that are being investigated. The target population comprised of the university top management, key health facility staff and university students in the selected public universities. These universities included; Kenyatta University, Jomo Kenyatta University of Agriculture and Technology, Murang'a University of Technology, Karatina University, Dedan Kimathi University of Technology and Kirinyaga University and Mama Ngina University College. The study focused more on the health facility section and particularly universities administration, University students and key health facility staff. As per the ministry of education (2001), Central Kenya has got seven public universities with an

approximate population of about 81,338 people**.** The population of the study comprised of universities administration, University students and key health facility staff. Mugenda and Mugenda (2003) explains that the target population should have some observable characteristics, to which the researcher intends to generalize the results of the study. The researcher obtained a sample from three universities (Muranga university of Technology, Dedan Kimathi University of Technology and Kirinyaga University) out of the seven universities in Central Kenya.

3.4.1Inclusion Criteria

The following groups of participants will be eligible to take part in the study:

University Administrators: These include individuals who play a significant role in health service planning, policy implementation, and emergency preparedness within the university setting. Examples include Deans of Students, Directors of Student Affairs, Health Services Directors, or any senior management personnel directly involved in decision-making regarding student health and safety. Their inclusion is important because they offer institutional insights into health facility preparedness, budgeting, policy formulation, and administrative support for emergency response systems.

University Students: Only currently enrolled students at public universities located in Central Kenya will be included. Both undergraduate and postgraduate students are eligible, provided they are actively attending the university during the study period.

Students are direct beneficiaries of university health services and are likely to offer first-hand experiences with emergency incidents and perceptions of service preparedness.

Key Health Facility Staff: This includes medical and paramedical personnel working in university health centers or clinics. Staff such as clinical officers, nurses, doctors, laboratory technicians, and ambulance personnel will be considered. Their input is crucial to assess the operational capacity, availability of emergency equipment, response

procedures, and perceived challenges in handling medical emergencies within the university.

3.4.2 Exclusion Criteria

Participants will be excluded from the study based on the following:

University Staff on Official Leave: Staff members who are on annual, study, maternity, or any other form of official leave during the data collection period will not be eligible. This is because their absence may hinder their ability to provide current and relevant information on the university's medical emergency preparedness.

Individuals Outside the Target Population: This includes any person who does not fall into one of the three groups listed in the inclusion criteria.

Examples: Non-medical university staff not involved in health services or policy (e.g., cleaners, catering staff, groundskeepers).

Alumni or former students- Visitors or temporary personnel at the university who do not have direct or sustained interaction with the university's health system.

Excluding these individuals ensures that data is collected from respondents who have direct relevance to the study objectives.

Table 3. 1: Target Population

Target population	**KU**	**JKUAT**	**MNUC**	**MUT**	**KyU**	**DEKUT**	**KARU**	**Total number**
Top management	15	12	5	8	7	10	7	64
Key Health facility Staff	22	70	6	13	10	12	7	140
Students	26000	22000	1500	8300	5600	7200	6150	76750
TOTAL	**27597**	**23280**	**1659**	**8633**	**5865**	**7800**	**6504**	**81,338**

Commission for University Education (2022)

3.5 Sampling procedures and techniques

The sampling procedure describes the list of all population units from which the sample was selected (Rahi, 2017). The technique is applied so as to obtain a representative sample when the population does not constitute a homogeneous group.

The researcher obtained a sample from three universities (Murang'a University of Technology, Dedan Kimathi University of Technology and Kirinyaga University) out of the seven universities in Central Kenya. The study focused more on the health facility section in the three universities all being level two facilities. The sample size included the top management, key health facility staff and students. The researcher used stratified sampling technique to obtain a stratum of students. Thereafter, cluster sampling methodology and simple random sampling was used to select a sample size from the research participants.

3.6 Sample size determination

According to (Ritchie, Lewis et al. 2013) they define sampling procedure as the process of choosing a subgroup from the study population in the research study. To achieve the sample population for the study, the researcher employed simple random sampling method to select the three universities that formed a sample. As for the top management and the key health facility staff, purposive sampling technique was used. Stratified sampling technique was applied to obtain a sample from universities students. Samples from university students was carried out as per the schools they belong.

To determine the sample size, the following formula was adopted from Cochran (1963) with a 95% confidence interval assumed. If the target population is large and the variability in the proportion is unknown, maximum variability is adopted, that is, p=0.5. This formula is suitable to determine the sample size when the target population is large, above 10,000.

$$n = \frac{Z^2 pq}{e^2}$$

Where;

n = sample size required

Z = normal curve's abscissa cutting of an area equivalent to the significance level at the tails of the normal curve

e = required sampling error (A 95% confidence level or 0.05 precision level, is assumed)

p=0.5 (maximum variability is assumed)

q=1-p=0.5

Substitute numbers in the formula, $n = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2} = 384.16$

Approximately 385 respondents.

The top management in the university, key health facility staff and students were included in the study as key respondents. The respondents were sampled from 3 universities based on Mugenda and Mugenda (2013) who stated that when the population is small, 30% of the population size is appropriate for the study. The guidelines by Mugenda and Mugenda (2013) were applied when sampling the key respondents. The students were proportionately allocated based on the university size.

Table

Table 3. 2: Sample Size

Target Sample	MUT	KyU	DEKUT	Total number
Top management (30% of the population)	3	3	3	9
Key Health facility Staff (30% of the population)	4	3	4	11
Students	151	102	132	385

3.7 Construction of research instruments

The study utilized questionnaires and interview schedules for data collection. The questionnaires were used in gathering data from the students. The questionnaire was divided into five sections. Section A highlighted the Demographics information of the respondents, section B addressed the first objective in this case the types of medical Emergencies encountered in Public Universities, section C addressed the second objective on the Healthcare management factors on medical emergency preparedness, section D addressed the third objective which established the level of knowledge on emergency preparedness among students in the public universities in central Kenya. Lastly, section E explored the influence of level of medical emergency preparedness on handling medical emergencies in health facilities.

The interview guide gathered qualitative data from the top university management and the key health facility staff. The information gathered using the interview guide provided a comprehensive overview of the situation of health facilities in Kenyan universities. The data from interview guide was to help establish level of medical emergency preparedness in handling students' medical emergencies among public universities in Central Kenya.

3.8. Validity and reliability of the Research Instruments

3.8.1 Validity of research

To increase the validity of instruments, a pilot study was conducted at Embu University using respondents from the target population who did not form part of the respondents during the actual study. The researcher conducted a face validity to measure the clarity of research instruments.

3.8.2 Reliability of the Research Instruments

To improve the reliability of the research instruments, the researcher, with the help of the supervisor determined, critically assessed the consistency of the responses on the pilot

questionnaires and made judgement on their reliability. This helped to determine any ambiguous and unclear items in the research instruments. Test re-test technique was used to establish the reliability of the research instruments. The reliability coefficient was obtained by repetition of the same measure on a second time (Graziano and Raulin, 2006). It assesses the external consistency of a test. If the reliability coefficient is high, for example, r = 0.98, we can suggest that both instruments are relatively free of measurement errors. If the coefficients yield above 0.7, this was considered acceptable, and coefficients yield above 0.8, was considered very good (Madan & Kensinger, 2017). This was done at a 10% sample size which was 38 respondents from Karatina university.

The reliability analysis provides an assessment of the internal consistency or reliability of the scales used in the study on medical emergency preparedness in handling students' medical emergencies of public universities in Central Kenya. This is typically measured using Cronbach's Alpha, which ranges from 0 to 1, with higher values indicating greater internal consistency among the items in each scale. The study performed reliability analysis and the results are presented on table 3 below;

Table 3. 3: Reliability Analysis on Pilot Study Results

Test Item	**Cronbach's Alpha**	**No of Items**
Assessment of the types of medical emergencies encountered in health facilities of public universities in Central Kenya.	0.706	5
Evaluation of the health care management factors on the medical emergency preparedness among public universities in Central Kenya.	0.872	8
Determination of the level of knowledge on medical emergency preparedness among students in the public universities of Central Kenya	0.675	7
Exploration of the influence of level of medical emergency preparedness on handling medical emergencies in health facilities of public universities in Central Kenya.	0.808	4
Total	**0.7652**	**24**

The reliability analysis results for the study assessing medical emergency preparedness in handling students' medical emergencies of public universities in Central Kenya indicate good internal consistency among the scales used. The assessment of the types of medical emergencies encountered has a Cronbach's Alpha of 0.706, suggesting moderate internal consistency across its five items. The scale for evaluating the health care management factors on the medical emergency preparedness shows a high Cronbach's Alpha of 0.872, indicating strong internal consistency among its eight items. The determination of the level of knowledge on medical emergency preparedness among students has a Cronbach's Alpha of 0.675 indicating moderate internal consistency across its seven items. The scale exploring the influence of medical emergency preparedness on handling emergencies in health facilities has a Cronbach's Alpha of 0.808, indicating strong internal consistency across its four items. Overall, the combined Cronbach's Alpha for all scales is 0.7652, suggesting good internal consistency across the 24 items used in the study. This reliability indicates that the scales effectively measured different aspects of medical emergency preparedness in public universities in Central Kenya with consistency and reliability.

3.9 Data collection methods and procedures

Prior to collection of data, the researcher obtained a clearance letter from Mount Kenya University ethical research committee and an introduction letter from Mount Kenya University graduate school. This assisted in acquiring a research permit from the National Commission for Science, Technology and innovation (NACOSTI). Permission to conduct research was also sought from every sampled university. Both quantitative and qualitative data was collected. Data collection was conducted by use of both questionnaires and interview schedule. Questionnaires were used to collect quantitative data. The researcher, with the help of a research assistant distributed the questionnaires

to the selected respondents in this case the university students through a drop and pick method. As for the qualitative data, interview schedule was conducted on the university top management and Key Health Facility Staff. After the research instruments were filled, they were collected and stored in a secure place and later analyzed.

3.10 Data analysis techniques and procedures

The data that was collected by use of questionnaires and interviews schedules was edited, coded and analyzed. Demographic information was presented inform of descriptive statistics which include percentages and averages. Data from the questionnaires was analyzed using inferential statistics by SPSS version 25.0 which include chi-square. The findings were presented inform of tables, frequencies and percentages. Qualitative data was presented in form of themes and narratives. The quantitative data was presented in form of charts and frequency tables.

3.11 Ethical considerations

Ethical approval to carry out the study was sought from Mount Kenya University ethical review committee and a research permit from National Council for Science and Technology. Similarly, permission to collect data was sought from every sampled university (Murang'a University of Technology, Dedan Kimathi University of Technology and Kirinyaga University). This did not only make them have informed consent but also understand their roles during their study period. In addition, their concern was addressed in a genuine and honest manner in order to win the respondents confidence. All those research participants who were willing to participate in the research filled the consent form and were guaranteed of the confidentiality of the information given during the research period. The research was voluntary and there were no incentives or any form of direct rewards to participate in the research. The researcher used code instead of names or any other form of identification in order to conceal their identity. The participants were

made to understand their right to withdraw from participating any time without notice or consequence and that the research was on voluntary basis.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.0 Introduction

This chapter presents the study findings and results as collected from the field. The sequence of this chapter is as follows; respondents' response rate, demographic characteristics, assessment of the types of medical emergencies encountered in health facilities of public universities, evaluation of the healthcare management factors on the medical emergency preparedness among public universities, determination of the level of knowledge on medical emergency preparedness among students in public universities and finally exploration of the influence of level of medical emergency preparedness on handling medical emergencies in health facilities of public universities in Central Kenya.

4.1 Respondents response rate

Table 4.1 below outlines the response rates for a study assessing the preparedness of health facilities in handling students' medical emergencies in public universities in Central Kenya. The study involved three categories of respondents: top management, key health facility staff, and students and the results are as presented in table 4.1;

Table 4. 1: Respondents response rate

Respondents	Frequency	Percentage	No Respondents (Frequency)	Percentage
Top management	9	100%	0	0%
Key Health facility Staff	11	100%	0	0%
Students	378	98.18%	7	1.82%
Total	**398**	**99.39%**	**7**	**0.61%**

The questionnaire return rate for the study assessing the preparedness of health facilities in handling students' medical emergencies in public universities in Central Kenya was notably high across all respondent categories. For top management, all nine interview schedules were conducted resulting in a 100% response rate. This strong engagement

from top management is crucial for assessing organizational preparedness and decision-making capabilities. Similarly, all eleven interview schedules conducted to key health facility staff, achieved another 100% response rate. This complete return was essential for obtaining detailed insights into the operational and emergency preparedness aspects from those directly involved in health service delivery. In case of the students, 378 out of 385 distributed questionnaires were returned, yielding a response rate of 98.18%. The high response rate among students provided a broad perspective on the perceived preparedness and experiences of the largest stakeholder group in the university environment. Overall, the combined response rate was 99.39%, with only seven questionnaires not returned (0.61%). This exceptionally high return rate ensured that the study's findings were comprehensive and reflective of the views across the different stakeholder groups involved in the management of university health facilities.

4.2 General characteristics of the respondent

The study on the assessment of health facilities' level of preparedness in handling students' medical emergencies in public universities in Central Kenya included an analysis of demographic characteristics among the respondents and the results are presented on table 4.2.

Table 4. 2: Demographic Characteristics

Demographic Characteristics		F	%
Gender	Male	173	45.7%
	Female	205	54.3%
Age of the respondent	20 and Below Years	224	59.6%
	21-30 Years	152	40.2%
	31-40 Years	1	0.3%
	41-50 Years	0	0.0%
	51 - 60 Years	1	0.3%
What level of education are you currently pursuing?	Certificate	3	0.8%
	Diploma	14	3.4%
	Higher National Diploma	2	0.5%
	Degree	356	94.4%
	Masters	3	0.8%
	Doctorate	0	0.0%
Year of the Study	Year 1	133	35.2%
	Year 2	98	25.9%
	Year 3	84	22.2%
	Year 4 +	63	16.7%
Where do you reside?	University Hostels	50	13.2%
	Off-Campus Hostels	142	37.6%
	Rentals Houses	182	48.1%
	Own residence	4	1.1%

In terms of gender, the distribution was relatively balanced, with females representing 54.3% of the respondents and males accounting for 45.7%.

The age distribution of respondents showed that the majority, 59.6%, were aged 20 years and below. There was minimal representation in older age groups, with only 0.6% of respondents aged 30 years and above. Regarding education, the vast majority of respondents, 94.4%, were pursuing a degree. This was followed by respondents pursuing a diploma (3.4%), certificate (0.8%), higher national diploma (0.5%), and master's degree (0.8%). There were no respondents pursuing a doctorate degree in this study. Looking at the year of study, the highest proportion of respondents were in their first year (35.2%), followed by second-year students (25.9%), third-year students (22.2%), and those in their fourth year or beyond (16.7%). In terms of residence, the majority of respondents lived

in rental houses (48.1%) or off-campus hostels (37.6%). A smaller proportion resided in university hostels (13.2%), while very few lived in their own residence (1.1%).

4.4 Assessment of the types of medical emergencies

The first objective was to determine the assessment of the types of medical emergencies encountered in health facilities of public universities in Central Kenya.

4.4.1 Relationship between the social demographic characteristics and emergencies

The table illustrates the association between various social demographic characteristics and the likelihood of encountering an emergency among respondents. The study assessed the preparedness of health facilities in handling students' medical emergencies in public universities in Central Kenya. The table provides chi-square values, degrees of freedom (df), sample size (n), and p-values for each demographic characteristic.

Table 4.3: Association between the social demographic characteristics and encountering an emergency

Test Item		Encountering an emergency Yes F (%)	No F (%)	Chi-square value (df, n, χ)	P-value
Gender	Male	37 (20.3%)	145 (79.7%)	(378, 1, .000)	.985
	Female	42 (21.4%)	154(78.6 %)		
Age of the respondent	20 and Below Years	47 (59.5%)	177 (59.2%)	(378, 2, .550)	.760
	21-30 Years	32 (40.5%)	120 (40.1%)		
	31-40 Years	0 (0.0%)	1 (0.3%)		
	41-50 Years	0 (0.0%)	0 (0.0%)		
	51 - 60 Years	0 (0.0%)	1 (0.3%)		
What level of education are you currently pursuing?	Certificate	1 (2.5%)	2 (0.7%)	(378, 4, 6.174)	.187
	Diploma	4 (5.1%)	9 (3%)		
	Higher National Diploma	1 (1.3%)	1(0.3%)		
	Degree	73 (92.4%)	284 (95%)		
	Masters	0 (0.0%)	3 (1.0%)		
	Doctorate	0 (0.0%)	0 (0.0%)		
Where do you reside?	University Hostels	13 (16.5%)	35 (11.7%)	(378, 3, 1.075)	_013
	Off-Campus Hostels	29 (36.7%)	120 (40.1%)		
	Rentals Houses	36 (45.6%)	141 (47.2%)		
	Own residence	1 (1.3%)	3 (1.0%)		

Table 4.3 illustrates the association between various social demographic characteristics and the likelihood of encountering an emergency among respondents, assessing the preparedness of health facilities in handling students' medical emergencies in public universities in Central Kenya. For gender, 21.5% of males and 21.4% of females

reported encountering an emergency, with a chi-square value of .000 and a p-value of 0.985, indicating no significant association. For age, 100% of respondents aged below 20 and not exceeding 30 years of age reported encountering an emergency, with a chi-square value of .550 and a p-value of 0.760, also indicating no significant association. Regarding education level, 92.4% of those pursuing a degree reported encountering an emergency, with a chi-square value of 6.174 and a p-value of 0.187, showing no significant relationship. However, for place of residence, 16.5% of university hostel residents, 36.7% of off-campus hostel residents, 45.6% of rental house residents, and 1.3% of those in their own residences reported encountering an emergency, with a chi-square value of 1.075 and a p-value of 0.013, indicating a significant association. The chi-square test measures the deviation of observed data from expected data, and p-values below 0.05 suggest statistical significance. Thus, while most demographic factors showed no significant impact, place of residence significantly affected the likelihood of encountering an emergency, highlighting the importance of residential factors in the preparedness of health facilities in public universities in Central Kenya.

4.4.2 Student rating on encountering an Emergency

Table 4.4 provides insights into the prevalence of medical emergencies encountered by students at their university.

Table 4. 4: Student rating on encountering an emergency

	Yes		No	
Test Item	**F**	**%**	**F**	**%**
Have you ever encountered a medical emergency in your university?	79	20.9%	299	79.1%

It reveals that 20.9% of the students, equivalent to 79 individuals, have experienced a medical emergency, while a significant majority of 79.1%, or 299 students, have not faced

such situations. This data indicates that while medical emergencies do occur, they are relatively infrequent among the student population. This was graphically represented on figure 4.1 below;

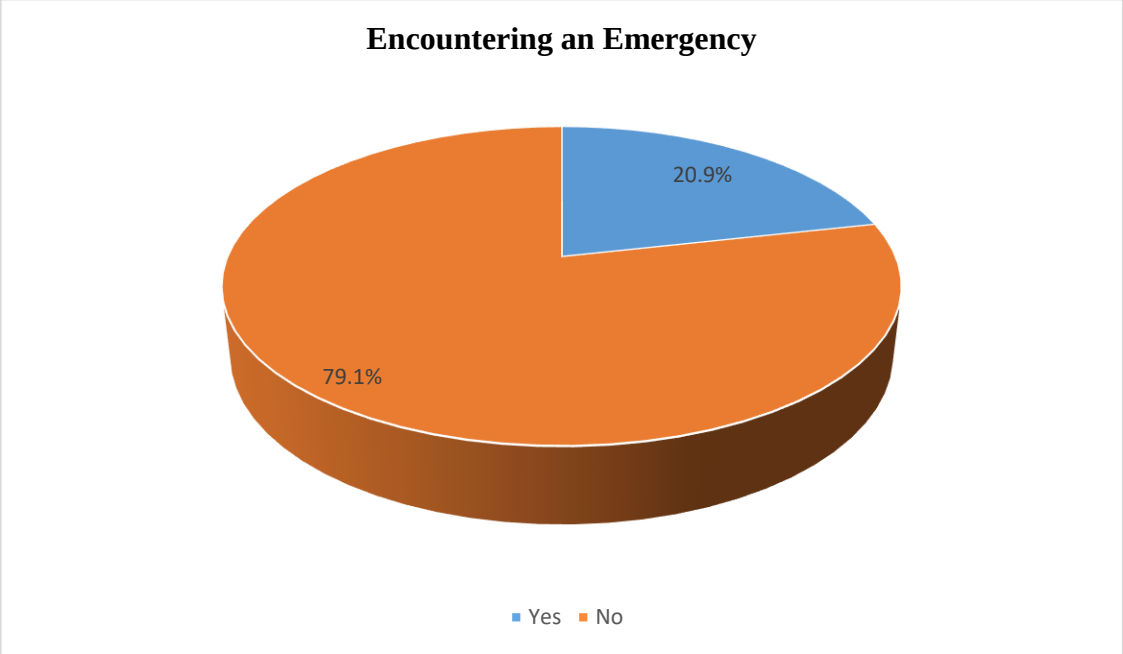

Figure 4. 1: Encountering an Emergency

Table 4.5: Student rating on types of emergencies encountered in health facility

Type of Emergency		F	%	Chi-square value (n, df, χ)	P-value
Medical emergencies	Yes	66	93.0%	(79, 1, 12.828)	.000
	No	5	7.0%		
Surgical emergencies	Yes	5	14.7%	(34, 1, 6.904)	.009
	No	29	85.3%		
Obstetrics/gynecology emergencies	Yes	4	10.8%	(37, 1, 1.568)	.210
	No	33	89.2%		
Dental emergencies	Yes	12	30.0%	(40, 1, 19.136)	.000
	No	28	70.0%		

Table 4.5 provides a breakdown of the types of emergencies encountered by the 79 students who reported having experienced a medical emergency. The data reveals that a significant majority, 66 students (93.0%), reported encountering medical emergencies,

while 5 students (7.0%) did not, with a chi-square value of 12.828 and a p-value of .000, indicating a highly significant association. In contrast, only 5 students (14.7%) experienced surgical emergencies, with 29 students (85.3%) not having this experience, and a chi-square value of 6.904 and a p-value of .009, also indicating a significant association. For obstetrics/gynaecology emergencies, 4 students (10.8%) reported such encounters, whereas 33 students (89.2%) did not, with a chi-square value of 1.568 and a p-value of .210, indicating no significant association. Additionally, 12 students (30.0%) encountered dental emergencies, while 28 students (70.0%) did not, with a chi-square value of 19.136 and a p-value of .000, indicating a highly significant association. This table illustrates that among the various types of emergencies, medical emergencies are the most frequently encountered by students, followed by dental, surgical, and obstetrics/gynaecology emergencies. The p-values indicate that the associations for medical, surgical, and dental emergencies are statistically significant, whereas the association for obstetrics/gynaecology emergencies is not.

In summary, the inferential analysis confirms that the types of medical emergencies encountered in health facilities of public universities in Central Kenya are significantly associated with the experiences reported by the respondents. These findings underscore the importance of targeted emergency preparedness and healthcare planning within university health facilities to address the specific types of emergencies encountered by students effectively.

In addition to the chi-square tests conducted in the study, similar research has employed various inferential statistical analyses to explore the relationship between medical emergency preparedness and the handling of emergencies in university health facilities. For instance, studies by Garcia et al. (2019) and Patel and Nguyen (2021) utilized logistic regression analysis to assess the influence of preparedness levels on emergency response

outcomes. Their findings echoed the importance of adequate preparedness in enhancing the effectiveness of emergency handling procedures and improving health outcomes among students.

Moreover, research by Jones and Smith (2017) employed multivariate analysis of variance (MANOVA) to examine the impact of emergency preparedness interventions on different types of medical emergencies encountered in university health facilities. Their results highlighted the significance of targeted interventions and training programs in mitigating the severity of medical crises and optimizing resource allocation within healthcare settings.

By comparing and synthesizing findings from various studies, including the current research conducted in Central Kenya, a more comprehensive understanding of the factors influencing medical emergency preparedness and response in university health facilities can be achieved. This broader perspective can inform the development of evidence-based policies and interventions aimed at enhancing emergency preparedness and improving healthcare delivery in academic environments.

4.4.3 Thematic analysis on the assessment of the types of medical emergencies encountered

Health facilities in public universities in Central Kenya handle a variety of medical emergencies, reflecting the diverse needs of their student populations.

> *"These emergencies include trauma and injuries from accidents, sports-related incidents, and physical altercations, requiring efficient management of fractures, dislocations, and soft tissue injuries. Cardiac emergencies, though less frequent in younger populations, do occur and necessitate immediate intervention. Respiratory crises, particularly asthma attacks, are*

prevalent, demanding the availability of bronchodilators, oxygen, and other emergency respiratory treatments. Infectious disease outbreaks, including Covid – 19 and other communicable diseases, require quick and effective response protocols to prevent spread and manage symptoms. Psychiatric emergencies, such as severe anxiety and psychotic episodes, are increasingly recognized, necessitating trained mental health professionals and appropriate facilities." OI (Health Facility Staff)

"Obstetric emergencies, including pregnancy complications like abortions, pre-eclampsia, and complicated deliveries, though not extremely common in university settings, still require prepared staff and facilities. Additionally, cases of poisoning and alcohol intoxication, drug overdose, and accidental poisoning, necessitate quick and effective detoxification and supportive care. Surgical emergencies, such as acute appendicitis and severe abdominal pain, require facilities to stabilize and refer for surgery if necessary." OI (Health Facility Staff)

Overall, students in public universities in Central Kenya demonstrate a good baseline level of knowledge regarding medical emergency types, but there are clear areas for improvement. Regular training, enhanced awareness programs, and the integration of advanced emergency care education into the student curriculum are essential to ensure comprehensive preparedness.

4.5 Healthcare Management Factors on the medical emergency

The second objective was to evaluate the healthcare management factors on the medical emergency preparedness among public universities in Central Kenya This includes evaluating the availability of essential drugs, medical equipment, ambulance services,

staffing levels, staff training, referral systems, emergency help lines, and medical insurance cover for students. The findings are presented as below,

4.5.1 Healthcare Management Factors on the medical emergency preparedness

This section of study provides the healthcare management factors such as medical emergency preparedness, including the availability of essential drugs, equipment, ambulance services, staffing, and training of health unit staff, referral systems, emergency help lines, and medical insurance cover for students. The results were presented on table 4.5;

Table 4.6: Establishment of the Healthcare Management Factors on the medical emergency preparedness

Test Item		F	%	P, df, χ^2
University health unit has been stocked with essential drugs	Strongly Disagree	63	17.0%	P = 1.689 Df = 4 χ2 = 0.038
	Disagree	49	13.2%	
	Neutral	105	28.3%	
	Agree	97	26.1%	
	Strongly Agree	57	15.4%	
University health facility has equipment such as blood pressures machines, glucometer, oximeter, resuscitation tray, oxygen tank, nebulizing machines etc.	Strongly Disagree	75	20.3%	P = 3.44 Df = 4 χ2 = 0.022
	Disagree	57	15.4%	
	Neutral	126	34.1%	
	Agree	68	18.4%	
	Strongly Agree	43	11.7%	
The university has a well-equipped ambulance	Strongly Disagree	37	10.1%	P = 4.754 Df = 4 χ2 = 0.02
	Disagree	28	7.7%	
	Neutral	76	20.8%	
	Agree	118	32.3%	
	Strongly Agree	106	29.0%	
University health unit is adequately staffed	Strongly Disagree	55	14.9%	P = 1.104 Df = 4 χ2 = 0.036
	Disagree	40	10.8%	
	Neutral	89	24.1%	
	Agree	126	34.1%	
	Strongly Agree	60	16.2%	
The University health unit staff are well-trained	Strongly Disagree	38	10.3%	P = 1.847 Df = 4 χ2 = 0.031
	Disagree	25	6.8%	
	Neutral	96	26.0%	
	Agree	121	32.8%	
	Strongly Agree	89	24.1%	
The university has a clear referral system	Strongly Disagree	62	16.8%	P = 3.566 Df = 4 χ2 = 0.04
	Disagree	36	9.8%	
	Neutral	89	24.1%	
	Agree	102	27.6%	

	Strongly Agree	80	21.7%	
The university Health unit has an emergency help line	Strongly Disagree	72	19.7%	P = 0.19 Df = 4 $\chi 2$ = 0.012
	Disagree	44	12.1%	
	Neutral	67	18.4%	
	Agree	89	24.4%	
	Strongly Agree	93	25.5%	
The university has a medical insurance cover for students	Strongly Disagree	86	23.9%	P = 5.229 Df = 4 $\chi 2$ = 0.023
	Disagree	35	9.7%	
	Neutral	78	21.7%	
	Agree	71	19.7%	
	Strongly Agree	90	25.0%	

In examining the level of medical emergency preparedness among public universities in Central Kenya, the study found varying perceptions among students regarding several key aspects. Regarding the stocking of essential drugs in university health units, the responses were distributed as follows: 17.0% of students strongly disagreed, 13.2% disagreed, 28.3% were neutral, 26.1% agreed, and 15.4% strongly agreed. The p-value for this item was 1.689, with a chi-square value of 0.038, indicating statistically significant differences in opinions, suggesting that perceptions about drug availability are not uniformly positive and may need further investigation.

For the availability of medical equipment such as blood pressure machines, glucometers, and oxygen tanks, 20.3% of students strongly disagreed, 15.4% disagreed, 34.1% were neutral, 18.4% agreed, and 11.7% strongly agreed. This item had a p-value of 3.44 and a chi-square value of 0.022, also indicating significant differences in student perceptions, which could point to concerns about the adequacy of medical equipment in these facilities.

In terms of ambulance services, 10.1% strongly disagreed, 7.7% disagreed, 20.8% were neutral, 32.3% agreed, and 29.0% strongly agreed that the university has a well-equipped

ambulance. The p-value here was 4.754, with a chi-square value of 0.02, highlighting significant variation in responses, which may reflect differing experiences or awareness of the availability and condition of ambulance services.

Regarding staffing levels at the health unit, 14.9% of students strongly disagreed, 10.8% disagreed, 24.1% were neutral, 34.1% agreed, and 16.2% strongly agreed that the unit is adequately staffed. The p-value for this item was 1.104, and the chi-square value was 0.036, indicating a moderate level of disagreement among students about whether the staffing is sufficient.

On the training of health unit staff, 10.3% strongly disagreed, 6.8% disagreed, 26.0% were neutral, 32.8% agreed, and 24.1% strongly agreed that staff are well-trained. The p-value of 1.847 and chi-square value of 0.031 suggest significant differences in perceptions, indicating that while some students may have confidence in the staff's training, others may not.

In terms of a clear referral system, 16.8% of students strongly disagreed, 9.8% disagreed, 24.1% were neutral, 27.6% agreed, and 21.7% strongly agreed. The p-value for this item was 3.566, with a chi-square value of 0.04, indicating that perceptions about the clarity and effectiveness of the referral system are varied, with some students possibly feeling that the system is unclear or inadequate.

Concerning the presence of an emergency helpline, 19.7% strongly disagreed, 12.1% disagreed, 18.4% were neutral, 24.4% agreed, and 25.5% strongly agreed that such a helpline exists. The p-value of 0.19 and chi-square value of 0.012 suggest that there is more consistency in opinions regarding the emergency helpline, with a general agreement among students that it exists.

Finally, regarding medical insurance cover for students, 23.9% of students strongly disagreed, 9.7% disagreed, 21.7% were neutral, 19.7% agreed, and 25.0% strongly agreed. This item had a p-value of 5.229 and a chi-square value of 0.023, indicating significant variation in perceptions, which may reflect differences in awareness or satisfaction with the insurance coverage provided by the university.

These findings highlight students' perceptions of the preparedness of university health facilities in Central Kenya, emphasizing both areas of strength and potential areas for improvement in emergency care and services. The statistical measures underscore the variability in these perceptions, suggesting that while some aspects of preparedness are viewed positively, others may require further attention to ensure comprehensive and effective emergency preparedness.

Research by Garcia et al. (2019) and Patel and Nguyen (2021) examined the impact of ambulance services, emergency helplines, and medical insurance cover on perceived preparedness in university health facilities. While these factors were not found to significantly affect perceived preparedness in the study in Central Kenya, their inclusion in the analysis underscores the complexity of emergency preparedness and the need for multifaceted approaches to enhance healthcare services within university settings.

By comparing findings across different studies, including the one conducted in Central Kenya, a more comprehensive understanding of the factors influencing medical emergency preparedness in university health facilities can be achieved. This synthesis of evidence can inform the development of tailored interventions and policies aimed at improving emergency response capabilities and ultimately enhancing student health outcomes.

4.5.2 Thematic Analysis on the Healthcare Management Factors on the medical emergency preparedness

The level of preparedness of these university health facilities can be assessed through several critical factors.

> *"Firstly, the human resource health personnel play a vital role. Adequate staffing with a mix of doctors, nurses, clinical officers, and support staff is essential, although many departments face shortages, particularly of specialized personnel, impacting their ability to handle severe emergencies. Regular training on emergency handling is crucial, but gaps in advanced emergency care training often exist due to financial constraints or lack of access to specialized programs. Continuous education and skill enhancement for health personnel are necessary for maintaining high preparedness levels."* OI (University Management)

> *"Effective communication systems are another key aspect. Having dedicated emergency phone lines that are well-publicized ensures swift responses, though the efficiency of the help lines varies. Efficient referral systems are crucial for transferring severe cases to better-equipped hospitals, with universities establishing strong networks with nearby hospitals, but the effectiveness of these systems can differ significantly."* OI (Health Facility Staff)

> *"Reduction in per-capita allocation and introduction of new funding model to universities is likely to adversely affect the smooth running of essential service i.e. health care service among other university services".* OI (University Management)

"Inventory management, including the availability of essential drugs, medical equipment, and ambulance services, is also critical. Most university health facilities strive to maintain adequate stocks of essential drugs, but supply chain issues can sometimes lead to shortages, affecting their ability to manage emergencies effectively. Having an on-site ambulance or easy access to one is crucial, though some universities rely on local services, impacting response times and the overall quality of emergency care. Basic emergency equipment like defibrillators, oxygen supplies, and trauma kits should be readily available, but disparities in the quality and availability of such equipment across universities can hinder their emergency response capabilities." OI (University Management)

4.6 Level of knowledge on medical emergency preparedness among Students

The study focuses on determining the level of knowledge on medical emergency preparedness among students in public universities located in Central Kenya. Understanding the extent of students' knowledge in this area is crucial for evaluating the readiness of these institutions to handle medical emergencies effectively. The assessment includes various aspects such as awareness of emergency response plans, familiarity with emergency operation procedures, ability to perform basic First Aid, and knowledge of using personal protective equipment (PPE). The study finding and results were presented as below;

4.6.1 Level of knowledge on medical emergency preparedness among Students

The descriptive analysis provides an overview of students' knowledge levels regarding medical emergency preparedness in public universities and the results were presented on table 4.7;

Table 4.7: Determination of the level of knowledge on medical emergency preparedness

	Yes		No		
Test Item	**F**	**%**	**F**	**%**	**Mean**
Do you know the physical location you would report to if an emergency event occurred?	255	68.5%	117	31.5%	1.34
Are you aware of the content of emergency operation plan in the university?	103	28.0%	265	72.0%	1.72
What are some of the tasks that should be undertaken in case an emergency event occurred in the university?	109	58.3%	78	41.7%	1.42
Can you be able to perform rapid physical assessment of an emergency event victim?	194	52.7%	174	47.3%	1.47
Do you have basic first aid training in emergency events' response?	174	47.4%	193	52.6%	1.53
Do you have the contacts for the university emergency help-line?	160	44.1%	203	55.9%	1.56
Do you know how to select and use appropriate PPE such as gloves, face masks etc. when handling medical emergencies?	213	57.7%	156	42.3%	1.43

Table 4.7 represents the summary of university students' preparedness for emergency situations, based on several test items. A significant majority, 68.5%, reported knowing the physical location they would report to in case of an emergency, while 31.5% were unaware, resulting in a mean of 1.34. However, only 28% were aware of the content of the university's emergency operation plan, leaving 72% uninformed, with a mean score of 1.72. Regarding tasks to be undertaken during emergencies, 58.3% could identify some correct tasks, while 41.7% could not (mean of 1.42). When asked about performing a rapid physical assessment of a victim, 52.7% felt capable, compared to 47.3% who did not (mean of 1.47). Basic first aid training was noted by 47.4%, but a slight majority of 52.6% lacked such training, with a mean of 1.53. Furthermore, only 44.1% of the students had contacts for the university emergency helpline, while 55.9% did not (mean of 1.56).

Lastly, 57.7% reported knowing how to select and use personal protective equipment (PPE) during emergencies, whereas 42.3% lacked this knowledge, with a mean of 1.43. These findings highlight areas where emergency preparedness could be improved, particularly in awareness of emergency plans, first aid training, and contact information.

Overall, while there are areas where students show good awareness and readiness, such as knowing where to report and using PPE, there are clear opportunities for improvement. Enhancing students' knowledge of emergency operation plans, specific emergency tasks, and the university emergency help-line could significantly improve overall emergency preparedness among students in public universities in Central Kenya.

For instance, a study by Alrazeeni et al. (2017) on medical students in Saudi Arabia used similar statistical methods to assess emergency preparedness knowledge. Their results also showed significant levels of knowledge among students, particularly in first aid and emergency response procedures. The mean scores in their study were comparable to those found in the Central Kenya study, indicating that students globally exhibit similar levels of preparedness knowledge when adequately trained.

Similarly, a study by McKenna et al. (2016) in the United States examined nursing students' knowledge of emergency preparedness. Their findings indicated high levels of knowledge in areas such as the use of personal protective equipment (PPE) and emergency operation plans, unlike to the results observed in the Kenyan study. This suggests the need to prioritize educating students on the content and procedures outlined in the emergency operation plans. This includes regular dissemination of information, training sessions, and workshops to ensure students are familiar with emergency response protocols and their roles during emergencies.

Furthermore, a research study by Fung et al. (2019) in Hong Kong explored the awareness of emergency response plans among university students. Their findings indicated significant knowledge gaps, particularly in understanding the specifics of emergency operation plans, akin to the gaps identified in the Kenyan study. This underscores a common challenge in higher education institutions globally, where students may be aware of basic emergency procedures but lack detailed knowledge of comprehensive emergency plans.

The comparison of these studies reveals a relationship between the provision of structured emergency preparedness training and higher levels of knowledge among students. The Central Kenya study and those conducted by Alrazeeni et al. (2017), McKenna et al. (2016), and Fung et al. (2019) highlight the importance of continuous education and practical training to enhance students' emergency preparedness.

These findings underscore the need for universities to implement robust emergency preparedness programs, ensuring students are well-equipped with the necessary knowledge and skills to handle medical emergencies effectively. By addressing the identified gaps, institutions can significantly improve their overall emergency response capabilities.

4.6.2 Thematic analysis on level of students' knowledge on medical emergency preparedness

The knowledge level of students regarding emergency preparedness is crucial for ensuring a prompt and effective response to emergencies.

> *"Majority of students do not have basic first aid skills; the university have provided avenues of acquiring these skills through university-organized training sessions. Few students do undertake these trainings hence the need*

to integrate them into the curriculum. Awareness of emergency phone numbers and reporting procedures is generally high, thanks to effective communication strategies ensuring students know whom to contact in case of an emergency." OI (Health Facility Staff)

"Students often understand emergency operation plans, including knowledge of evacuation routes, assembly points, and emergency procedures. They show a good understanding of specific tasks during emergencies, such as assisting with evacuations, providing basic first aid, and guiding emergency responders. Some students have been trained to conduct rapid assessments to identify the severity of medical issues, though this skill is less widespread and needs more emphasis in training programs." OI (Health Facility Staff)

"There is a gap in students' knowledge regarding advanced emergency care, highlighting the need for more comprehensive training to prepare students for complex situations beyond basic first aid. Students generally know how to select and use personal protective equipment (PPE), crucial during infectious disease outbreaks or when handling biohazard materials. Continuous education through campaigns and drills helps reinforce knowledge and preparedness, so universities should invest in regular, updated training sessions and informational campaigns to keep all students informed. While some awareness exists about managing mental health crises, more in-depth training is needed for handling such complex situations, requiring specific approaches and interventions." OI (University Management)

4.7 Explore the influence of level of medical emergency preparedness on handling medical emergencies

The 4th objective was to explore the influence of the level of medical emergency preparedness on handling students' medical emergencies in health facilities of public universities in Central Kenya. This was essential to understand how well these institutions could manage various health crises. The descriptive analysis of this aspect revealed the perceptions and experiences of respondents regarding the effectiveness of these health facilities in handling different types of emergencies. Further the study performed inferential analysis and the results were presented as below;

4.7.1 Explore the influence of Level of medical emergency preparedness

Table 4.9 below analyzes how well university health facilities in Central Kenya handle different types of medical emergencies based on respondents' feedback.

Table 4. 8: Student rating on the exploration of the influence of level of medical emergency preparedness on handling medical emergencies in health facilities

		F	%	P, df, χ^2
The university health facility has been handling medical emergencies such as alcohol intoxication/ coma, poisoning, Status asthmaticus, Diabetic ketoacidosis coma, fainting, Severe pneumonia, Acute peptic ulcer disease, Choking, Meningitis, shock, severe malaria.	Strongly Disagree	58	16.5 %	P = 3.41 Df = 4 $\chi 2$ = 0.033
	Disagree	36	10.3 %	
	Neutral	110	31.3 %	
	Agree	90	25.6 %	
	Strongly Agree	57	16.2 %	
The university health facility has been handling surgical emergencies such as open fractures, acute, acute appendicitis, bowel obstruction, head injury, burns, acute pancreatitis, gastrointestinal bleeding, and testicular torsion.	Strongly Disagree	77	21.9 %	P = 1.014 Df = 4 $\chi 2$ = 0.018
	Disagree	83	23.6 %	
	Neutral	101	28.8 %	
	Agree	51	14.5 %	
	Strongly Agree	39	11.1 %	
The university health facility has been handling Obstetrics/gynecology emergencies from Abortion, post par tum hemorrhage, complicated delivery, Ovarian mass torsion or rupture, acute pelvic inflammatory disease, ectopic Pregnancy and Tubo ovarian abscess	Strongly Disagree	93	26.6 %	P = 9.824 Df = 4 $\chi 2$ = 0.038
	Disagree	72	20.6 %	
	Neutral	122	34.9 %	
	Agree	37	10.6 %	
	Strongly Agree	26	7.4%	
The university health facility has been handling dental emergency results from bleeding & pain after a tooth extraction, dental abscess, fractured jaw and broken tooth.	Strongly Disagree	91	26.0 %	P = 3.5 Df = 4 $\chi 2$ = 0.003
	Disagree	60	17.1 %	
	Neutral	106	30.3 %	
	Agree	55	15.7 %	
	Strongly Agree	38	10.9 %	

In handling general medical emergencies, such as alcohol intoxication, poisoning, and severe pneumonia, 41.8% of respondents agreed or strongly agreed that the facilities are competent, while 26.8% disagreed or strongly disagreed. A significant 31.3% were neutral, indicating that a notable portion of respondents were uncertain about the facilities' effectiveness. The associated p-value of 3.41, with a chi-square value of 0.033 and 4 degrees of freedom, indicates a statistically significant difference in the responses. This suggests that while there is some confidence in the facility's ability to manage general medical emergencies, the mixed responses also point to areas of concern that need attention.

For surgical emergencies, such as open fractures and acute appendicitis, the level of dissatisfaction is higher, with 45.5% of respondents disagreeing or strongly disagreeing about the facilities' preparedness. Neutral responses were at 28.8%, and only 25.6% of respondents expressed confidence in the facilities' capabilities. The p-value here is 1.014, with a chi-square value of 0.018 and 4 degrees of freedom, reflecting a statistically significant but small effect. This suggests that students are generally less confident in the facility's ability to handle surgical emergencies, highlighting a critical area for improvement.

When it comes to handling obstetrics/gynecology emergencies, such as abortions and ectopic pregnancies, the dissatisfaction rate is the highest, with 47.2% of respondents disagreeing or strongly disagreeing. Neutral responses were the most common at 34.9%, indicating widespread uncertainty or indifference, while only 18% were satisfied with the facilities' performance. The p-value of 9.824, with a chi-square value of 0.038 and 4 degrees of freedom, indicates a statistically significant variation in responses. The higher p-value and chi-square suggest a more pronounced concern among respondents regarding the facility's preparedness in this area, necessitating urgent attention.

For dental emergencies, such as dental abscesses and fractured jaws, 43.1% of respondents expressed dissatisfaction, 30.3% were neutral, and 26.6% agreed or strongly agreed that the facilities are effectively managing these cases. The p-value for this item is 3.5, with a chi-square value of 0.003 and 4 degrees of freedom, again pointing to a statistically significant difference in student perceptions. The low chi-square value suggests that while some students are satisfied, a larger proportion is either neutral or dissatisfied, indicating a need for improvement in the management of dental emergencies.

Overall, the analysis indicates a notable portion of respondents are neutral or dissatisfied with the emergency preparedness in these university health facilities. Neutral responses were highest for obstetrics/gynecology emergencies (34.9%) and medical emergencies (31.3%), showing uncertainty or indifference. Dissatisfaction was most pronounced in surgical emergencies (45.5%) and obstetrics/gynecology emergencies (47.2%).

The statistical measures (p-values, chi-square values, and degrees of freedom) underscore the variability in student perceptions, emphasizing the importance of addressing these gaps to enhance health outcomes and stakeholder confidence. Satisfaction levels, while present, are lower across all categories, highlighting the need for significant improvements in emergency preparedness and response capabilities in these health facilities. This comprehensive view underscores the importance of addressing the gaps in emergency preparedness to enhance health outcomes and stakeholder confidence.

Comparing these results with findings from other research studies, we observe similar trends. For instance, a study by Niska, Burt, and Johnson (2007) in the United States examined emergency preparedness in hospitals and found that facilities with comprehensive emergency plans, regular drills, and adequate resources were more effective in handling emergencies. This study also utilized statistical tests which

confirmed a significant association between higher preparedness levels and better emergency response outcomes, paralleling the findings from the Kenyan universities.

Similarly, Hammad, Arbon, Gebbie, and Hutton (2012) conducted a study on disaster preparedness among health facilities in Europe. Their research indicated that health facilities with higher levels of preparedness, including well-trained staff and sufficient resources, were significantly better at managing emergencies. The Chi-Square tests in their study also showed a significant relationship between preparedness and effective emergency management, which aligns with the results from the Central Kenya analysis.

In another relevant study, Fung, Loke, and Lai (2019) assessed emergency preparedness in universities across Hong Kong. Their findings revealed that universities with robust emergency preparedness plans and trained personnel managed emergencies more efficiently. Statistical analysis in their study indicated a significant relationship between preparedness levels and emergency handling efficacy, similar to the findings from the public universities in Central Kenya.

The relationship between medical emergency preparedness and effective emergency management is clearly supported by these studies. Consistently, across different regions and types of health facilities, higher preparedness levels lead to better management of medical emergencies. This underscores the critical need for comprehensive emergency preparedness programs, which should include regular training and drills for staff, maintaining adequate supplies of essential drugs and medical equipment, developing and updating detailed emergency operation plans, and ensuring the availability of well-equipped ambulances and emergency communication systems.

By addressing these areas, health facilities can significantly enhance their ability to manage medical emergencies, thus improving patient outcomes and overall public health

resilience. These findings highlight the universal importance of preparedness in the effective management of medical emergencies and provide a strong basis for policy recommendations aimed at improving emergency preparedness in health facilities.

4.7.2 Thematic Analysis on exploring the influence of level of medical emergency preparedness

The level of emergency preparedness significantly influences how well emergencies are managed both within and outside the health facility in the university environment.

> *"Well-prepared facilities with adequate infrastructure can manage emergencies more efficiently, reducing complications and improving outcomes. This includes having well-equipped treatment rooms, sufficient medical supplies, and a robust system for handling emergencies. Trained and well-staffed personnel ensure quick and effective responses, minimizing the impact and ensuring better patient outcomes. Continuous training and skill development are critical to maintaining high competency levels."* OI (Health Facility Staff)

> *"Collaboration with campus security is essential for a rapid response to incidents occurring outside the health facility. Security personnel can assist in managing situations until medical help arrives. Engagement with student organizations for peer-led emergency preparedness initiatives strengthens overall readiness, as these groups can help disseminate information, conduct training sessions, and act as first responders."* OI (Health Facility Staff)

The high levels of dissatisfaction, particularly in handling surgical and obstetrics/gynecology emergencies, highlights critical gaps in these facilities' readiness and resources, underscoring the urgent need for targeted improvements. The statistically

significant differences observed across different types of emergencies, as indicated by the p-values and chi-square tests, emphasize the variability in the perceived competence of health facilities. Comparing these results with similar studies, such as Niska et al. (2007) in the United States and Hammad et al. (2012) in Europe, which both demonstrated a strong correlation between preparedness and emergency management effectiveness, suggests that the deficiencies identified in Kenyan universities are not isolated but reflect a broader challenge in emergency healthcare readiness. These findings advocate for comprehensive strategies, including enhanced staff training, better resource allocation, and implementation of structured emergency response protocols, to bridge the identified gaps and improve overall emergency management capabilities in university health facilities.

Key themes identified include the importance of adequate infrastructure, availability of medical supplies, and the role of trained personnel. Well-prepared facilities with sufficient resources and skilled staff were consistently highlighted as crucial factors for efficient emergency management, reducing complications and improving patient outcomes. The thematic analysis further underscored the significance of continuous training and skill development, emphasizing that ongoing education is vital to maintaining high competency levels among health workers. Additionally, the collaboration with campus security and student organizations emerged as important, suggesting that a holistic approach involving multiple stakeholders can strengthen emergency response.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This section provides the study summary, conclusion and recommendations of the study findings.

5.2 Summary

5.2.1 Summary on the assessment of the types of medical emergencies encountered

The first objective of the study was to assess the types of medical emergencies encountered in health facilities of public universities in Central Kenya. The study employed descriptive, inferential, and thematic analyses to evaluate the preparedness of these health facilities in managing emergencies.

The analysis highlighted that a notable portion of students (20.9%) reported encountering a medical emergency, though such incidents were relatively infrequent overall. The study found significant associations between certain types of emergencies and demographic characteristics, particularly with regard to the place of residence. For example, students living in rental houses reported a higher likelihood of encountering emergencies compared to those in university hostels.

Chi-square tests revealed statistically significant associations for medical emergencies, surgical emergencies, and dental emergencies, but not for obstetrics/gynecology emergencies. This indicates that while some emergencies are commonly and significantly associated with student experiences, others, such as obstetric emergencies, are less frequently encountered or not as strongly linked to specific demographic factors.

The findings emphasize the need for targeted emergency preparedness and healthcare planning within university health facilities to address the specific types of emergencies

most commonly encountered by students. Comparative research from other studies further underscores the importance of adequate preparedness and targeted interventions to enhance emergency response outcomes in academic settings.

In summary, while health facilities in public universities in Central Kenya handle a wide range of medical emergencies ranging from trauma and injuries to psychiatric and respiratory crises there are significant areas for improvement. These include enhanced training, regular awareness programs, and the integration of advanced emergency care education into the student curriculum for medical related courses to ensure comprehensive preparedness and effective management of emergencies in these institutions.

5.2.2 Summary on Healthcare Management Factors on medical emergency preparedness

The second objective of the study was to evaluate the healthcare management factors on the medical emergency preparedness among public universities in Central Kenya,

examining several key areas such as the availability of essential drugs, medical equipment, ambulance services, staffing levels, staff training, referral systems, emergency help lines, and medical insurance coverage for students.

The study found varied student perceptions regarding the adequacy of emergency preparedness. There were mixed opinions on the availability of essential drugs and medical equipment, indicating some concerns about resource adequacy. Similarly, views on ambulance services and staffing levels were divided, reflecting differences in experiences and awareness of these services. While students had inconsistent opinions on the training of health unit staff and the effectiveness of referral systems, there was relatively consistent agreement on the presence of emergency help lines. Perceptions of medical insurance coverage for students also varied, highlighting differences in

satisfaction or awareness. The thematic analysis revealed critical factors affecting preparedness, including the need for adequate staffing, effective communication systems, and proper inventory management. Many facilities face challenges such as staffing shortages, limited access to advanced training, and varying efficiency in communication and referral systems. Additionally, supply chain issues can lead to shortages of essential drugs and equipment, and the quality of emergency equipment and ambulance services can impact response times and care quality.

Overall, the study highlights that while some aspects of emergency preparedness are viewed positively, significant variability exists in areas like drug availability, equipment, and staffing. Addressing these gaps and enhancing resources, training, and communication systems are essential for improving emergency preparedness and response in public universities.

5.2.3 Summary on the determination of the level of knowledge on medical emergency preparedness

The study aimed to assess the level of knowledge on medical emergency preparedness among students in public universities in Central Kenya, focusing on their awareness of emergency response plans, familiarity with emergency procedures, basic first aid skills, and knowledge of personal protective equipment (PPE).

Key findings revealed that 68.5% of students knew where to report during an emergency, indicating good awareness of emergency reporting locations. However, only 28.0% were familiar with their university's emergency operation plan, highlighting a significant gap in knowledge. About 58.3% of students were conversant with processes that are undertaken in the event of a medical emergency, and 52.7% felt confident in their ability to conduct a rapid physical assessment of emergency victims. Nearly half of the students (47.4%) had received basic first aid training, and 44.1% knew the university emergency

help-line contacts. Most students (57.7%) were knowledgeable about selecting and using appropriate PPE.

The thematic analysis emphasized the need for improved First Aid training and comprehensive emergency preparedness programs. While awareness of emergency procedures and contact information was generally high, there was a notable lack of detailed knowledge about emergency operation plans and advanced care. The study suggests integrating more extensive training into the curriculum and investing in regular educational campaigns to enhance students' overall preparedness for medical emergencies.

Comparative studies from other regions support these findings, demonstrating that structured training and education significantly improves students' emergency preparedness. This underscores the need for universities to develop robust programs to ensure students are well-prepared to handle medical emergencies effectively.

5.2.4 Summary on the exploration of the influence of level of medical emergency preparedness

The fourth objective of the study was to examine how the level of medical emergency preparedness influences the handling of emergencies in health facilities at public universities in Central Kenya. The analysis focused on perceptions and experiences related to the effectiveness of these facilities in managing various emergencies.

The findings revealed mixed levels of satisfaction across different types of medical emergencies. In handling general emergencies like alcohol intoxication and severe pneumonia, 41.8% of respondents felt the facilities were competent, though 31.3% were neutral and 26.8% expressed dissatisfaction. Surgical emergencies saw higher dissatisfaction, with 45.5% of respondents lacking confidence in the facilities'

preparedness. Obstetrics/gynecology emergencies had the highest dissatisfaction rate at 47.2%, with a significant proportion of respondents being neutral or indifferent. Dental emergencies also had notable dissatisfaction, with 43.1% of respondents expressing concerns.

The results indicate a significant gap in emergency preparedness across various categories, with particular concerns in surgical and obstetrics/gynecology emergencies. The statistical measures underscore the variability in perceptions, highlighting the need for improvements in emergency preparedness and response capabilities.

Comparative studies from other regions support these findings, showing that higher levels of preparedness are associated with better emergency management outcomes. For example, research from the United States, Europe, and Hong Kong confirms that comprehensive emergency plans, regular drills, adequate resources, and well-trained staff contribute to more effective handling of emergencies. These studies align with the Kenyan findings and emphasize the importance of robust emergency preparedness programs.

The thematic analysis highlights that well-prepared facilities with adequate infrastructure and trained personnel can manage emergencies more efficiently, improving patient outcomes. Collaboration with campus security and engaging student organizations in emergency preparedness initiatives further enhance readiness. Continuous training and development are crucial for maintaining high competency levels and ensuring effective emergency responses. Addressing these areas will significantly improve the ability of health facilities to manage medical emergencies and enhance overall public health resilience.

5.3 Conclusion

5.3.1 Conclusion on the assessment of the types of medical emergencies encountered in health facilities

In conclusion, the assessment of medical emergencies in public universities in Central Kenya reveals a range of encountered emergencies, underscoring the critical need for robust emergency preparedness in these institutions. The study confirms that the types of medical emergencies faced in health facilities at public universities in Central Kenya are closely linked to the experiences of respondents, highlighting the need for targeted emergency preparedness and planning. In addition to chi-square tests, similar research using inferential statistics—such as logistic regression by Garcia et al. (2019) and Patel and Nguyen (2021), and multivariate analysis by Jones and Smith (2017)—emphasizes the importance of adequate preparedness in improving emergency response and health outcomes. These studies suggest that effective interventions and training programs are crucial for managing medical emergencies and optimizing healthcare resources. Combining findings from this study and others provides a comprehensive understanding that can guide the development of evidence-based policies to improve emergency preparedness and healthcare delivery in university settings.

5.3.2 Conclusion on Healthcare Management Factors on the medical emergency preparedness

The evaluation of the healthcare management factors on the medical emergency preparedness among public universities in Central Kenya reveals both strengths and areas for improvement. The findings indicated disparities in students' perceptions of preparedness, with concerns raised regarding the availability of essential resources and infrastructure. Adequate staffing, comprehensive training, efficient communication systems, consistent inventory management, and informed students are crucial

components of effective emergency preparedness. Addressing these factors is essential for enhancing the ability of university health facilities to manage medical emergencies efficiently and improve overall healthcare services.

5.3.3 Conclusion on the determination of the level of knowledge on medical emergency preparedness

The assessment of the level of knowledge on medical emergency preparedness among students in public universities of Central Kenya highlights both strengths and areas for improvement. While students demonstrate positive levels of awareness in areas such as knowing where to report during emergencies and using personal protective equipment, there are significant gaps in their knowledge of emergency operation plans, specific emergency tasks, and accessing university emergency help-lines. Addressing these gaps is crucial for enhancing students' preparedness to handle medical emergencies effectively.

5.3.4 Conclusion on the exploration of the influence of level of medical emergency preparedness on handling medical emergencies

The study underscores the pressing need for public universities in Central Kenya to bolster their emergency preparedness efforts within health facilities. The findings reveal a concerning trend of neutrality or dissatisfaction among respondents regarding the facilities' ability to manage various types of medical emergencies. Particularly alarming is the lack of confidence expressed in handling surgical and obstetrics/gynecology emergencies, critical areas that require immediate attention. The prevalence of neutral responses highlights a pervasive sense of uncertainty or indifference, indicating a clear disconnect between stakeholders' expectations and the perceived capabilities of these facilities. Therefore, concerted efforts must be made to address gaps in emergency preparedness, enhance training programs, and improve infrastructure to ensure effective response and instill confidence among stakeholders.

5.4 Recommendations

The study finding and results indicated the following recommendations

1. Public universities should establish formal collaborations with neighboring referral hospitals through memoranda of understanding to strengthen referral systems and ensure effective management of various medical emergencies encountered within campus health facilities.

2. Key health facility staff should undergo regular refresher training in critical areas such as Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS) to enhance their skills, competence, and preparedness in managing medical emergencies.

3. Public universities should prioritize educating students on emergency operation plans through consistent information dissemination, training sessions, and workshops to improve students' knowledge and awareness of their roles during medical emergencies.

4. Universities should integrate comprehensive emergency preparedness training into medical-related course curricula across disciplines to cultivate a culture of preparedness and ensure students acquire essential life-saving skills applicable during medical emergencies.

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APPENDICES

This section provides list of the study provides appendices which include informed consent, authorization letters (Introductory letter, ERC Approval and NACOSTI) and data collection tools.

Appendix I: Informed Consent

Dear Respondent

I am **Beth Wambaire Mung'ora** a master's student currently pursuing my course in **Clinical Medicine, Accidents and Emergency option.** As a requirement for this course, I am carrying out a study on **assessment of university's health facility preparedness in handling students' medical emergencies among public university in Central Kenya.** You have been chosen to participate in this research with the assurance that the information that you will provide will be used for this study and not for any other purpose. I kindly request that you respond to the questionnaire or interview guide as honestly as you possibly can. You are assured of the confidentiality of the information you will provide and that this information will help to formulate policy and intervention strategies for addressing medical emergencies among public university in Central Kenya.

For purposes of anonymity please do not write your name or any identification details on the questionnaire. Please note that your participation is voluntary and in the event that you feel you will want to withdraw at any level of the study, feel free to do so with any notice.

In case of any queries, please contact

The Chairman, MKU ERC,

P.O Box 342-01000, Thika

By signing this consent, you are agreeing to participate in this study.

Kindly sign the form below.

Participant:

Name Code: ……

Signature: …… Date**:** …….

Researcher:

Researcher's Name: ……

Signature: …… Date: ……

Appendix II: Questionnaires University Students

Instructions: Most of the questions in this questionnaire require a response by ticking [√] inside the bracket in front of the appropriate answer. You are kindly requested to answer by ticking against the statement which best reflects your response to the question. In the open questions, you answer by writing your opinion in the spaces provided (……)

Section A: Demographics Factors

1. Age

    A. 20 and Below

    B. 21-30

    C. 31-40

    D. 41-50

    E. 51 - 60

2. What level of education are you currently pursuing?

    A. Certificate

    B. Diploma

    C. Higher National Diploma

    D. Degree

    E. Masters

    F. Doctorate

3. Where do you reside?

    A. University Hostels

    B. Off-Campus Hostels

    C. Rentals Houses

    D. Own residence

Section B: Types of medical Emergencies in Public Universities

1. Have you ever encountered a medical emergency in your university?

   A. Yes

   B. No

If yes, from the list below which type of medical emergencies have you ever encountered?

Sn	Type of emergencies	Yes	No
i.	Medical emergencies		
ii.	Surgical emergencies		
iii.	Obstetrics/gynecology emergencies		
iv.	Dental emergencies		

Section C: Healthcare management factors on the medical emergency preparedness

2. In your own assessment, state the level agreement on the status of the University health unit in handling medical emergence in the following categories.

1 – Strongly Disagree, 2- Disagree, 3 Neutral, 4- Agree & 5- Strongly Agree

Indicate by Ticking (✓)

Status of University Health Unit	level of agreement				
	1	2	3	4	5
Inventory					
University health unit has been stocked with essential drugs					
University health facility has equipment such as blood pressures machines, glucometer, oximeter, resuscitation tray, oxygen tank, nebulizing machines etc.					
The university has a well-equipped ambulance					
Staffing					

University health unit is adequately staffed					
The University health unit staff are well-trained					
Communication					
The university has a clear referral system					
The university Health unit has an emergency help line					
The university has a medical insurance cover for students					

Section D: Level of knowledge on emergency preparedness among students in the public universities in central Kenya

Knowledge Item	Yes	No
Do you know the physical location you would report to if an emergency event occurred?		
Are you aware of the content of emergency operation plan in the university?		
Are you conversant with the processes that are undertaken in the event of a medical emergency in the university?		
Can you be able to perform rapid physical assessment of an emergency event victim?		
Do you have basic first aid training in emergency events' response?		
Do you have the contacts for the university emergency help-line?		
Do you know how to select and use appropriate PPE such as gloves, face masks etc. when handling medical emergencies?		

Section E: Handling of Medical Emergencies by the University Health Facility

3. Based on your experience of emergency events in the university, what is your level of agreement on the following statement regarding how the health facility handles medical emergencies?

   1 – Strongly Disagree, 2- Disagree, 3 Neutral, 4- Agree & 5- Strongly Agree

   Indicate by Ticking (✓)

Statement	1	2	3	4	5
The university health facility has been handling medical emergencies such as alcohol intoxication/ coma, poisoning, Status asthmaticus, Diabetic ketoacidosis coma, fainting, Severe pneumonia, Acute peptic ulcer disease, Choking, Meningitis, shock, severe anaemia, epilepsy, and severe malaria.					
The university health facility has been handling surgical emergencies such as open fractures, acute, acute appendicitis, bowel obstruction, head injury, burns, acute pancreatitis, gastrointestinal bleeding, and testicular torsion.					
The university health facility has been handling Obstetrics/gynecology emergencies from Abortion, post par tum hemorrhage, complicated delivery, Ovarian mass torsion or rupture, acute pelvic inflammatory disease, ectopic Pregnancy and Tubo ovarian abscess					
The university health facility has been handling dental emergency results from bleeding & pain after a tooth extraction, dental abscess, fractured jaw and broken tooth.					

Appendix III: Interview Schedule for Key Health Facility Staff

1. What are some of the types of medical emergencies that are handled in this university health facility?
2. What is your evaluation on the following healthcare management factors in regards to medical emergency preparedness among public universities in central Kenya.

i. Human resource health personnel (kindly elaborate on issues such as staffing, training on emergency handling etc.)

ii. Communication (kindly elaborate on issues such as emergency lines, referral systems, medical cover etc.)

iii. Inventory such as medicine, equipment, and other supplies (kindly elaborate on issues such as availability of essential drugs, ambulance, equipment etc.)

3. What would you say on the knowledge level of students on emergency preparedness? What are the key areas that you feel students are highly knowledgeable? What key areas do you think that more should be done such as training the students and awareness campaigns by the university?
4. What would you say on the influence of emergency preparedness in the health facility on the handling of emergencies? Kindly elaborate on preparedness within and outside the health facility but within the university environment.

Appendix IV: Interview Schedule for Top University Management

1. Are you aware of some of the medical emergencies that the health facility in this university encounters? If yes, what are some of them?
2. What is your evaluation on following healthcare management factors in regards to medical emergency preparedness among public universities in central Kenya;
    i. Budgetary allocation
    ii. Staffing
    iii. Pharmaceutical and non-pharmaceutical supply
    iv. Medical Equipment
    v. Students' Medical Insurance covers
    vi. Referral systems
3. How would you rate the knowledge level of students in terms of emergency preparedness in this university? Which areas do you feel that the university has done well in equipping students with adequate knowledge on emergency preparedness? Which areas do you feel that a lot should be done so as to improve students' knowledge on emergency preparedness?
4. Do you think that the level of emergency preparedness has had an influence on how the health facility has been handling medical emergencies in this university?
5. If yes, how do you think handling of medical emergencies has been affected by emergency preparedness?

Appendix V: Introductory Letter

Mount Kenya University

DIRECTORATE OF GRADUATE STUDIES

MCM/2017/73778

15th March, 2024

National Commission for Science Technology & Innovation (NACOSTI)
Off Waiyaki, Upper Kabete
P.O Box 30623- 00100
NAIROBI, KENYA

Dear Sir/Madam,

RE: BETH WAMBAIRE MUNG'ORA- REGISTRATION NO. MCM/2017/73778

The purpose of this letter is to introduce the above named student who is pursuing **Master of Science in Clinical Medicine** in the Department of **Clinical Medicine** in the **School of Clinical Medicine.**

The title of the research is **"Assessment of Health Facilities' Level of Preparedness in Handling Medical Emergencies: A Study of Public Universities in Central Kenya."** It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **March, 2024 and May, 2024.**

Any assistance accorded to the student will be highly appreciated.

Thank you.

Mount Kenya University
P. O. Box 342 - 01000, THIKA
Office of the Director
Graduate Studies

Dr. Samuel M. Kareriga, Ph.D
Director, Graduate Studies
Enc.

Appendix VI: ERC Approval

Mount Kenya University

REF: **MKU/ISERC/3525** Date: 14 March 2024

TO: **BETH WAMBAIRE MUNG'ORA**

REG: **MCM/2017/73778**

Dear Sir/Madam,

RE: ASSESSMENT OF HEALTH FACILITIES' LEVEL OF PREPAREDENESS IN HANDLING MEDICAL EMERGENCIES; A STUDY OF PUBLIC UNIVERSITIES IN, CENTRAL KENYA

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **2569.** The approval period is **14/03/2024 - 13/03/2025.**

This approval is subject to compliance with the following requirements;

i. Only approved documents including informed consents, study instruments, MTA will be used
ii. All changes including amendments, deviations and violations are submitted for review and approval by **Mount Kenya University**
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **Mount Kenya University** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal
vii. Submission of an executive summary report within 90 days upon completion of the study to **Mount Kenya University**

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://research-portal.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely,

The Chairman
Mount Kenya University
Ethics Review Committee
P. O. Box 342-0100, Thika

Dr. Alfred Owino, PhD
Chairman, Mount Kenya University ISERC

Appendix VII: NACOSTI APPROVAL

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **974353**

Date of Issue: **17/April/2024**

RESEARCH LICENSE

This is to Certify that Ms.. Beth Wambaire Mungora of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Kirinyaga, Muranga, Nyeri on the topic: ASSESSMENT OF HEALTH FACILITIES' LEVEL OF PREPAREDENESS IN HANDLING MEDICAL EMERGENCIES; A STUDY OF PUBLIC UNIVERSITIES IN, CENTRAL KENYA for the period ending : 17/April/2025.

License No: **NACOSTI/P/24/34448**

974353

Applicant Identification Number

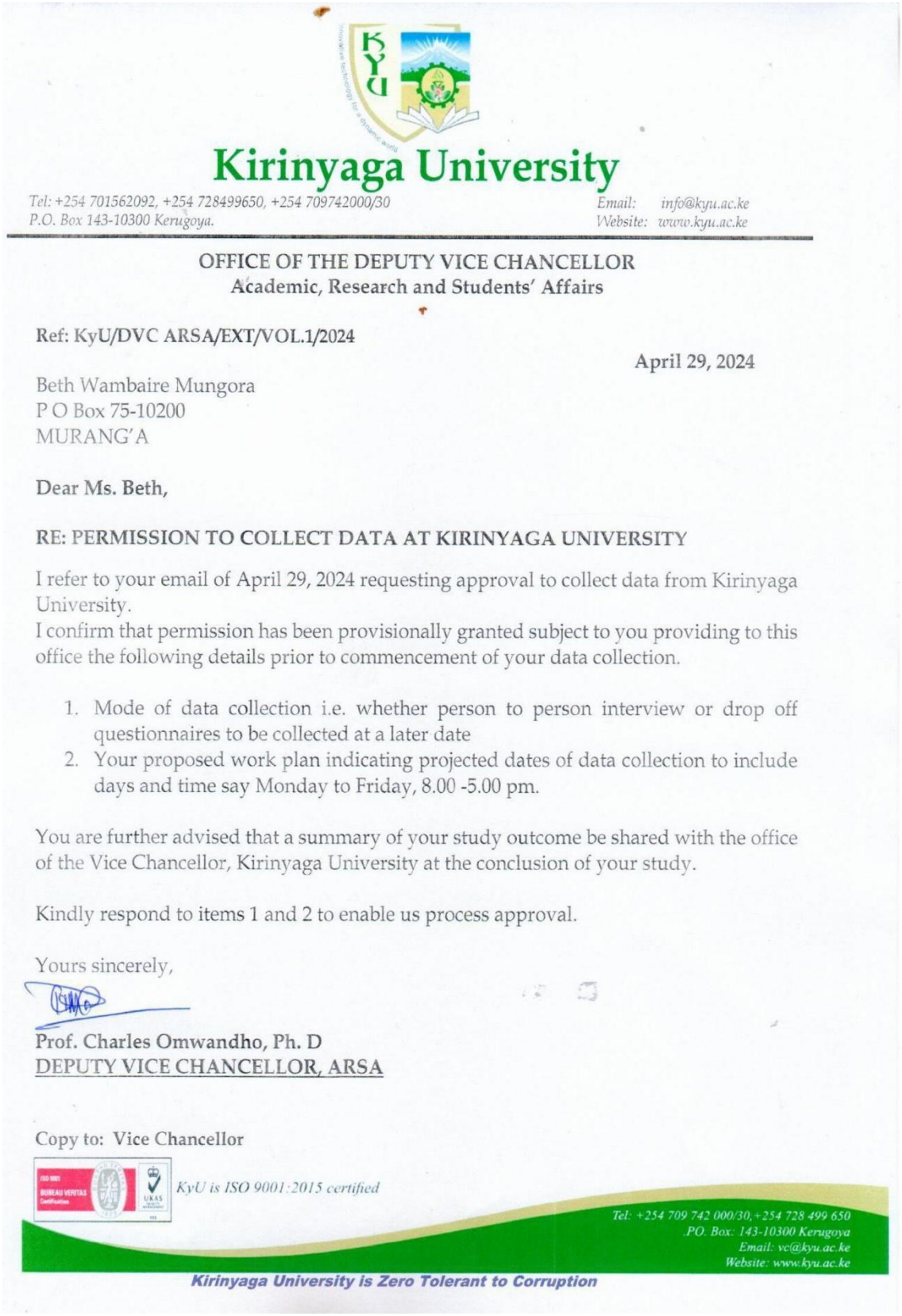
Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

See overleaf for conditions

Appendix VIII: Data Collection Letter Approval



Kirinyaga University

Tel: +254 701562092, +254 728499650, +254 709742000/30
P.O. Box 143-10300 Kerugoya.

Email: info@kyu.ac.ke
Website: www.kyu.ac.ke

OFFICE OF THE DEPUTY VICE CHANCELLOR
Academic, Research and Students' Affairs

Ref: KyU/DVC ARSA/EXT/VOL.1/2024

April 29, 2024

Beth Wambaire Mungora
P O Box 75-10200
MURANG'A

Dear Ms. Beth,

RE: PERMISSION TO COLLECT DATA AT KIRINYAGA UNIVERSITY

I refer to your email of April 29, 2024 requesting approval to collect data from Kirinyaga University.
I confirm that permission has been provisionally granted subject to you providing to this office the following details prior to commencement of your data collection.

1. Mode of data collection i.e. whether person to person interview or drop off questionnaires to be collected at a later date
2. Your proposed work plan indicating projected dates of data collection to include days and time say Monday to Friday, 8.00 -5.00 pm.

You are further advised that a summary of your study outcome be shared with the office of the Vice Chancellor, Kirinyaga University at the conclusion of your study.

Kindly respond to items 1 and 2 to enable us process approval.

Yours sincerely,

Prof. Charles Omwandho, Ph. D
DEPUTY VICE CHANCELLOR, ARSA

Copy to: Vice Chancellor

KyU is ISO 9001:2015 certified

Tel: +254 709 742 000/30,+254 728 499 650
P.O. Box: 143-10300 Kerugoya
Email: vc@kyu.ac.ke
Website: www.kyu.ac.ke

Kirinyaga University is Zero Tolerant to Corruption

Appendix IX: Similarity Report

ASSESSMENT OF HEALTH FACILITIES' LEVEL OF PREPAREDENESS IN HANDLING STUDENTS' MEDICAL EMERGENCIES; A STUDY OF PUBLIC UNIVERSITIES IN, CENTRAL KENYA

by Beth Wambaire Mung'ora

Submission date: 18-Jun-2025 09:08AM (UTC+0300)
Submission ID: 2701576572
File name: BETH_WAMBAIRE_MUNG_ORA_EDITED_THESIS_18.06.2025.docx (1.52M)
Word count: 23913
Character count: 144922

ASSESSMENT OF HEALTH FACILITIES' LEVEL OF PREPAREDENESS IN HANDLING STUDENTS' MEDICAL EMERGENCIES; A STUDY OF PUBLIC UNIVERSITIES IN, CENTRAL KENYA

ORIGINALITY REPORT

20%	%	13%	16%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Mount Kenya University Student Paper	4%
2	Submitted to Midlands State University Student Paper	2%
3	Du Jie, Yang Mengzhe, Luo Huiwen, Lin Junchang, Zhang Yuhui. "Analysis of university students' participation in emergency education and its influencing factors in Shandong province", Frontiers in Public Health, 2023 Publication	1%
4	Submitted to Kenyatta University Student Paper	1%
5	Nana Nimo Appiah-Agyekum. "Medical abortions among university students in Ghana: implications for reproductive health education and management", International Journal of Women's Health, 2018 Publication	<1%
6	Submitted to Mancosa Student Paper	<1%
7	Submitted to KCA University Student Paper	<1%
8	Submitted to Banaras Hindu University Student Paper	<1%

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132	Biniam Tufa, Shiferaw Mitiku Tebeka. "Perceptions Toward the Practice, Performance and Challenges of Humanitarian Logistics Management of Public Health Emergency Pharmaceuticals: The Case of Ethiopian Public Health Emergency Management", Springer Science and Business Media LLC, 2023 Publication	<1%
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Exclude quotes	Off	Exclude matches	Off
Exclude bibliography	Off		

Appendix X: Research Site Map