# ASSESSING NURSE AND MIDWIFE EDUCATORS' READINESS FOR THE USE OF SIMULATION BASED EDUCATION IN HEALTH TRAINING INSTITUTIONS IN KILIMANJARO TANZANIA

**MASTER OF SCIENCE IN MIDWIFERY**

**SAKANDA LINUS**

**KAMUZU UNIVERSITY OF HEALTH SCIENCES**

**SCHOOL OF NURSING**

**18th March, 2025**

KAMUZU UNIVERSITY
OF HEALTH SCIENCES

# ASSESSING NURSE AND MIDWIFE EDUCATORS' READINESS FOR THE USE OF SIMULATION BASED EDUCATION IN HEALTH TRAINING INSTITUTIONS IN KILIMANJARO TANZANIA

**By**

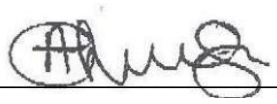
**Sakanda Linus**

**A dissertation submitted to the School of Maternal, Neonatal and Reproductive Health, Kamuzu University of Health Sciences in partial fulfillment for the requirement of Master of Science in Midwifery**

**18th March, 2025**

## CERTIFICATE OF APPROVAL

The undersigned approve that this thesis represents the student's work and has not been presented elsewhere and hereby recommends for consideration by Kamuzu University of Health Sciences, the dissertation entitled: "**Nurse and Midwife Educators' Readiness for the Use of Simulation-Based Education in Health Training Institutions in Kilimanjaro, Tanzania**."



18th March, 2025

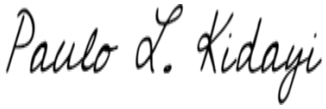
Professor Angela Faith Chimwaza

(**Primary Supervisor**)

18th March, 2025

Dr. Lily Kumbani, PhD

(**Secondary Supervisor)**



18th March, 2025

Dr. Paulo Lino Kidayi

(**Secondary Supervisor)**

## DECLARATION

I, Sakanda Linus declares that this dissertation is my own original work and that it has not been presented, and will not be presented, to any other university for a similar or any other degree award, and is not previously or currently under copyright.

**Sakanda Linus** **Date: 18/03/2025**

## ACKNOWLEDGEMENT

Sincere thanks and praise to God for giving me the strength and courage to complete this study. My special thanks to Kilimanjaro Christian Medical University College (KCMUCo) for trusting me and allowing me to join this noble course. I would like to thank the Dean faculty of nursing, Dr. Jane Rogathi, for her support during the entire period of my studies. My gratitude also goes to the NORHED II for sponsoring my studies.

My deepest gratitude will go to my supervisors, Prof. Angela Chimwaza, Dr. Paulo Kidayi and Dr. Lily Kumbani, thank you for the endless hours of reading my work and guiding me in the right direction. Also Prof. E. Chirwa, Dr. Genesis S. Chorwe, Dr. Debora Kajeguka for advice and encouragement when I needed it most. I would also like to express my sincere thanks to Kamuzu University of Health Sciences, School of Maternal, Neonatal and Reproductive Health, specifically the Midwifery Department, for supporting me in communicating with all required offices.

To my colleagues, thank you to those who participated in my study and those who provided words of inspiration throughout the years. So many of you were a sounding board and cheered me on when I needed help and revealed in my successes.

I dedicate this work to my wife Rehema Mao and my son Jayden, I am proud of you. Special dedication goes to my mother, Swahili, and Mr. and Mrs. Andrew Mao for their moral support during my studies.

Thank you.

## ABSTRACT

Simulation-based education (SBE) improves students' critical thinking, clinical reasoning, and decision-making skills. However, in Tanzania, its implementation is hampered by a lack of organizational support and unprepared staff, with 97% of nurses and midwifery educators using traditional didactic methods that are ineffective in developing relevant healthcare skills. Currently, little is known about readiness for the use of SBE in health teaching institutions in Tanzania. This study aimed to assess the readiness of nurse/midwife educators to incorporate simulation-based education in health training institutions in Tanzania. A quantitative descriptive cross-sectional study design was employed, and it adopted a validated Simulation Culture Organization Readiness Survey (SCORS) questionnaire with 24 items and a 5-point Likert scale. Consecutive sampling was used to recruit 99 participants from selected nurses and midwifery training institutions in Kilimanjaro. Data were collected using a self-administered questionnaire and analyzed using the Statistical Package for Social Sciences (SPSS) version 26. The study discovered that institutional readiness for simulation-based education was significantly low. This was primarily due to a lack of a clear strategic vision for simulation-based education (mean=2.79), the absence of a written commitment to SBE (mean=2.62), and insufficient resources to support SBE (mean=2.72). Organizations were perceived as "ready but not acting," with participants scoring both the current state and the previous six months similarly on a scale of "73-108": 40 (40.4%) vs. 38 (38.4%). The low levels of readiness to implement simulation-based education (SBE) in Tanzania highlight the need for a clear strategic vision by nursing and midwifery institutions. Additionally, institutional support is required to develop policies and allocate resources to enhance the effective adoption of SBE.

**TABLE OF CONTENTS**

## LIST OF TABLES

## LIST OF FIGURES

## ABBREVIATIONS

| | |
|---|---|
| COMREC | College of Medicine Research and Ethics Committee |
| COSTECH | Tanzania Commission for Science and Technology |
| CRECR | College Research Ethics and Review Committee |
| FBO | Faith based organizations |
| INACSL | International Nursing Association of Clinical and Simulation Learning |
| KCMUCo | Kilimanjaro Christian Medical University College |
| KCN | Kamuzu College of Nursing |
| KUHeS | Kamuzu University of Health Sciences |
| MCT | Measure of Central tendency |
| MD | Measure of Dispersion |
| MoHCDGEC | Ministry of Health, Community Development, Gender, Elderly and Children |
| NACTVET | The National Council for Technical and Vocational Education and Training |
| REC | Research Ethical Committee |
| SBE | Simulation-based Education |
| SCORS | Simulation Culture Organization Readiness Survey |
| SPSS | Statistical Package for Social Sciences |
| WHO | World Health Organization. |

## DEFINITION OF TERMS

**Adoption**: the extent to which your organization and programs are willing to accept and work towards simulation (Foisy-Doll & Leighton, 2017).

**Education**: formal programs, training, conferences, workshops for SBE teams and others (Foisy-Doll & Leighton, 2017).

**Fidelity:** The degree to which the simulation replicates the real event and/or workplace; this includes physical, psychological, and environmental elements (Lopreiato & Rockville, 2016).

**Integration of SBE**: the planning, development, execution (implementation), and evaluation of SBE across the curriculum (Foisy-Doll & Leighton, 2017).

**Organizational Culture**: the ways in which people know and understand the values and beliefs of a specific group of people or an institution (Taplay et al., 2014).

**Organization support**: The degree to which an organization worries about its members and tries to do best for them (Çağlar Doğru, 2019).

**Readiness**: the state of being prepared for something (Muh'd Habib & Yoffo, 2013).

**Simulation-based education**: an instructional approach that involves creating realistic scenarios or situations to replicate real world experiences in a controlled environment (Cowperthwait, 2020).

**Simulationist**: an individual who is involved in the design, implementation, and/or delivery of simulation activities (Lopreiato & Rockville, 2016).

# CHAPTER ONE

# INTRODUCTION AND BACKGROUND

## 1.0 Introduction

Healthcare delivery requires well-trained, highly skilled, and competent healthcare providers to ensure the safety and well-being of patients (WHO and World Bank, 2018). This requires the adoption of alternative teaching methodologies and strategies to produce high-quality specialists who are capable of providing high-quality care that is suitable for clients and patients. Among the various pedagogical approaches, simulation-based education (SBE) has proven to be an efficient strategy for improving the quality of healthcare education training (Hegland et al., 2017; Lendahls & Oscarsson, 2017).

SBE is gaining recognition as a powerful and beneficial pedagogical technique that significantly enhances student learning outcome (Alinier & Oriot, 2022). It involves replicating real-life tasks, relationships, phenomena, equipment, behaviors, and cognitive activities in an interactive and immersive manner (Eyikara & Baykara, 2017). By simulating realistic scenarios, SBE provides students with a safe and controlled environment to practice and refine their skills, thereby improving their readiness in real-world clinical situations (Koukourikos et al., 2021).

The essence of simulation lies in creating a situation or environment that mirrors real events, allowing individuals to engage in the practice, learning, evaluation, and understanding of systems or human actions (Lopreiato & Rockville, 2016) . This technique is particularly valuable in nursing and midwifery education where it serves as a key strategy for teaching, learning, and assessing clinical competencies. The positive impact of SBE extends beyond students to educators, healthcare professionals,

and the broader community they serve, as well as to educational and healthcare organizations (Martins et al., 2018).

The primary goal of simulation as a teaching method is to enhance quality of care and ensure patient safety. It aims to provide a structured approach that aligns with the program goals and institutional missions (Campos et al., 2020). Simulation fosters collaborative learning, problem-solving, and development of reflective and critical thinking skills, which are essential for effective patient care (INACSL Standards of Best Practice, 2016; Kelly et al., 2016). By integrating simulation into healthcare education, institutions can better prepare students to meet the complex demands of the healthcare environment and improve overall patient outcomes (Koukourikos et al., 2021; Munazza Saleem & Khan, 2023).

Because of the substantial benefits and outcomes associated with Simulation-Based Education (SBE), various types of mannequins are employed in nursing and midwifery education to effectively simulate clinical scenario (Moabi & Mtshali, 2022). These mannequins are categorized based on their fidelity, which refers to the degree to which the simulation device or environment replicates the physical characteristics and realism of the actual task or clinical setting (Lopreiato & Rockville, 2016). The categories of low-, medium-, and high-fidelity are named according to how closely they imitate the conditions under which a particular skill is performed (Edgecombe et al., 2015.; Eyikara & Baykara, 2017).

**Low-Fidelity Simulations (LFS)** are designed to represent only a portion of the body or the environment and are primarily used to teach basic psychomotor skills and procedures (Lopreiato & Rockville, 2016). These simulations do not require external control or programming to engage learners, thus making them relatively

straightforward and accessible (Koukourikos et al., 2021). Examples of low-fidelity simulations include case studies, role-playing exercises, and task training. These tools are instrumental in supporting students or professionals in learning and practicing clinical situations and specific skills (Pai, 2018).

**Medium-Fidelity Simulations (MFS)** offer a higher level of realism than low-fidelity models. They typically include features such as the ability to produce heart and breath sounds, although they lack advanced capabilities such as verbal communication and visible chest and eye movements (Ntlokonkulu et al., 2018). Full-body manikins used in medium-fidelity simulations can mimic a range of physiological functions such as breath sounds, bowel sounds, and heartbeats. These manikins enable students to perform various procedures including intravenous insertions, injections, nasal-gastric tube insertions, tracheostomy suctioning, and Foley catheter placement, thereby providing a more realistic training experience (Koukourikos et al., 2021).

**High-Fidelity Simulations (HFS)** utilize sophisticated, computerized, full-body manikins that replicate the anatomy and physiology of a real patient with a high degree of accuracy (Pai, 2018). These advanced manikins can exhibit a range of interactive behaviors, including talking, which allow students to develop crucial communication and problem-solving skills. High-fidelity simulations create a dynamic and immersive learning environment that enables trainees to engage in realistic clinical interactions and scenarios. This type of simulation is valuable for teaching, assessing performance, providing feedback, and enhancing overall educational experience (Edward & Chukwuka, 2020; Koukourikos et al., 2021).

Each simulation category plays a critical role in the educational process, contributing to the development of clinical skills and competencies among nursing and

midwifery students. By incorporating a range of simulation types, educational programs can address various aspects of clinical training and effectively prepare students for real-world health care challenges ( Martins et al., 2018; Koukourikos et al., 2021).

The World Health Organization (2013) advocates the incorporation of Simulation-Based Education (SBE) in both undergraduate and postgraduate health training curricula, emphasizing its effectiveness as a teaching approach. The primary objective of this recommendation is to enhance the education of health professionals, thereby producing qualified and competent nurses and midwives who are well-prepared for their roles. Despite this endorsement, there remains a noticeable deficiency in the planning and structuring necessary for effective simulation integration into educational curricula (Alrashidi et al., 2023).

The practice and integration of simulation in nursing and midwifery education show considerable variation across countries, reflecting a significant disparity in institutional readiness for its implementation (Martins et al., 2018). The successful integration of simulation into nursing and midwifery education is closely associated with an institution's organizational culture and readiness for change (Foisy-Doll & Leighton, 2017). When organizational support for SBE is lacking or insufficient, it results in inadequate planning, which in turn leads to deficiencies in educators' competence, skills, and knowledge. This ultimately restricts the effective utilization and implementation of SBE in educational programs (Martins et al., 2018).

Organizational culture plays a pivotal role in shaping the execution of educational programs and change initiatives (Maleka, 2023). It sets standards for the procedures and influences the implementation process. The absence of adequate preparation and support for personnel significantly affects the successful application of

SBE. Such a scenario is often observed in environments with poor organizational backing and inadequate staff readiness, which hinders the effective utilization of SBE programmes (Kerner et al., 2016; Lazzara et al., 2014).

To address these challenges, it is essential for institutions to cultivate a supportive organizational culture that embraces the integration of SBE. This involves establishing clear planning frameworks, providing adequate training for educators, and ensuring that necessary resources and support systems are in place. By fostering an environment conducive to SBE, institutions can enhance the quality of education and better prepare healthcare professionals to meet the demands of their fields (Maier & Rammingen, 2014; Maleka, 2023).

Despite widespread international recommendations and established evidence supporting the benefits of Simulation-Based Education (SBE) in nursing and midwifery education, many institutions globally continue to face significant challenges in incorporating simulation approaches into their curricula (Martins et al., 2018). This issue is particularly pronounced in Sub-Saharan Africa (SSA), where several studies have identified numerous barriers to the successful implementation of SBE.

In a study focusing on the integration of SBE in Kilimanjaro, Tanzania, and Madagascar, Tjoflåt et al. (2021) highlighted several critical barriers, including a lack of infrastructure, time constraints, and the large number of students that pose challenges to effective simulation implementation. These obstacles are compounded by other issues such as inadequate planning, poor access to appropriate simulation scenarios, limited technical expertise, and insufficient support for SBE initiatives.

The scarcity of essential infrastructure, including clinical skill laboratories and simulation equipment, further exacerbates these challenges, limiting the capacity of

institutions to provide effective simulation experiences. Additionally, time constraints restrict educators' ability to integrate simulation into an already crowded curriculum, while the sheer number of students often exceeds the capacity of available simulation resources. These factors collectively hinder the ability of institutions to adopt and sustain SBE practices effectively (Baayd et al., 2023; Dinho & Swai, 2017; Fongang et al., 2017; Koukourikos et al., 2021; Nevenglosky et al., 2018; Pinehas et al., 2017; Teni & Gebretensaye, 2019).

Moreover, the lack of well-defined planning and the absence of comprehensive simulation scenarios restrict educators' ability to utilize simulation to its full potential. Limited technical knowledge and expertise among faculty and staff also contribute to the difficulties faced in implementing SBE. Finally, inadequate institutional support undermines efforts to integrate simulation effectively, as it diminishes the motivation and resources available to advance SBE practices (Alinier & Oriot, 2022; Mwalabu et al., 2024).

Addressing these barriers requires a multifaceted strategy that includes enhancing infrastructure, improving access to high-quality simulation scenarios, providing targeted technical training, and securing robust institutional support (Elendu et al. 2024). By overcoming these challenges, health training institutions in Sub-Saharan Africa and beyond can better utilize the benefits of SBE to improve the quality of nursing and midwifery education, and ultimately, patient care (Bvumbwe & Mtshali, 2018).

Despite the recognition of Simulation-Based Education (SBE) as a pedagogical method in Tanzania's national curriculum (Ministry of Health, 2017), there is a notable underutilization of this approach in nursing and midwifery education. The prevailing

teaching methods in Tanzania predominantly rely on traditional didactic classroom-based approaches. These conventional methods have been found to be less effective in imparting essential healthcare skills and competencies required for modern medical practice (Angelina et al., 2021).

Tjoflåt et al. (2021) identified several significant barriers to the adoption of simulation in Tanzanian educational institutions. These challenges include the high number of students, which strains the available resources, and the difficulty of integrating simulation-based methods into an already congested teaching schedule and curriculum. Such factors contribute to a generally low level of readiness to implement SBE in these institutions. The literature indicates a lack of comprehensive evidence supporting the effective use of SBE as a teaching strategy within the Tanzanian context and highlights a gap in understanding how prepared institutions are to adopt and utilize simulation-based methods.

In light of these challenges, this study aimed to evaluate the readiness of nursing and midwifery educators in Kilimanjaro health teaching institutions to incorporate simulation-based education into their curricula. By investigating the current state of SBE implementation and identifying areas for improvement, this study sought to provide valuable insights and recommendations to enhance the integration of simulation-based methods in nursing and midwifery education, thereby improving the overall quality of healthcare training in the region.

### 1.1 Background

Over the last few deca des, the application of simulation as an educational tool in nursing and midwifery has seen remarkable expansion (Almotairy et al., 2023). The origins of Simulation-Based Education (SBE) in nursing can be traced back to 1910

with the debut of the first full-body mannequin, Mrs. Chase, which featured jointed hips, elbows, and knees to facilitate practical training (Decker & Wolff Bsn, 2015). The evolution of simulation technology continued through the 1960s with the introduction of "SimOne," an advanced computer-controlled simulator designed to enhance medical education (Alrashidi et al., 2023; Mante & Houston, 2019).

By the 1990s, programmable, fully computerized mannequins capable of simulating complex scenarios, including pathophysiology and pharmacology, had been integrated into nursing education, marking a significant advancement in simulation technology (Decker & Wolff Bsn, 2015). This period also saw the diversification of simulation tools, including computer games, role plays, skill-based trainers, and sophisticated patient manikins, collectively known as Human Patient Simulation (HPS) (Koukourikos et al., 2021). Simulation-based education encompasses three phases: The three phases of pre-briefing, exposure to simulation experience, and debriefing (Fegran et al., 2023).

Pre-briefing is a crucial process that involves careful preparation and a detailed briefing before the commencement of simulation-based experiences. This preparatory phase is essential for ensuring learner success and can significantly enhance both the debriefing process and the subsequent reflection (Chan et al., 2023). During the pre-briefing, participants were equipped with the necessary information to ensure that they were fully prepared for the educational content. Moreover, they were made aware of the ground rules governing the simulation-based experience. This phase is comprehensive, covering various aspects, such as the goals and objectives of the simulation exercise, logistical considerations regarding the activity, and the introduction of all participants, which may include students, facilitators, and actors (McDermott et al., 2021).

High-quality simulation demands that simulationists and educators possess a strong understanding of pedagogy, particularly during the pre-briefing phase. In this phase, both learners and facilitators received clear guidance on their roles. Learners are provided with preliminary information along with sample questions designed to foster reflective thinking throughout the simulated learning experience (McDermott et al., 2021). Additionally, an overview of the learning environment was provided to learners. This could include any necessary materials, required technology, an overview of the setting, and a description of available resources (Simulation-Based Experiential Learning Faculty Toolkit, 2021).

A simulation activity in the health sciences involves acting out of a scenario depicting what happens in the real clinical environment. Participants enter the simulated environment where they interact with the scenario and with each other based on their roles, as assigned in the briefing phase (Aamlid & Tveit, 2022). During role-playing, the participants are fully immersed in the activity at hand, and as the scenario unfolds, they make decisions, solve problems, and react to challenges (Alejandro et al., 2024). Their actions influence the direction and outcome of the simulation. Depending on the simulation activity, participants may need to work together, share information, and coordinate their actions to achieve their common goals (Lainema et al. 2023).

Debriefing is a fundamental component of simulation-based education and serves as a structured and guided process that takes place between participants after the completion of a simulated training session (Fegran et al., 2023). This critical phase is designed to help learners develop deeper insights, enhance future performance, and facilitate the transfer and integration of the knowledge and skills acquired during the simulation into real-world practice. The primary focus of debriefing is on reflection and analysis, allowing participants to critically examine their actions, decisions, and the

outcomes of the simulation in a safe and supportive environment (Chernikova et al., 2020).

Debriefing is not merely an informal conversation; it is a preplanned and systematic discussion that requires active engagement from facilitators and students. Facilitators play a crucial role in guiding this process, ensuring that conversation remains focused and productive (Fegran et al. 2023). They encourage students to express their experiences, thoughts, and emotions related to the simulation, helping them articulate what they learned and how they could apply it in future scenarios. This dialogue is vital for deepening the understanding and solidifying learning (Decker et al., 2021).

During debriefing, the facilitator supervised and directed the reflection process, encouraging students to think critically about the simulation experience. The facilitator's role is to ask probing questions, offer feedback, and provide additional context or clarification, as needed. By doing so, the facilitator helps students connect the dots between their simulated experience and broader principles of practice, thereby promoting deeper understanding and retention of the lessons learned. This reflective practice is essential for reinforcing the educational objectives of the simulation and ensuring that the knowledge and skills gained are effectively transferred to participants' professional practice (Decker et al., 2021; Fegran et al., 2023; Mohebi et al., 2018).

The growth and development of SBE in nursing and midwifery education has been largely driven by increased awareness and the availability of improved resources (Jones et al., 2015). Successful simulation programs are supported by adequate administrative and technological resources (Seethamraju et al. 2022). Research by Heward et al. (2021) indicates that management support and staff readiness are crucial

for the effective implementation of simulations, although challenges such as a lack of organizational support and limited resources can impede progress (van der Merwe et al., 2022).

Effective execution of simulation-based training is often more prevalent in high-resource settings than in low-resource environments. This disparity is largely attributed to better management support, including access to funds, skilled personnel, and conducive learning environments, which foster the adoption of simulation-based methods (Baayd et al., 2023; Ferguson et al., 2020). In well-resourced countries such as the United States, various European nations, Australia, and parts of the Middle East, SBE is widely utilized and integrated into healthcare training programs (Munangatire & Naidoo, 2017). Lazzara et al., (2014) and Mwalabu, et al., (2024) emphasize that the successful implementation of SBE is significantly enhanced by having skilled and knowledgeable staff, adequate scientific resources, well-equipped laboratories, and strong leadership support. These factors collectively contribute to the effective use and sustainability of simulation-based education in nursing and midwifery training.

In sub-Saharan Africa, the implementation of Simulation-Based Education (SBE) has been notably ineffective due to a combination of financial constraints, inadequate infrastructure, and insufficient knowledge among instructors (Rubio-Martínez et al., 2022; Van Zyl et al., 2021). These challenges are further compounded by limited staff readiness, a lack of organizational culture change, and practices that support simulation (Maier & Rammingen, 2014; Weller et al., 2012). Poorly designed simulation programs and inadequate instructions have also been identified as significant barriers to effective SBE implementation (Mwalabu et al., 2024).

The scarcity and uneven distribution of training facilities across nursing and midwifery education institutions have severely affected the ability to implement SBE effectively. This problem is exacerbated by the absence of comprehensive policies governing SBE and the lack of curriculum reforms that are crucial for the successful integration and operation of simulation programs in low-resource settings (Foisy-Doll & Leighton, 2017; Seethamraju et al., 2022).Additionally, limited access to appropriate scenarios for simulation and insufficient technical expertise among educators have been highlighted as key obstacles to the effective utilization of SBE (Dinho & Swai, 2017; Teni & Gebretensaye, 2019). Overall, these barriers collectively undermine the potential benefits of simulation-based education in sub-Saharan Africa, hindering its ability to enhance healthcare training and ultimately affecting the quality of healthcare services in the region (Mramel et al., 2024).

Individual beliefs and values within an organization play a crucial role in shaping the development and implementation of Simulation-Based Education (SBE). These intrinsic factors can significantly influence how SBE is integrated into educational practices and how effectively it is utilized (Taplay et al., 2014). Supporting faculty training on SBE has been shown to be a critical factor in promoting its successful implementation, as it ensures that educators are well prepared and knowledgeable about the simulation techniques and tools available (Seethamraju et al., 2022). Research indicates that organizational factors, including the attitudes and beliefs of members, have substantial impacts on the effectiveness of organizational change, including the integration of SBE (Taplay et al., 2014).

Therefore, the successful implementation of SBE requires a well-defined strategic plan that involves key stakeholders, availability of resources, and engagement of educators trained to deliver SBE (Almotairy et al., 2023). This strategic approach is

essential for overcoming barriers and ensuring that SBE are effectively integrated into the educational framework. In studies conducted in Tanzania and Madagascar, Tjoflåt et al. (2021) found that, while nurse and midwife educators recognized SBE as an effective teaching method that enhances student learning, they also faced significant challenges. These challenges included a limited number of staff members' relative to the number of students, which hindered the implementation of SBE. Additionally, the minimal implementation of SBE has been linked to insufficient resources and funding, particularly for purchasing necessary equipment, such as mannequins (Riaz, 2019).

Furthermore, the lack of experience with SBE, an unresponsive curriculum, and inadequate collaboration between academic institutions and practice settings were identified as factors that interfered with readiness to implement SBE (Bvumbwe & Mtshali, 2018). Overall, the integration of SBE into nursing and midwifery education requires rigorous effort to address these challenges. This includes enhancing faculty training, securing necessary resources, and fostering collaboration between different stakeholders to build a supportive environment for effective simulation-based learning (Mwalabu et al., 2024). Egenberg et al., (2017) conducted a study in Tanzania and found that various elements such as team training, skills training, realistic scenarios, and repeated scenario practice can significantly enhance teamwork and facilitate the implementation of simulation-based learning. Their findings emphasized that the effectiveness of SBE is highly dependent on these critical factors, which contribute to the overall success of the educational approach.

Further research by Almotairy et al. (2023) highlights that the successful implementation of SBE as a pedagogical method is greatly influenced by the level of organizational support and the positive attitudes of educators. When educators exhibit a positive disposition towards simulation-based education and when institutions

provide adequate support, the integration of SBE into the curriculum becomes more feasible and effective. Conversely, Foisy-Doll and Leighton (2017) found that inadequate organizational support, lack of staff readiness, and resistance to cultural change are significant barriers that hinder the use of SBE as a teaching approach. These barriers point to a broader issue of limited information and support for SBE in health training institutions, particularly in Tanzania.

This evidence underscores a gap in the existing knowledge base regarding the effective implementation of SBE in Tanzanian institutions (Mwalabu et al., 2024; Tjoflåt et al., 2021). The current study aimed to address this gap by examining the readiness of nurses and midwifery institutions in Tanzania to utilize SBE programs. By assessing factors such as organizational support, staff readiness, and the overall resources available, this study seeks to provide valuable insights into the challenges and opportunities associated with integrating simulation-based education into health training curricula in Tanzania. This research is crucial for informing future strategies and improving the effectiveness of SBE in this region.

### 1.2 Problem Statement

Simulation-Based Education (SBE) is recognized as an effective student-centered teaching approach that enhances critical thinking, clinical reasoning, and clinical decision-making skills among students (Lateef & Mhlongo, 2019). The interactive nature of SBE allows students to actively engage with realistic scenarios, thereby improving their ability to apply theoretical knowledge in practical settings (Abdulmohdi & McVicar, 2024). However, SBE implementation is often hindered by inadequate organizational support and a lack of staff readiness, as identified by Foisy-Doll and Leighton (2017).

In Tanzania nurses and midwife educators predominantly use didactic teaching methods. Additionally, 53% of these educators employed simulation in a manner that lacked a participatory approach and a clear understanding of simulation concepts. This reliance on traditional teaching methods has been shown to be less effective in equipping students with essential health care skills and competencies (Angelina et al., 2021; Bienstock & Heuer, 2022; Mmari et al., 2020). Ministry of Health, Community Development, Gender, Elderly, and Children (MoHCDGEC, 2017) recognizes SBE as a core teaching technique within the curriculum for nursing and midwifery education. Despite these guidelines and government efforts to promote the effective use of SBE, its application remains low (van der Merwe et al., 2022). There is death of information in Tanzania regarding educators' readiness to incorporate SBE. To address this significant research gap, the present study aimed to assess the readiness of nurse and midwife educators in health teaching institutions in Tanzania for the integration and effective use of SBE programs.

### 1.3 Rationale of the study

Knowledge about the level of preparedness of nurses and midwifery training institutions regarding the use of SBE will help policymakers and other stakeholders implement appropriate interventions that would enhance the use of SBE. Such interventions will potentially enhance and improve standards of nursing and midwifery education and practice and overall improvement of healthcare practices and outcomes in the country. Furthermore, training institutions can use the findings of this study to develop appropriate institutional policies and put in place initiatives that will support the implementation of SBE and hence improve standards of nursing and midwifery education, since SBE is known to be a teaching approach that improves student learning.

## 1.4 Objectives

### 1.4.1 Broad Objective

To assess the readiness of nurse/midwife educators to incorporate simulation-based education in health teaching institutions in Kilimanjaro, Tanzania.

### 1.4.2 Specific Objectives

1. To assess organizational factors that support the use of simulation-based education among nurse/midwife educators in health training institutions.
2. To determine the readiness factors that influence nurse/midwife educators to incorporate simulation-based education into their teaching practices.
3. To evaluate the resources available to incorporate simulation-based education into teaching practices among nurses and midwives.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.0 Introduction

This chapter presents a literature review of the conceptual framework that guided the study, as well as the factors that affect the use of simulation-based education in health training organizations.

## 2.1 Conceptual Frameworks for Readiness

This study was guided by a concept that was originally developed by Sharma et al. (2014). During the development of the framework, Sharma et al. (2014), assessed early childhood education settings to implement nutrition and physical activity programs among children. This framework has subsequently been utilized by other researchers for various program implementations, such as the study protocol and psychometric evaluation of the measure Change Framework Applied to Hospitals among other programs (Helfrich et al., 2011; Shea et al., 2014).

The researcher adapted this framework to evaluate the readiness of nurse and midwife educators to incorporate simulation-based education as a teaching method within health institutions. The framework suggests that institutional and individual factors related to a program's objectives work together to influence an individual's readiness to successfully implement the program. The framework indicates three important antecedents of readiness for the successful implementation of a new program. These include structural and external factors, staff attributes, and other psychological factors. Structural and external factors operate only at the organizational level, whereas staff attributes and other psychological factors are linked to both the organization and individuals.

It highlighted that the organizational level consists of the structural and external factors that have an impact on individual factors that are believed to shape organizational readiness, which in turn influence program implementation. According to Sharma et al. (2014), organizational readiness is influenced by factors, such as resources, policies, professional growth, training, and communication. At the individual level, factors include staff authority, openness to change, and clarity of goals. These factors are summarized in figure 1.

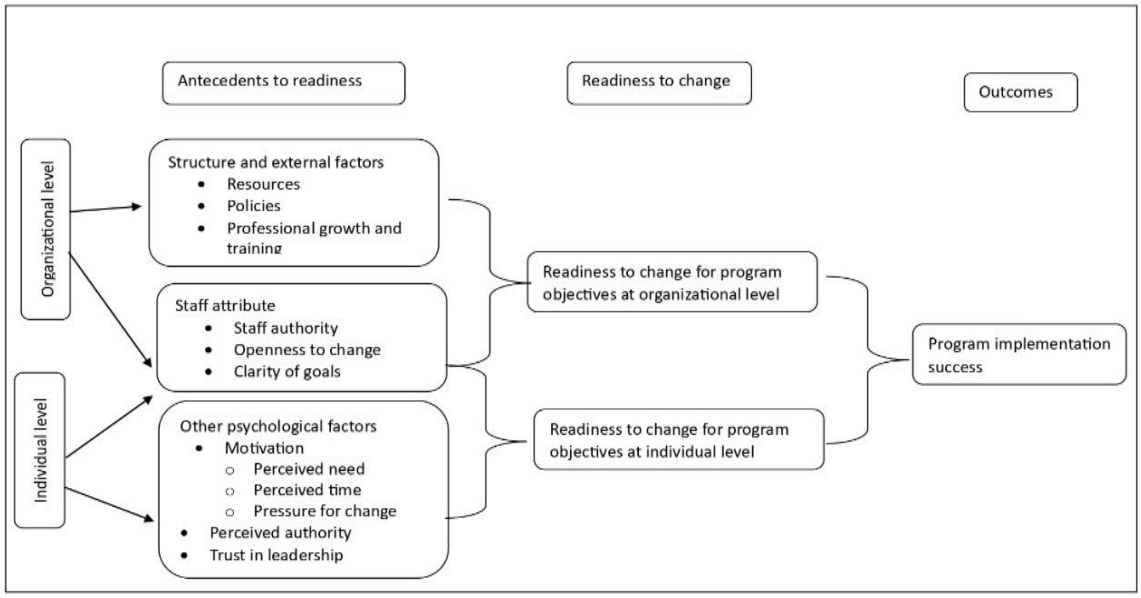



*Figure 1 : Conceptual Framework for Organizational Readiness (Sharma et al., 2014).*

### 2.1.1 Organizational Level Factors

Both structural and external factors that exist at the organizational level significantly influence daily operations and readiness for change. These are the elements that affect the performance of an institution and its readiness to change. These factors include resources, policies, professional growth, training, and communication (Sharma et al., 2014). The term “resource” includes financial standing, infrastructure, and human resources comprised of teaching and administrative staff, all of whom are

part of the simulation program. The term "policies" refers to the existing or non-existing written documents on the use of SBE within an institution. "Professional growth and training" refer to the process of enhancing knowledge and skills in simulation. "Communication' how institutions convey information about simulation to their staff as highlighted by Sharma et al. (2014).

### 2.1.2 Staff attributes

The attitudes of staff members can influence how simulations are implemented at individual and organizational levels. Staff attributes are defined as attitudinal factors, such as staff cohesion, stress, authority among the staff, openness to change, clarity of goals, and self-efficacy. Another attribute explained by Sharma et al. (2014) was staff cohesion. Staff cohesion is the extent to which the staff of an institution work together as one unit. The aim of this teamwork is to help share the workload of the team. Another factor identified by Sharma et al. (2014) was openness to change. Openness to Change is the general attitude toward the organization and staff's preparedness or willingness to accept a new program.

This requires transformation in thinking, where staff must believe that incorporating simulation into the curriculum is not only feasible, but also a worthwhile approach for improving students' learning (Sharma et al., 2014; Taplay et al., 2014). "Clarity of goals" demonstrates the extent to which the staff members view the goals of the new simulation program to be in line with the overall goals of the institution. Self-efficacy was another factor highlighted by Sharma et al. (2014). It measures the ability and capability of an organization and its staff to use simulations (Sharma et al., 2014). This is similar to the results of the study by Taplay et al. (2014). This stage includes practice with equipment that improves self-efficacy.

### 2.1.3 Other psychological factors

Psychological factors are individual beliefs and attitudes that influence acceptance of and support for any institutional change. These factors, which include motivation, trust in leadership, and perceived authority, are primarily measured at the individual level, with a focus on nurses and midwife educators involved in the implementation of the simulation. “Motivation to Change” A construct that reflects staff members' perception of the need for change, the time required for implementation, and the pressure to adopt the new program. “Trust in Leadership: The level of confidence staff members has in the decisions and actions of leadership, such as supervisors or center directors. Finally, "perceived authority" refers to staff members' perceptions of their own authority in institutional decision-making (Sharma et al., 2014).

The current study applied the construct of organizational structure in terms of resources, policies, professional development and training, communication, and individual factors, which include staff cohesion, staff authority, openness to change, and trust in leadership. The adapted constructs are summarized in **figure 2.**

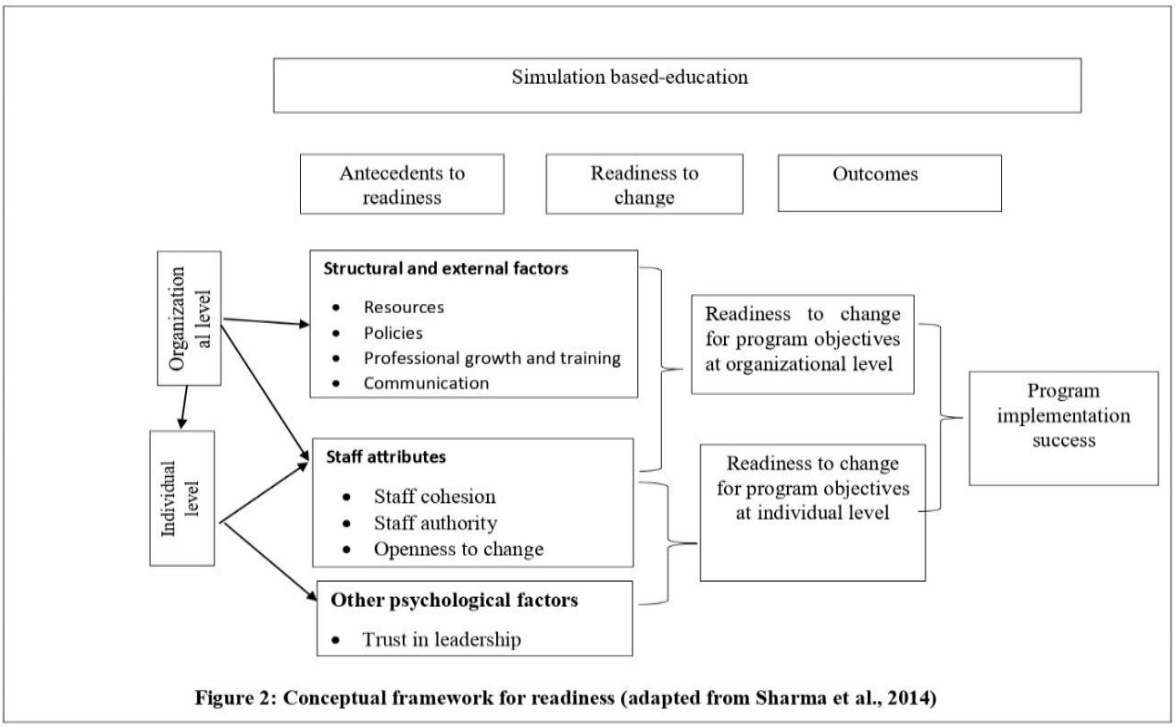



**Figure 2: Conceptual framework for readiness (adapted from Sharma et al., 2014)**

*Figure 2 : The adapted Conceptual Framework for SBE Readiness (Sharma et al., 2014).*

## 2.2 Application of the conceptual framework

The Conceptual framework has highlighted organisational, individual and resource-related factors that influence an organisation's readiness in the implementation of any program such as simulation-based education (SBE). These groups of factors fit in very well with the three objectives of the study. The focus for the first objective was to evaluate organizational-level factors such as resources, policies, professional development, training, and communication that support SBE. Such factors are crucial in determining institutional readiness to adopt a program. The second objective focused on individual readiness factors. These factors included staff attributes such as cohesion, authority, openness to change, and clarity of goals, as well as psychological factors such as motivation, trust in leadership, and perceived authority. All these shape educators' willingness to adopt SBE. Lastly, the third objective examined the availability of resources, including financial, human, and infrastructural elements, along with staff professional development opportunities. Resource availability, has the capacity to influence an institutions' readiness to integrate SBE into teaching practices effectively.

The components of the discussed framework were also incorporated into the items of the instrument utilized for this research, and the corresponding concepts are presented in the literature review below.

## 2.3 Literature search strategy

The literature review began with an in-depth search of the literature from various databases accessible through the Kamuzu University of Health Sciences library and other sources. This was aided by the use of various keywords validated by the librarian. Searches were restricted to peer-reviewed scholarly articles that were accessible online and published between 2014 and 2024. Ten years' range was selected

for the researcher to obtain the most current information. Dissertations were also included in this search. The following databases were searched: EMBASE, Science Direct PubMed, and SCOPUS. In addition, websites for international organizations, such as the World Health Organization, and other sources of grey literature were also searched for relevant publications and information.

The search terms and phrases used in the search strategy were as follows: change readiness OR organizational culture AND simulation-based education OR simulation learning AND Nursing education OR midwifery education AND Enablers OR facilitators OR barriers OR Challenges. A total of 1954 research articles were generated and screened for duplicates. After the removal of duplicates, 1256 articles remained for abstract and title screening of which 1000 were removed. Thirty-five papers were excluded because they were not freely accessible through the university's databases.

Two hundred and twenty-one articles were reviewed in full, and out of these, 125 articles were included in this review. Only articles written and published in English were used for the researcher to clearly understand the information because English is the language of instruction at Kamuzu University of Health Sciences. Very little has been done in this area of Africa; therefore, most of the sources used in this study are from high-resource countries. This chapter is primarily based on concepts adapted from the conceptual framework, which are reflected in the items of the instrument used in this study, as presented in the literature review below.

## 2.4 Organizational factors to incorporate simulation based education in health training institutions

In health training institutions, organizational aspects are significant in the utilization of simulation-based education, as they support the environment for its integration and sustainability (Seethamraju et al., 2022). The factors that have been

identified as essential to the successful integration and use of simulation-based education in the curriculum are policies, communication, written commitment to SBE, standards and guidelines, openness to change, and clarity of goals. All of these factors help create an organization that is conducive to the implementation and promotion of SBE.

### 2.4.1 Organizational Policies to SBE

According to Moabi & Mtshali.(2022), institutional support is required for the successful implementation of Simulation Based Education (SBE) in health training institutions. Policies provide a framework for staff, including educators and administrators, to implement new teaching methods and ensure that SBE is consistently integrated into the curriculum (Nevenglosky et al., 2018). Mwalabu et al. (2024) found that institutions with clear policies are more likely to incorporate SBE, thereby improving readiness and utilization of simulation activities.

SBE integration is more successful in institutions where the mission and policies align with organizational requirements (Jonyo et al., 2018). However, organizations with poor policies usually face severe problems in the effective utilization of simulation-based education (Byrne et al., 2021). Furthermore, the lack of supportive policies may pose challenges to the implementation of SBE. Lawaetz et al. (2023) found that when policies are absent in institutions, program implementation such as SBE fails. Without such a policy, educators may not have a clear understanding of how to implement and use simulations in their teaching (Byrne et al., 2021; Nyström & Ahn, 2024). As a result, it is critical to implement policies that improve SBE to ensure the overall effectiveness of the educational system.

In addition, it is important to note that policies must be reviewed and revised on a regular basis to incorporate new developments and emerging best practices in simulation education. For example, according to Bienstock and Heuer (2022), ongoing policy evaluations enable institutions to address the dynamic expectations of educators and students. Furthermore, Byrne et al. (2021) and Akparep et al. (2019) demonstrated that organizational support significantly impacts SBE implementation performance. Re-evaluating policies and practices based on changes in current research on SBE practices may help institutions create a culture that encourages change and development in teaching practices.

### 2.4.2 Communication to SBE

Communication is a key factor that can help organizations implement SBE. According to Byrne et al. (2021) and Elwy et al. (2022), the presence of a clearly communicated vision within institutions aids stakeholders; teachers, administrators, and policymakers collaborate towards the same goal, influencing the utilization and implementation of simulation-based education. Effective communication within an institution promotes collaboration and the ongoing integration of SBE within the institution, which has a significant impact on organizational performance and decision-making (Musheke & Phiri, 2021).

However, poor communication within the institution between educators and administrators impedes the effective use and incorporation of SBE into their teaching practices (Musheke & Phiri, (2021). Poor interaction between educators and administrators in the institution impedes the realistic application of simulation-based education, limiting how far these institutions can implement the strategy (Blackmore et al., 2018). Institutions can strike the right balance and provide necessary assistance if their faculty members are allowed to express their concerns. This type of

communication improves interpersonal relationships and encourages teachers to take risks and to implement new teaching techniques.

### 2.4.3 Open to change to SBE

An organization's readiness to embrace change plays an important role in creating a climate for SBE execution (Childs et al., 2020). In such institutions, where there is an innovative culture, the educator's attitudes and behaviors toward simulation-based education (SBE) are positively enhanced as there is strong encouragement towards incorporating different teaching techniques. According to Moabi and Mtshali (2021), for SBE to be successful, there should be organizational cultivation that supports SBE practice and implementation.

This organizational cultivation should incorporate advancement, continuous education, and the incorporation of contemporary approaches to teaching. Other studies have demonstrated that better implementation of simulation-based education in diverse resource environments cuts across the existing innovation culture and encourages the use of best practices (Baayd et al., 2023; Foisy-Doll & Leighton, 2017). This form of culture is always marked by strong leadership and commitment to the provision of necessary resources and support for simulation-based education implementation (Bank et al., 2017; Schmutz, 2022).

Furthermore, being open to change allows organizations to operate in a way that supports staff and students in carrying out simulation-based education without any barriers (Bozkurt et al., 2023). This flexibility not only assists in the incorporation of the SBE but also elevates the general learning experiences of the students and influences the implementation of simulation-based education (Almotairy et al., 2023; Moabi & Mtshali, 2022). For example, Moabi and Mtshali (2021) discovered that

curricular enhancement through SBE was more prevalent in institutions with teamwork and a beseech culture. Such educators expressed a strong commitment to using simulation-based techniques and willingness to take more risks in their teaching.

This resolve was typically supported by leadership, which actively supported SBE and provided opportunities for professional development (Kilag et al., 2023). Finally, overcoming these challenges requires a broad-based approach that includes increased organizational motivation, establishment of specific measurement criteria, and incorporation of simulation into teaching processes. These are critical issues that Tanzanian institutions must address to better prepare their students for simulation-based education and training in healthcare practice skills and competencies.

## 2.5 Readiness factors to incorporate simulation-based education in health training institutions

Readiness factors play a key role in the successful implementation of simulation-based education in health-training institutions. It is one of the factors that determines an institution's ability to adopt and maintain such teaching techniques (Baayd et al., 2023; Bozkurt et al., 2023; Moabi & Mtshali, 2021; Munazza Saleem & Khan, 2023). Such factors include professional development and training, skilled facilitators, knowledgeable educators to guide SBE, clarity of educational goals and educators' willingness, and trust in leadership.

### 2.5.1 Professional development and Training

According to Mwalabu et al. (2024), professional development and training are key factors influencing nurses' and midwifery educators' readiness to implement SBE. A study by Piryani et al. (2019) suggests that simulation-trained facilitators are better able to incorporate SBE within curricular frameworks. The study emphasizes that skill

acquisition benefits individuals qualitatively by providing not only technical know-how to use simulation equipment but also the proper use of such equipment for learning purposes. Institutional support for educational training significantly improves readiness (Kumpikaitė-Valiūnienė et al., 2021). According to Moabi and Mtshali's (2021) research, institutions that provide structured training and mentorship to nurse and midwife educators are more likely to embrace SBE.

#### 2.5.1.1 Skilled Facilitator

Skilled facilitators are required for the effective use of Simulation-Based Education (SBE) in health training institutions (Moabi & Mtshali, 2022). Facilitators must not only understand SBE principles but must also put them into practice so that students can fully benefit from the simulations available. According to the literature, faculty development programs can significantly increase the implementation of simulation-based education (SBE) activities within institutions among educators and students (Lopreiato & Rockville, 2016; Mula, 2013).

In low-resource settings, the challenge most frequently arises from a lack of skilled facilitators (Seethamraju et al., 2022). Mwalabu et al. (2024) and Baayd et al. (2023) discovered that many training institutions face a shortage of trained simulation facilitators, which significantly impedes the effective use and implementation of simulation-based education (SBE). This shortage is frequently linked to financial constraints, which makes it difficult for educators to attend training workshops. In a study by Vax et al. (2021), when facilitators lack sufficient skills in simulation methodologies and tools, their ability to utilize and effectively implement simulation-based education (SBE) in practice suffers significantly.

In addition, the absence of sufficient training gaps for educators leads to a cycle of unpreparedness in which educators are unable to acquire the skills and knowledge required to successfully implement SBE (Nevenglosky et al., 2018). Furthermore, according to Rajendran et al. (2023), SBE integration success rates are typically much higher in institutions that provide educators with continuous professional development. In a study by Pannekoeke et al. (2023), ongoing educators' training and mentorship increased their confidence in simulation-based education utilization and implementation. This suggests that the availability of adequately trained personnel significantly determines SBE implementation, even in areas where resources may be limited.

#### 2.5.1.2 Knowledgeable Educators to guide SBE

The ability of nurse and midwifery educators to incorporate SBE in their institutions depends on their level of knowledge and understanding of simulation principles (Mwalabu et al., 2024). Nurse and midwife educators should understand the theoretical aspects of simulation implementation (Fegran et al. 2023). A study by Seethamraju et al.(2021), which assessed faculty simulation training, was found to have a positive impact on the knowledge gained during the workshop.

Furthermore, a study by Nauman Ahmed et al. (2021) stressed that educators who understand SBE are more likely to improve their effective utilization and implementation. According to Greenwood and Ewell's (2018) research findings, the incorporation of simulation-based education (SBE) within teaching improves knowledge and techniques of educators, making it possible to carry out teaching in a better way and enable proper use of simulation. Razak et al.(2023) stressed that nurse-midwifery educators who possess strong knowledge can significantly incorporate and

use simulation-based education effectively. If this knowledge is not attained, SBE is not well utilized, leading to poor implementation within health training institutions.

However, knowledge gaps remain a significant barrier to the widespread use of SBE in practice. A study by Baayd et al.(2023) and Mwalabu et al.(2024) indicated that many facilitators do not feel ready to teach using simulation-based education due to little exposure to and use of the technique. A study conducted by Moabi and Mtshali (2022) stressed that the successful and effective implementation of SBE is hindered by limited knowledge and understanding of simulation based education among facilitators. Furthermore, educators may find it challenging to comprehend how best to incorporate simulation in their curriculum, especially in cases where there is an emphasis on theoretical teaching compared to clinical practice (Elendu et al., 2024; Munazza Saleem & Khan, 2023).

In addition, health training institutions that fund educators' training and capacity-building initiatives are better prepared to execute SBE (Gakwerere et al., 2024). For instance, a study by Foronda et al. (2017), discovered that teachers who used simulation training programs were willing and knowledgeable to conduct SBE (Alinier & Oriot, 2022; Andersson et al., 2023). This emphasizes the importance of fostering a culture of continuous improvement among educators to equip them with leadership roles in SBE.

### 2.5.2 Staff Cohesion

According to Sharma et al. (2014), staff cohesion refers to how well an institution's staff collaborates, functions as a unified team, and supports one another. Staff cohesion is a critical factor in determining an institution’s readiness to incorporate simulation-based education (Koukourikos et al., 2021; Moabi & Mtshali, 2021; Sharma

et al., 2014). When educators collaborate effectively, they can better navigate the complexities of integrating new technologies into their teaching practices (Crossley and McNamara 2016). Strong staff cohesion allows for easier transitions and increased willingness to adopt simulation based education, as educators rely on each other for guidance and feedback (Koukourikos et al., 2021).

In addition to fostering collaboration, staff cohesion also promotes knowledge sharing, which is essential when incorporating simulation-based learning (Lainema et al., 2023). Evidence has reported that, the successful adoption of simulation requires continuous communication and the exchange of best practices among educators (Blackmore et al., 2018; Koukourikos et al., 2021). Educators with varying levels of expertise in simulation can help one another develop necessary skills and competencies (Eppich & Cheng, 2015). This collaborative dynamic reduces resistance to change and encourages collective problem-solving, which is crucial when facing the challenges associated with integrating simulation into the curriculum. As such, institutions that promote staff cohesion are better positioned to effectively implement simulation-based education.

### 2.5.3 Staff Authority in the Incorporation of Simulation-Based Education

Staff members in health training institutions play a vital role in the successful incorporation of simulation-based education (SBE) (Koukourikos et al., 2021; Mwalabu et al., 2024). Educators with an appropriate level of institutional authority can better drive the decision-making process to implement SBE interventions (Musengamana et al., 2024). Nevenglosky et al. (2018) emphasized that when educators have the autonomy to design and implement simulation programs, the likelihood of successful integration into curricula increases.

This can empower educators to create a simulation culture within their institution because they have a say on where resources are allocated, how the curriculum is designed and created, and the management of simulation activities. The lack of this power would be a bottleneck to the success or economic effectiveness of simulation-based initiatives, simply because decisions may (obviously) be caught at the organizational level (Seethamraju et al., 2022). Additionally, stakeholders making decisions regarding the curriculum can lobby for protected time to engage in simulation training and develop faculty (Soni et al., 2024).

This can result in poor implementation of SBE despite the need for these activities during the implementation time to optimize learning (Nevenglosky and Zegarellu 2018). Research shows that without proper authority, educators may struggle to secure sufficient time for these critical activities, leading to ineffective SBE implementation (Nevenglosky et al., 2018). Ensuring that educators have the necessary authority to make decisions regarding simulation activities is critical for the successful integration of SBE in health training.

### 2.5.4 Trust in Leadership

According to Sharma et al. (2014), trust in leadership refers to employees' belief in the decisions and actions of leaders such as supervisors or center directors. Trust in leadership is an important factor in determining an institution's readiness to implement simulation-based education (Baayd et al., 2023; Lazzara et al., 2014). When educators trust their institutional leaders, they are more likely to support and participate in new initiatives, such as the implementation of simulation (Hayak et al., 2024).

Leaders who demonstrate clear vision, support, and transparency are better able to foster trust among their staff, which in turn encourages educators to embrace change (Dinsdale, 2017). Trust in leadership ensures that educators feel supported in the

transition to new teaching methods. Studies have shown that when leaders actively engage in the implementation process by providing resources, training, and encouragement, educators are more willing to adopt simulation technologies (Sayed Munna & Kalam, 2021), since it contributes to the successful allocation of resources and organizational support needed for simulation-based education (Marshall & Flanagan, 2010).

Nurse and midwife educators who trust their leaders are more likely to believe that the institution's investments in simulation technologies will be sustained over time, which can reduce anxiety about adopting new methods (Baayd et al., 2023; Salifu et al., 2022). Leaders who communicate effectively and demonstrate a commitment to professional development about the goals and benefits of simulation-based education can inspire confidence among educators, making the transition smoother, which further supports the integration of simulation-based education (Alrashidi et al., 2023; Blackmore et al., 2018).

## 2.6 Resources available to incorporate simulation-based education in health training institutions

The successful implementation of simulation-based education (SBE) in health training institutions requires a variety of resources to ensure effective teaching and learning experiences (Sharma et al., 2014). Such resources include simulation equipment, simulation training centers, technologic, Financial, Human resources (including trained personnel), and time (Mwalabu et al. 2024).

In addition, dedicated simulation laboratories equipped with the necessary technology and infrastructure are crucial for facilitating hands-on training (Elendu et al. 2024). Finally, financial resources are essential to support the acquisition,

maintenance, and continuous upgrading of simulation equipment and facilities as well as to fund professional development programs for educators (Senvisky et al., 2023). Together, these resources create a robust framework for integrating SBE into health training curricula, ultimately enhancing the quality of education provided to future healthcare professionals, as shown below.

### 2.6.1 Financial Resources

The availability of financial resources plays a critical role in the effective implementation of simulation-based education (SBE) (Moabi & Mtshali, 2022; Mwalabu et al., 2024). Adequate funding ensures that educational institutions can acquire and maintain the simulation equipment and technologies required to create realistic learning experiences (Elendu et al., 2020; Elendu et al., 2024). According to Baayd et al. (2023) and Lazzara et al. (2014), without sufficient financial investment, institutions may struggle to purchase high-quality manikins, computer-based simulations, and audiovisual tools for effective simulation exercises.

In low-resource settings, limited budgets often hinder the development of fully operational simulation laboratories, leading to reliance on outdated or inadequate tools that do not meet current educational standards (Kumar et al., 2024). Moreover, inadequate financial support may restrict the frequency and quality of simulation activities, ultimately affecting student preparedness for real-world clinical scenarios (Koukourikos et al., 2021). Studies have highlighted the need for continuous investment in SBE to ensure the sustainability and scalability of simulation programs. For instance, a study by Lazzara et al. (2014) emphasizes that simulation programs require ongoing financial support not only for the initial setup, but also for periodic maintenance and upgrading of simulation technologies.

This underscores the importance of securing adequate and sustained financial resources to enhance the long-term success of SBE initiatives. Furthermore, innovative financial strategies such as partnerships with government agencies, private sector sponsors, and non-governmental organizations have been suggested as ways to bridge the financial gap in low-resource settings (Liu et al., 2024). Such collaborations can provide additional funding streams to support the continuous enhancement of simulation labs and the acquisition of new technologies, thereby fostering the integration of SBE into teaching practices on a broader scale (Mwalabu, Msosa, Tjoflåt, Risa, et al., 2024). These financial partnerships are especially important in environments in which institutional budgets are insufficient to meet the demands of high-quality simulation-based education (Elendu et al., 2024).

### 2.6.2 Simulation Equipment

Simulation equipment is a fundamental resource for the effective implementation of Simulation-Based Education (SBE) in health training institutions (Moabi & Mtshali, 2022; Mwalabu et al., 2024). According to Koukourikos et al. (2021), high-fidelity simulation mannequins and equipment provide realistic scenarios that enhance students' learning experience, allowing them to practice clinical skills in a safe environment. The quality of the simulation equipment directly impacts the fidelity of the learning experience, making it essential for institutions to invest in modern and relevant technology (Elendu et al., 2024). Additionally, the presence of diverse simulation equipment in simulation based education can provide to various learning needs, thus enhancing the overall educational experience and implementation (Koukourikos et al., 2021).

Moreover, research by Alrashidi et al. (2023) and Koukourikos et al. (2021) highlights that the integration of advanced simulation equipment can lead to significant improvements in clinical performance and confidence among healthcare students.

These improvements are attributed to students' ability to engage in realistic practice scenarios that mimic real-life clinical situations (Alrashidi et al., 2023). Institutions that prioritize the procurement of high-quality simulation equipment are more likely to produce competent graduates who can effectively apply their skills in clinical settings (Baayd et al., 2023). Therefore, the availability of appropriate simulation equipment is crucial for successful implementation of SBE in health training institutions (Mwalabu et al., 2024).

Furthermore, studies indicate that without adequate simulation equipment, the potential benefits of SBE may not be fully realized. For instance, Alinier and Oriot (2022) and Mwalabu et al. (2024) found that institutions lacking sufficient equipment faced challenges in conducting comprehensive simulation sessions, resulting in limited learning opportunities for students. This underscores the importance of not only acquiring simulation equipment but also ensuring its adequacy and relevance to the curriculum. Therefore, a strategic approach to sourcing and maintaining simulation equipment is necessary for health training institutions to effectively incorporate SBE. Furthermore, INACSL (2016) emphasized the importance of proper simulation equipment design and usability in ensuring effective implementation and desired learning outcomes. This highlights the need for ongoing investment in infrastructure to fully incorporate SBE into teaching practices.

### 2.6.3 Simulation Laboratories

Simulation laboratories are specific venues where Simulation-Based Education is delivered, and are crucial in facilitating learning experiences (Elendu et al. 2024). According to Piryani et al. (2019) and Mwalabu et al. (2024), well-designed simulation laboratories can significantly enhance the effectiveness of SBE by providing an environment conducive to skill acquisition and practice. These laboratories create opportunities for ensuring patient safety as learners participate in practical activities (Koukourikos et al., 2021). In a study conducted by Shbeer (2024), institutions with well-equipped simulation laboratories reported higher levels of student satisfaction and engagement in learning processes. The physical presence of simulation laboratory sources, fostersa culture of learning, and collaboration between students and faculty (Koukourikos et al., 2021). In addition, simulation laboratories can be designed to reflect real clinical environments, further bridging the gap between theoretical knowledge and practical applications (Koukourikos et al., 2021).

Efforts to improve infrastructure, particularly in low-resource settings, are essential to the long-term success of SBE programs (Gorgulu et al., 2023). According to Elendu et al. (2024) and Al-Elq (2010), institutions must prioritize the development of simulation centers specifically designed to support various forms of simulation, from basic manikin-based exercises to complex, high-fidelity simulations. Furthermore, Salifu et al. (2022) emphasized that the integration of simulation labs into the broader educational infrastructure requires careful planning and investment to ensure that these spaces are accessible and conducive to learning. Thus, the establishment of well-resourced and appropriately designed simulation laboratories is vital for the successful incorporation of SBE in health training institutions.

Moreover, a study by Gray & Diloreto (2016) found that the presence of adequate simulation labs was associated with higher levels of student satisfaction and perceived learning outcomes. However, a lack of space or substandard facilities can hinder educators' ability to deliver high-quality simulation experiences (Baayd et al., 2023). In some institutions, simulation activities are conducted in multipurpose rooms or clinical spaces that are not fully equipped to support advanced simulation technologies, thus reducing the effectiveness of the learning process (Elendu et al., 2024; Koukourikos et al., 2021).

This emphasizes the importance of investing in infrastructure to ensure that students have access to environments that closely simulate the real-world clinical settings. To maximize the benefits of simulation education, institutions must prioritize the establishment of accessible and adequately equipped simulation laboratories that can accommodate varying student needs and schedules (Elendu et al., 2024; Mwalabu et al., 2024). This commitment not only enhances learning outcomes, but also supports the ongoing professional development of healthcare educators.

### 2.6.4 Human Resources

The availability of trained simulation personnel is crucial for the successful incorporation of SBE into teaching practices (Greenwood & Ewell, 2018). Human resources, particularly educators skilled in simulation techniques, play a key role in designing, delivering, and evaluating simulation experience (Koukourikos et al., 2021). A study by Elendu et al. (2024) and Baayd et al. (2023) indicated that the presence of dedicated simulation personnel enhances the quality of simulation-based learning, as these individuals are able to facilitate complex scenarios, provide immediate feedback, and guide students through reflective learning processes. In low-resource settings,

however, a shortage of staff (educators) often limits the ability of institutions to fully integrate SBE into their curricula (Moabi & Mtshali, 2022).

### 2.6.5 Time allocation for the Integration of Simulation-Based Education (SBE)

To effectively incorporate simulation-based education (SBE) into their teaching methods, educators need allocated time away from their regular duties (Muhumuza et al., 2023). Research conducted by Munazza Saleem and Khan (2023) and Elendu et al. (2024) demonstrated that teachers given dedicated time were more successful in creating and executing simulation exercises, as they could concentrate on developing curricula and engaging students without the burden of juggling multiple teaching obligations. In the absence of this allocated time, instructors may find it challenging to successfully implement SBE, as their conventional teaching responsibilities can hinder their capacity to create and enhance simulation-based curricula (Alinier & Oriot, 2022; Kelly et al., 2016).

Allocated time off also enables educators to participate in SBE-related professional growth opportunities, such as attending seminars, symposiums, or training sessions focused on simulation. This ongoing learning is crucial for simulation educators to stay current with the up-to-date advancements and optimal techniques in the field (Al-Hassan & Omari, 2023). However, in settings with limited resources, the absence of organizational backing for professional growth and dedicated time can impede the advancement of SBE initiatives (Mwalabu et al., 2024).

Research indicates that time limitations hinder the adoption and effective use of simulation-based education (SBE) among nurse and midwife educators (Baayd et al., 2023; Seethamraju et al., 2022). Mbakaya et al. (2020) stressed that restricted clinical time in midwifery training programs utilizing SBE hampers its implementation and

efficacy. Additionally, Lukasse et al. (2017) and Nghitanwa et al. (2019), noted that extended simulation to meet student learning needs, including adequate opportunities to discuss theory and articulate derived knowledge. Consequently, providing educators with ample time and resources to incorporate SBE is essential for its successful implementation in educational settings.

### 2.6.6 Technological support

The incorporation of simulation into educational settings to enhance learning and instruction is significantly facilitated by technology, which in turn boosts the preparedness and execution of simulation-based education (SBE) (Zenios, 2020). Research by Decker et al. (2015) indicates that institutions that invest in advanced simulation technology and up-to-date and well-maintained equipment enhance the success and effective use of SBE.

Moreover, simulation technologies and devices, including high-fidelity simulators, task trainers, and virtual reality systems, serve as crucial resources for implementing SBE, allowing educators to construct lifelike scenarios for students (Rubio-Martínez et al., 2022). Cook et al. (2011) conducted a study demonstrating that technology-based simulation training in healthcare education correlates with substantial improvements in knowledge, skills, and patient-related outcomes. Consequently, institutions providing health-related training must emphasize not only the acquisition of technological resources but also ongoing training and assistance for educators to effectively utilize these tools in their teaching methods.

## 2.7 Conclusion

The framework was adapted to stress the importance of assessing readiness for change at both the institutional and individual levels before implementing programs.

This approach helps to identify potential execution barriers. This chapter reviews the literature on simulation-based education and its implementation in health training institutions, considering the factors outlined in the framework.

# CHAPTER THREE

# METHODOLOGY

## 3.1 Introduction

This chapter provides an overview of the methodology for conducting the study to gain an understanding of nurse and midwife educators' readiness to use SBE in nursing and midwifery training institutions. This chapter describes the study design, setting, period, population, inclusion and exclusion criteria, sample size and sampling method, data collection method, data management and analysis, validity and reliability, and ethical considerations. The procedure for disseminating the results has also been included.

## 3.2 Study design

This study employed a descriptive cross-sectional design to assess the readiness of nurse and midwife educators to implement SBE in health training institutions. The philosophical underpinning paradigm in this study is positivism. Positivism is a research method that uses empirical evidence, objectivity, and quantitative methods to produce generalizable results for large populations through surveys (Burns & Grove, 2013; Maksimović & Evtimov, 2023). This design was employed because little is known about the readiness of nurse and midwife educators to implement SBE in Tanzania.

## 3.3 Study Setting

This study was conducted in six institutions offering nursing and midwifery programs in Kilimanjaro. It involved one public institution, four faith-based organizations (FBO), and one private institution. These institutions offer a three-year diploma in the Nursing and Midwifery program. All institutions used a similar

curriculum (competency-based curriculum) developed by the United Republic of Tanzania, ran similar programs, and administered similar examinations.

Kilimanjaro is located in the northern part of Tanzania and shares its borders with Kenya to the north and east, Tanga region to the south, Manyara region to the southwest, and Arusha region to the west. This region was selected because there is little evidence regarding SBE. In addition, Kilimanjaro has a large number of nursing and midwifery training institutions, which would provide a large number of educators for the study sample. In return, an adequate sample size would enhance the generalizability of the results to a broader population of Tanzanian nursing and midwifery training institutions.

### 3.4 Study Population

According to Majid (2018), the population under consideration is the specific group that the study aims to investigate or address. The study population consisted of nurses and midwifery educators from six nursing and midwifery training institutions in Kilimanjaro. This population was chosen because they were implementers of the curriculum using various pedagogical methods including SBE.

### 3.5 Study period

The study period was June 2023 to October 2024. During this period, the researcher developed the research proposal, conducted data collection, performed data analysis, wrote the report, and prepared the manuscript.

### 3.6 Sample size and sample calculation

The study used the cross-sectional sample size calculation formula by Yamane (Uakarn, 2021), ((n=N/[(1+N(e)²)]). The sampling frame in the study setting was 100 and the sample size was calculated as follows:

n=sample size, N=Population size, e= margin error and equals to 5% (0.05).

n=100/ [(1+ 100(0.05) ²)]).

=100

(1 + (100 x 0.0025)

=100

1.25

=80

Estimated 20% non-responses rate. Therefore, the sample size was n= 80 + 16, n=96

During data collection, 99 participants were recruited, comprising the total sample of educators who met the inclusion criteria from six institutions.

During data collection, 99 participants were recruited from six institutions, comprising a total sample of educators who met the inclusion criteria.

**Table 1 : Proportion of Nurses and midwife educators in the selected institutions.**

| S/N | Name of College n=99 | Status | No. Educators | Proportion |
|---|---|---|---|---|
| 1. | St. Theresa college of Nursing | FBO | 13 | 13 |
| 2. | Zawadi memorial health Training | Private | 07 | 07 |
| 3. | Kilimanjaro College of Health and Allied Sciences | Public | 31 | 30 |
| 4. | Kibosho School of Nursing and Midwifery | FBO | 17 | 16 |
| 5. | Machame Health Training institute | FBO | 15 | 15 |
| 6. | Huruma institute of Health and Allied Sciences | FBO | 18 | 18 |
| | Total | | 100 | 99 |

### 3.7 Sampling method

This study employed a consecutive sampling method. Consecutive sampling involves selecting all available participants who meet a specific set of criteria with the characteristics that a researcher requires (Bujang et al., 2022). The researcher chose to include the entire population of nurse and midwife educators in health training institutions because the population with the desired characteristics was small and manageable (Polit and Beck, (2017). Using this method, the researcher aimed to include all eligible participants to obtain an adequate sample size and to ensure a comprehensive representation of the accessible population for the study.

### 3.8 Eligibility criteria

#### *3.8.1 Inclusion criteria*

Full-time and part-time educators who provided consent and had at least six months of experience in teaching nursing and midwifery students were recruited for the study.

#### 3.8.2 Exclusion criteria

Critically ill educators.

### 3.9 Data Collection Method

The data were collected using a self-administered questionnaire. The researcher adopted a structured questionnaire developed by Foisy-Doll & Leighton, (2017), which is used to assess simulation culture organizational readiness (SCORS) (see Appendix D).

### 3.10 Data Collection instrument

The data were collected using a structured questionnaire. Permission to use the tool (SCORS) was obtained from the authors (Foisy-Doll and Leighton, (2017)

(**Appendix C**). The simulation culture organization readiness (SCORS) tool was

modified by adding a demographic section to collect information on the baseline characteristics of the participants. Additional information under the demographic section included teaching experience and socio-demographic characteristics (educational level, gender, and age).

The survey tool had four dimensions/components: organizational support for change, readiness of nurses, midwifery educators to implement SBE, and resources (Human and Non-human resources) to incorporate simulation-based education in teaching institutions. The instrument consists of 24 statements rated on a five-point Likert scale (ranging from "none at all" to "very much"). All questions were included in the study, but questions 23 and 24 were relocated from Section D to Sections B and A, respectively, without altering their scores.

The tool was also translated into Swahili to ensure clear understanding by the respondents. Back-and-forward translations were conducted to ensure the accuracy of the items in the questionnaire. The questionnaire was translated by two translators, and another translator translated it back into the original language to verify the accuracy and consistency of the questionnaire items. Swahili version of the structured questionnaire was used to collect data. Participants' responses were recorded using a Likert scale (1-5 point), and the SCORS instrument guide was used to interpret the results.

Participants selected one option for each question. The mean score for each item was calculated using the SCORS guide. A mean score of 3 or higher was considered favorable, whereas a mean score of < 3 was considered below acceptable standards. The scores of the responses were added to represent the respective dimensions of institutional readiness to use simulation-based education (SBE). The dimension scores included "None" (0-36), "A Little" (37-72), "Somewhat" (73-108), "Moderately" (109-

144), and "Very Much" (145-180). This guide was used to report the results of data analysis.

### 3.11 Recruitment and data collection procedure

Prior to data collection, the researcher sought permission from the gatekeeper before meeting the college principal of each Nursing and Midwifery Institution. Upon obtaining permission, the researcher was introduced to the respondents by the principals or delegated nurse educators for the research context in the institutions. The researcher explained the purpose of the study to the participants and requested their permission to contact full-time and part-time nurses and midwifery educators to invite them to participate.

Once permission was obtained from the participants, they were asked to sign a consent form. After obtaining consent, the researcher provided the participants with a self-administered questionnaire to respond to the questions. Data were collected by the researcher and two trained research assistants. The researcher used Swahili for communication with the participants during the data collection process.

### 3.12 Pre-testing of the Questionnaire

Pre-testing was conducted to ensure that the questionnaire was effective in measuring the intended variables and that participants could understand it, thereby improving the quality of the data to be gathered during the actual study (Polit & Beck, 2017). Pre-testing was conducted at St. Theresa College of Nursing, where the respondents had relevant background and experience related to the study. The respondents were asked to complete the questionnaire following clear information regarding the study. Participants were also encouraged to note any confusion or unclear items in the questionnaire. Pre-testing was carried out with five nurse and midwifery educators who

were not involved in the study to ensure the clarity and appropriateness of the questions and wording.

### 3.13 Validity and Reliability

Validity and reliability are crucial for ensuring the stability and accuracy of the findings (Bagozzi, 2017). The study adopted a questionnaire from the SCORS tool and tested its reliability, which revealed an alpha coefficient of 0.88, which is acceptable, as the range is 0.7 and above. Content validity was ensured by subjecting the questionnaire to experts in nursing and midwifery education, and SBE for critique. The researchers incorporated items from the SCORS tool, which have been previously tested and found valid, with an Alpha Cronbach coefficient of 0.96 (Bujang et al., 2018).

### 3.14 Data Management

After each data collection period, all the questionnaires were carefully reviewed to check for completeness and accuracy. Any missing information was verified with the researcher, research assistants, and participants to ensure that the data collected were reliable and free from errors. Once the questionnaires were completed, they were placed in sealed envelopes to maintain their confidentiality and privacy. These envelopes were securely locked in the drawers until the end of the study. SPSS version 26.0 was used for data entry, and files containing information and data on the computer were protected with passwords to ensure that only authorized personnel could access and handle the electronic data, thereby reducing the risk of data breaches or unauthorized access.

### 3.15 Data Analysis

Statistical Package for the Social Sciences (SPSS) version 26 was used to analyse the data. Data was cleaned and analyzed, for categorical frequency and

proportion, and for continuous variables measures of central tendency (MCT) and their respective measures of dispersion (MD), were used to summarize descriptive statistics. The mean score for the readiness to SBE was computed according to simulation culture organization readiness (SCORS) standards guide.

SCORS instrument is a five (5) point scale used to assess the nurse and midwifery educator's readiness in the use of simulation based education in the teaching institutions in Kilimanjaro region. Its response was 1= not at all and 5=very much. The SCORS instrument comprised four dimensions: Organizational support for change, readiness to staff within the institution (staff attributes), Resources Readiness within the institution **(**Time, Personnel). About nine questions/items were used to assess Organizational support for change dimension with a total score ranging from 9 to 45. Readiness for culture change (staff readiness) dimension assessed using eleven question/items with a total ranging from 11 to 55. Twelve questions assessed the resources readiness within the institution **(**Time, Personnel), with scores ranging from 12 to 60. Four questions measure the Sustainability Practices to Embed Culture dimension, with scores between 4 and 20 however the questions 23 and 24 with their sub-items were relocated from section D to section A and B. Question 23 were moved to section and question 24 were moved to section B.

Internal consistency was calculated to determine if items across SCORS dimensions measure the same concept, with 0.7 and above considered acceptable (Taber, 2018). Given the normal distribution of the data, the mean (SD) summarizes the SCORS subscale scores. An independent samples t-test estimated the mean differences in SCORS dimension subscale scores by gender (male vs. female), age groups (25-35 vs. 36+), and education institution type (government vs. private). The eta squared was calculated to estimate the effect size of mean difference between SCORS dimension

subscale score by gender, age and type of education institutions. The effect size value is interpreted according to Cohen, (1988) being 0.01 small effect, 0.06 moderate effect and 0.14 large effect size.

### 3.16 Ethical Consideration

The researcher ensured the protection of participants' human rights throughout the study (Polit & Beck, 2017). Approval was obtained from two university-based research ethics boards. Kilimanjaro Christian Medical University College (ethical clearance number PG.125/2023) (Appendix E) and Kamuzu University of Health Sciences (ethical clearance number P.08/23-0243) (Appendix F). Second, before contacting the individual participants, gatekeepers granted permission to conduct the study across all training institutions (Appendices I-O).

The researcher then arranged a day and date to meet with the principals to introduce himself, describe the purpose of the study, and request permission to contact the nurse and midwife educators and invite them to participate in the study. The study strictly adhered to all principles of human research subjects as per the Declaration of Helsinki. After obtaining permission to contact the educators, the researcher provided all study participants with an information sheet (see Appendix A), thoroughly explaining the study's purpose, nature, potential benefits, and risks.

Before participating, the researcher obtained both verbal and written consent from the respondents to ensure their voluntary participation (see Appendix B). To maintain confidentiality, the study used codes instead of the participants' names. The study had no major risk, although in the case of minor discomfort, which was more of a psychological nature arising from the time required to read and respond to the questionnaire, psychological support was offered.

### 3.17 Reimbursements / participants compensation

During data collection, the researcher provided drinks and snacks, even though the College of Medicine Research and Ethics Committee mandated a compensation of $10 (Tsh. 25,000.00) for each participant's duration. This decision was influenced by the financial limitations of the study.

### 3.18 Dissemination of results

The findings of this study will be presented to the KUHeS committee during the master's defense viva voce. A written report of the research findings will be submitted to COMREC, KUHeS library, and KUHeS online learning resources and publications. Other copies will be distributed to the institutions where data were collected, and the Kilimanjaro Christian Medical University Library, where the researcher is sponsored by the NORHED II project. Manuscripts will be written and submitted to accredited and peer-reviewed nursing and midwifery journals for publication to reach out to a large number of healthcare professionals, including students and academicians.

# CHAPTER FOUR

# STUDY RESULTS

## 4.0 Introduction

This chapter presents the findings of a study that assessed nurses' and midwifery educators' readiness to use simulation-based education in teaching institutions in the Kilimanjaro region. The survey instrument had two sections. The first part was on demographic information from respondents, while the second part Simulation Culture Organizational Readiness Survey (SCORS). Simulation Culture Organizational Readiness Survey (SCORS) had four sections of the simulation culture organization reediness (SCORS) which are Organizational support, readiness for culture change, and resources for the implementation of SBE.

According to the SCORS guide, the mean scores for each item should be computed for each component. A mean score of 3 or higher was considered favorable, whereas a mean score below 3 indicated that the standards were not met. The score of responses was computed to represent the respective item in each dimension of institutional readiness to use Simulation-Based Education (SBE), and the findings are presented as follows. The first part of the results presents the demographic characteristics of the respondents, followed by organizational support, readiness for culture change, and resources for the implementation of SBE.

## 4.1 Demographic characteristics of the responded

A total of 99 respondents participated in the study, 62.6% (n=62) were female, 74.7% (n=74) had a bachelor's degree, 36.4% (n=36) had teaching experience of more than five years, and 60.6% (n=60) were Faith-Based Organizations, as shown in Table 2.

**Table 2 : Socio-demographic Characteristics n=99**

| Variable | Frequency (n) | Percentage |
|---|---|---|
| Gender | | |
| Male | 37 | 37.4 |
| Female | 62 | 62.6 |
| Age (years) | | |
| 25 - 35 | 40 | 40.4 |
| 36 - 45 | 31 | 31.3 |
| 46 – 55 | 15 | 15.2 |
| >55 | 13 | 13.1 |
| Education Institution | | |
| Governmental | 31 | 31.3 |
| Private | 8 | 39.4 |
| Faith Based Organization | 60 | 60.6 |
| Education qualification | | |
| PhD | 1 | 1.0 |
| MSc | 14 | 14.1 |
| BSc | 74 | 74.7 |
| Diploma | 10 | 10.1 |
| Teaching experience | | |
| 6months to 1 year | 9 | 9.1 |
| 2-3 years | 27 | 27.3 |
| 4-5 years | 27 | 27.3 |
| Above 5 years | 36 | 36.4 |

### 4.2 Organizational Support for Change within the institutions

This section assessed support for Simulation-Based Education (SBE) within the institution. It included the extent to which educators verbalize their commitment to integrating SBE into the curriculum, the necessity of considering SBE integration, and clarity of communication regarding the strategic vision for SBE among stakeholders. The Conceptual framework has highlighted organisational, individual and resource-related factors that influence an organisation's readiness in the implementation of any program such as simulation-based education (SBE). The organizational-level factors from the conceptual framework such as professional development, training, and communication determine institutional readiness to adopt a program. These factors align with the objective as it focused on organizational factors which are also indicated in framework.

The findings revealed a significant lack of organizational support for SBE, see Table 3. Of the 12, six were below the recommended standard. Key limitations included inadequate communication of a clear strategic vision for SBE (mean = 2.79; SD = 1.13), absence of a written commitment to SBE (mean = 2.62; SD = 1.235), and insufficient funding to support SBE initiatives (mean = 2.72; SD = 1.246). All mean scores fell below the recommended standards, indicating challenges in readiness for SBE implementation. Other poor scores were for items 9, 10a, 10b, and 10c.

Despite the limited current organizational support for SBE, the scores for Items 1, 2, and 3 in Table 3 show signs of readiness and potential for growth. Item 1 emphasizes institutional innovation, experiential learning, and quality student experiences, and is clearly articulated as central to its mission and philosophy (mean = 3.35; SD = 0.92). Similarly, the score for item 2 (mean = 3.18; SD = 0.98), which is based on the presence of educators who demonstrate a commitment to integrating SBE

into the curriculum, is above the recommended mean of 3.0 highlights a supportive environment for change.

**Table 3 : Organizational Support for Change within the institution**

| | **Item** | **Mean** | **Standard Deviation** |
|---|---|---|---|
| 1. | To what extent are innovation, experiential learning and quality student experiences clearly described as central to the mission and Philosophy of your institution? | 3.35 | 0.92 |
| 2. | To what extent have the educators in your institution verbalized a commitment to SBE integration into the curriculum? | 3.18 | 0.98 |
| 3. | To what extent has your organization clearly defined the need to consider simulation-based education (SBE) integration? | 3.06 | 1.10 |
| 4. | To what extent have the educators you work with articulated a need for SBE integration into the curriculum? | **2.89** | 0.98 |
| 5. | To what extent does your organization promote the need for SBE based on current evidence, standards, and guidelines? | **2.83** | 1.13 |
| 6. | To what extent have administrators within your organization communicated a clear strategic vision for SBE? | 2.79 | 1.13 |
| 7. | To what extent have administrators within your organization provided funding to support the commitment to SBE? | 2.72 | 1.25 |
| 8. | To what extent have administrators within your organization provided a written commitment to SBE? | 2.62 | 1.24 |
| 9. | To what extent is SBE currently being used as a teaching modality in your institution? | 2.60 | 1.12 |
| 10. | To what extent are decisions regarding SBE influenced by: | | |
| a. | Educators | 2.94 | 1.03 |
| b. | Administration | 2.71 | 1.07 |
| c. | Clinicians | 2.70 | 1.16 |

### 4.3 Readiness for Culture Change within the institution

This section measured readiness for cultural change for Simulation-Based Education (SBE) within the institution. It involves the need of considering the level of knowledge and skills educators have for SBE integration and the institution to utilize simulation. The conceptual framework highlighted factors that can influence the readiness of staff within the organization. The factors include staff attributes such as cohesion, authority, openness to change, and trust in leadership shape educators' willingness to adopt SBE. These factors highlighted from the conceptual framework fits with the objective since it has focused on individual readiness factors as indicated in framework.

The findings revealed a significantly limited readiness for cultural change within the institutions concerning the adoption and integration of Simulation-Based Education (Table 4). Out of the 10 items, seven were below the recommended standard. The findings showed lack of essential skills among professionals in the field of SBE (mean=2.99; SD 1.05), inadequately trained simulationists who could mentor or coach others (mean=2.57, SD = 1.08), and insufficient proficiency among staff in the use of technology (mean=2.75; SD 1.10), which is a fundamental component of SBE. Other poor scores are items 14,16,17 and 18.

The findings also showed a degree of readiness for change. There is a presence of professionals within institutions who already possess a strong knowledge base in SBE, as reflected by a mean score of 3.07 (SD 1.08) and positive attitudes (mean 3.35, SD 1.03), which are above the recommended mean of 3.0 highlights a supportive environment for change see Table 4.

**Table 4 : Readiness for Culture Change within the institutions**

| | Item | Mean | Standard Deviation |
|---|---|---|---|
| 11 | **In your organization, to what extent is there a critical mass of professionals who already possess strong SBE:** | | |
| a | Positive attitudes | 3.35 | 1.03 |
| b | Knowledge | 3.07 | 1.08 |
| c | Skills | 2.99 | 1.05 |
| 12 | To what extent do you believe that now is the right time to implement a culture change to support SBE? | 3.15 | 1.21 |
| 13 | To what extent are there graduate level prepared researchers available to assist in research to develop new knowledge, as appropriate to your organization's mission? | 2.93 | 1.18 |
| 14 | To what extent are librarians available within your organization to help search for evidence-based practice and related simulation resources? | 2.85 | 1.16 |
| 15 | To what extent are staff/faculty proficient in the use of technology? (I.e. computer systems, AV and IT systems) | 2.75 | 1.10 |
| 16 | To what extent are your librarians accessed to search for evidence-based practice and related simulation resources? | 2.67 | 1.21 |
| 17 | To what extent are there credentialed or trained simulationists who mentor/coach others, including, other simulationists? | 2.58 | 0.94 |
| 18 | To what extent does your organization have individuals who model SBE best practice? | 2.57 | 1.08 |

### 4.4 Resources to incorporate simulation-based education

This section assesses the availability of resources to support the integration of Simulation-Based Education (SBE) within the institution. It focuses on fiscal resources, including personnel, time, and non-human resources see Table 5. The Conceptual framework has highlighted factors such as organisational resources including financial, human, and infrastructural elements. Resource availability, has the capacity to influence an institutions' readiness to integrate SBE into teaching practices effectively. These factors highlighted from the conceptual framework fits with the objective since it has examined the availability of resources, including financial, human, and infrastructural elements.

These findings reveal a critical shortage of financial resources within the institutions. The lack of dedicated time to lead SBE integration, shortage of equipment, and absence of simulation champions—individuals who go above and beyond to advance simulation practices—among administrators (mean = 2.77, SD = 1.067), clinicians (mean = 2.73, SD = 1.086), educators (mean = 2.83, SD = 1.125), and technology specialists (mean = 2.64, SD = 1.233) significantly hindered the ability to support and sustain Simulation-Based Education (SBE). Other low scores included items 19, 21, 22a, 22b, 22c, 22d, and 22e. However, there were some positive indicators. The availability of physical learning spaces (mean = 3.08, SD = 1.075) and support for learning and managing technologies that aid education (mean = 3.0, SD = 1.088) were noted as facilitating factors for SBE implementation, see Table 5.

**Table 5: Resources to incorporate simulation-based education**

| | **Resources to incorporate simulation-based education** | **Item Mean** | |
|---|---|---|---|
| 19 | To what extent are fiscal resources available to support SBE in the following areas: | | |
| a | Development of physical learning spaces? | 3.08 | 1.08 |
| b | Education? | 2.90 | 0.10 |
| c | Release time to lead integration of SBE? | 2.88 | 1.03 |
| d | Equipment? | 2.78 | 0.96 |
| e | Human resources (simulation personnel)? | 2.76 | 1.07 |
| 20 | To what extent is support available to learn and manage technologies that support education? | 3.00 | 1.09 |
| 21 | To what extent do employees in your institution have access to quality technology, including computers, audiovisual equipment, and other institutional technologies? | 2.98 | 1.12 |
| 22 | **To what extent are there existing simulation champions (people who will go the extra mile to advance simulation) in the current environment among** | | |
| a | Educators | 2.83 | 1.13 |
| b | Administrators | 2.77 | 1.07 |
| c | Clinicians | 2.73 | 1.09 |
| d | Administrative assistants and support Staff | 2.67 | 1.10 |
| e | Technology Specialists | 2.64 | 1.23 |

### 4.5 Internal consistency of SCORS dimension and subscale scores

Four dimensions of SCORS instrument was computed to estimate the internal consistency of items respectively. The reliability of SCORS dimension was measured using Cronbach's Alpha with 0.7 and above acceptable. All dimensions had Cronbach's alpha above 0.7 indicating the items are measuring the same construct as shown in Table 6.

**Table 6: SCORS dimension Internal consistency and subscale score n=99**

| **Dimensions** | **Cronbach's Alpha** | **Mean** | **Standard Deviation** |
|---|---|---|---|
| Organizational support within the institution | 0.83 | 26.03 | 6.48 |
| Staff readiness for change within the institution (staff attributes) | 0.82 | 31.94 | 7.28 |
| Resources available to incorporate SBE within the institution (Time, Personnel) | 0.85 | 34.00 | 7.97 |
| Sustainability Practices to Embed Culture | 0.75 | 11.16 | 3.27 |

### 4.6 Differences between SCORS dimension subscale scores by gender (male vs. female), age groups and type of education institution

An independent samples t-test was used to compare SCORS dimensions subscale scores by gender (male vs. female), age groups (25-35 vs. 36+) and type of education institution (Government vs. Private institution). This was computed after the independent samples t-test assumption met. Organizational support for change dimension subscale score was not detected any significant differences across all independent variables (gender, age groups and education institution). Readiness for culture change dimension subscale score, there was significant difference for age groups (26-35 vs. 36+) and type of education institution (Government vs. Private institution).

Furthermore, there was significant differences for resources, time and Personnel readiness dimension subscale score for government education institution (*M=29.5, SD=6.97*) and Private education institution *(M=36.04, SD=7.59); t (97) = -4.07, p= 0.001,* two tailed). With higher mean differences (mean difference = *-6.53, 95%CI: 9.71, -3.42*), the difference detected was high (eta squared *=0.14*). Also, Sustainability Practices to Embed Culture dimension subscale score only shown significant differences for government education institution (*M=8.84, SD=2.65*) and private education institution (*M=12.22, SD=2.97); t (97) = -5.43, p=0.001*, two tailed). With significant differences observed (mean difference=*-3.38, 95%CI: -4.62, -2.15*), the detected differences were higher (eta squared=*0.2*) see table 7.

**Table 7: SCORS Subscale Score dimensions mean differences by gender, age groups and education institution=99**

| Dimension/Variable | N | Mean (SD) | t(df) | P-Value | Mean Difference | 95%CI | Eta squared/effect size |
|---|---|---|---|---|---|---|---|
| **Organizational support for Change** | | | | | | | |
| Gender | | | | | | | |
| *Male* | 37 | 25.8 (5.96) | | | | | |
| *Female* | 62 | 26.1 (6.80) | -0.23(97) | 0.82 | -0.31 | -2.99, 2.38 | 0.00 |
| Age (years) | | | | | | | |
| *25 - 35* | 40 | 27.18(5.61) | | | | | |
| *36+* | 59 | 25.25(6.94) | 1.46(97) | 0.15 | 1.92 | -0.69,4.54 | 0.02 |
| Education Institution | | | | | | | |
| *Government* | 31 | 24.52 (6.75) | | | | | |
| *Private* | 68 | 26.72(6.28) | -1.58(97) | 0.12 | -2.20 | -4.96,0.56 | 0.03 |
| **Readiness for culture change** | | | | | | | |
| Gender | | | | | | | |
| *Male* | 37 | 33.16(6.51) | | | | | |
| *Female* | 62 | 31.20(7.66) | 1.3 (97) | 0.19 | 1.95 | -1.04,4.94 | 0.02 |
| Age (years) | | | | | | | |
| *25 - 35* | 40 | 34.30(6.34) | | | | | |
| *36+* | 59 | 30.34(7.49) | 2.74(97) | 0.007 | 3.96 | 1.09,6.82 | 0.07 |
| Education Institution | | | | | | | |
| *Government* | 31 | 27.61(6.01) | | | | | |
| *Private* | 68 | 33.91(6.98) | -4.34(97) | 0.001 | -6.29 | -9.18, -3.42 | 0.16 |
| **Resource Readiness (Time, Personnel)** | | | | | | | |
| Gender | | | | | | | |
| *Male* | 37 | 35.59 (7.34) | | | | | |
| *Female* | 62 | 33.05(8.23) | 1.55(97) | 0.13 | 2.55 | -0.72,5.81 | 0.02 |
| Age (years) | | | | | | | |
| *25 - 35* | 40 | 35.23(7.93) | | | | | |
| *36+* | 59 | 33.17(7.95) | 1.26(97) | 0.21 | 2.06 | -1.17,5.28 | |
| Education Institution | | | | | | | |
| *Government* | 31 | 29.52(6.97) | | | | | |
| *Private* | 68 | 36.04(7.59) | -4.07(97) | 0.001 | -6.53 | -9.71,-3.42 | 0.14 |
| **Sustainability Practices to Embed Culture** | | | | | | | |
| Gender | | | | | | | |
| *Male* | 37 | 11.57(3.78) | | | | | |
| *Female* | 62 | 10.92(2.92) | 0.89(61.59) | 0.37 | 0.65 | -0.79,2.09 | 0.01 |
| Age (years) | | | | | | | |
| *25 - 35* | | 11.90(3.18) | | | | | |
| *36+* | | 10.66(3.25) | 1.88(97) | 0.06 | 1.24 | -0.07,2.55 | 0.04 |
| Education Institution | | | | | | | |
| *Government* | 31 | 8.84(2.65) | | | | | |
| *Private* | 68 | 12.22(2.97) | -5.43(97) | 0.001 | -3.38 | -4.62,-2.15 | 0.2 |

### 4.7 Impression of Organizations' readiness for Simulation-based Education

Table 8 provides an overview of how participants perceived their organization's readiness for Simulation-Based Education (SBE) based on the SCORS indicator scores. According to the data, the organizations were classified as "Ready but not acting" during the study period. This classification reflects a situation in which the institutions demonstrated some level of preparedness for SBE but had not yet fully implemented or acted upon these preparations.

This perception of readiness remained consistent even when considering the six-month period prior to the study. Despite the organizations being recognized as "Ready but not acting" for both current and past periods, the participant ratings for this classification were notable. Specifically, 40.4% of participants (n=40) rated their organizations in the "Ready but not acting" category, whereas 38.4% of participants (n=38) provided the same rating for the preceding six-month period.

**Table 8: Impression of organization's readiness for Simulation-based Education**

| Variable | Frequency | (%) |
|---|---|---|
| ***Organizations' readiness for SBE integration*** | | |
| None at all (Not Ready)**:** 0-36 | 5 | 5.1 |
| A Little (Getting ready): 37-72 | 14 | 14.1 |
| Somewhat (Ready but not acting): 73-108 | 40 | 40.4 |
| Moderately (Ready to Start to Act): 109-144 | 30 | 30.3 |
| Very much (Past Ready & Into Action Planning): 145-180 | 10 | 10.1 |
| ***Organizations' readiness for SBE integration for previous 6 months*** | 11 | 11.1 |
| None at all (Not Ready)**:** 0-36 | 18 | 18.2 |
| A Little (Getting ready): 37-72 | 38 | 38.4 |
| Somewhat (Ready but not acting): 73-108 | 24 | 24.2 |
| Moderately (Ready to Start to Act): 109-144 | 8 | 8.1 |
| Very much (Past Ready & Into Action Planning): 145-180 | | |

# CHAPTER FIVE

# DISCUSSION OF THE RESULTS

## 5.0 Introduction

This study aimed to assess the readiness of nurses and midwife educators to use simulation-based education in health institutions in the Kilimanjaro region. The discussion was guided by the following objectives: to assess organizational support in the use of simulation-based education among nurse and midwife educators in health training institutions; to determine the extent of readiness of nurse and midwife educators to incorporate simulation-based education into their teaching practices; and to determine the resources available to incorporate simulation-based education into teaching practices among nurse and midwife educators.

The Conceptual framework supports the results as it has highlighted factors related to the objectives that influence an organisation's readiness in the implementation of any program such as simulation-based education (SBE). These groups of factors fit in very well with the objectives of the study. The focus for the first objective was to evaluate organizational-level factors such as resources, policies, professional development, training, and communication that support SBE. Such factors are crucial in determining institutional readiness to adopt a program. The second objective focused on individual readiness factors. These factors included staff attributes such as cohesion, authority, openness to change, and clarity of

goals, as well as psychological factors such as motivation, trust in leadership, and perceived authority. All this shape educators' willingness to adopt SBE. Lastly, the third objective examined the availability of resources, including financial, human, and infrastructural elements, along with staff professional development opportunities. Resource availability, has the capacity to influence an institutions' readiness to integrate SBE into teaching practices effectively as discussed.

### 5.1 Organizational support in the use of SBE in health training institutions

The results of this study revealed a significantly low level of organizational support for the adoption of Simulation-Based Education (SBE) in institutions in Tanzania. This aligns with the study by Akram et al. (2018), which demonstrated that organizational ability has a substantial impact on both organizational performance and SBE utilization. The organization provides a structural framework for incorporating SBE. This includes creating a positive environment, defining clear roles and responsibilities, and ensuring that necessary physical and technological infrastructure is in place.

Similar results from various studies (Almotairy et al., 2023; Baayd et al., 2023; Seethamraju et al., 2022), have reported that inadequate organizational support can hinder the effective integration and utilization of Simulation-Based Education (SBE), thereby limiting its potential benefits. Almotairy et al. (2023) stressed that a well-structured organization is critical to the long-term viability of SBE programs because it ensures that leadership, management, and administration are all working toward common goals. Evidence from the literature indicates that organizational structure must also support interdisciplinary collaboration, in which different departments work together to develop, implement, and evaluate SBE initiatives (Schmutz, 2022).

In this study, the results show that another contributing factor to the poor implementation of SBE is the shortage of resources provided by administration. Without a cohesive structure, efforts to integrate SBE are diminished, resulting in inefficiencies and lower educational outcomes. When there is poor organizational support, the challenging institutions they face prioritize different approaches over others. This requires ongoing investment in staff training, continuous updates to simulation technology, and regular evaluations to assess the effectiveness of SBE (Elendu et al., 2024).

These results underscore the importance of administration support in the implementation of SBE within institutions. Organizational administration is critical for planning, coordinating resources, and ensuring the smooth operationalization of SBE.A study by Falola et al.(2020), reported that lack of support has been identified as a major barrier to the successful implementation of SBE. The findings reported by Wu & Gu (2022), revealed that institutions offering substantial support are more inclined to successfully adopt and implement SBE. Administrators are responsible for developing actionable plans that align with the organization's strategic goals, obtaining the necessary materials (such as simulators, software, and dedicated training spaces), and ensuring that these resources are used efficiently. Without proper management, resources needed for SBE may be misallocated or underutilized, significantly reducing its effectiveness (Lazzara et al., 2014; Seethamraju et al., 2022).

The study results showed a significant lack of effective integration of simulation-based education (SBE) into the curriculum, likely due to insufficient institutional support. Evidence from studies such as those by Moabi & Mtshali (2022) and Pinar (2020), highlight that integrating simulation-based education (SBE) into an institution's curriculum is a key aspect of organizational support. Ineffective curriculum

integration may result from factors such as educators' lack of knowledge and skills in SBE, limited resources, and reluctance of both educators and administrators to adopt and implement SBE in their institutions. The literature reports that incorporating simulation-based education (SBE) into existing curricula is essential for maintaining relevance while also addressing societal and student needs (Baayd et al., 2023; Lazzara et al., 2014; Seethamraju et al., 2022).

Without structured integration, SBE remains optional, rather than a core component of health education. Many institutions fail to prioritize SBE in their formal educational programs, significantly limiting their overall impact. A study by Nevenglosky et al. (2018), emphasized the importance of incorporating SBE into the curriculum to ensure its consistent application and effectiveness. Without proper integration, the value of SBE decreases, resulting in its inconsistent implementation by educators.

The study's results also revealed that inadequate communication of a clear strategic vision for SBE within the institution was a key factor impeding readiness to implement simulation-based education. Similar findings by Musheke & Phiri (2021), report that effective communication within an organization is essential, as it fosters collaboration and supports the continued integration of SBE within the institution. This, in turn, can positively influence the successful implementation and utilization of SBE. A study by Mwalabu et al. (2024) revealed that when learning about SBE, nursing and midwifery educators as well as students rely on efficient communication to meet the required need for the implementation of SBE within the institution.

Similarly, Musheke & Phiri (2021), reported that communication is an essential and vital component of any organization because it fosters collaboration in the

workplace, which has a significant impact on organizational performance and decision making. Poor communication among faculty members within the institution left them with no guidance on how to incorporate SBE into their teaching practices. A study by Byrne et al. (2021), reported that a clearly communicated vision among educators and administrators serves as a roadmap, ensuring that everyone understands the institution's goals and expectations for SBE. However, the lack of clear communication from organizational administrators often reflects a broader lack of support for change. This lack of communication can undermine the potential benefits of SBE, making it difficult for institutions to embrace this innovative educational approach fully (Blackmore et al., 2018).

Furthermore, this study's results revealed a significant absence of written commitment to SBE within the institution. According to Moabi and Mtshali (2022), institutions with clear written SBE policies have a higher success rate in implementing them because these policies provide a framework for action, guide resource allocation, and encourage faculty participation. Institutions that lack such commitments frequently face fragmented or inconsistent adoption of SBE.A, which ensures that SBE is prioritized at both the administrative and operational levels.

Evidence from the current study shows that implementing comprehensive simulation-based education requires special standards and policies that guide and operate within the organization. A study by Moabi and Mtshali (2022) showed that institutions with good policies and standards facilitate the effective utilization of SBE. Public policies can play a crucial role in ensuring that sufficient resources are allocated for the development of simulation centers, which are often challenging to establish because of the high costs associated with simulators, mannequins, equipment, physical

space, and staff required to run these centers (Elendu et al., 2024; Krishnan et al., 2017; Rubio-Martínez et al., 2022).

These policies must ensure the safety and well-being of both the learners and staff by addressing the physical and psychological aspects of the learning environment. Furthermore, Moabi and Mtshali (2021) and Byrne et al. (2021) found that an institution's mission, vision, and philosophy statements can significantly influence its acceptance and preparedness for adopting SBE. This underscores the need for institutions to align their strategic goals with SBE adoption, thereby facilitating a smoother transition. This lack of commitment can undermine the potential benefits of SBE, making it difficult for institutions to embrace this innovative educational approach fully (Blackmore et al., 2018). When administrators articulate such a vision, it not only demonstrates the institution's commitment to innovation and educational excellence but also helps secure the necessary institutional commitment from faculty and staff. A study by Potter (2024), highlighted that establishing a shared vision is instrumental in fostering collaboration among stakeholders, motivating them, and providing a clear roadmap for the successful implementation of Simulation-Based Education (SBE) initiatives.

When administrators take the step to formally commit to SBE, they not only demonstrate tangible support but also reinforce accountability within the institution. This formal commitment reassures stakeholders that the institution genuinely prioritizes SBE as a core educational strategy. Such a commitment often lays the foundation for crucial aspects of program development, including resource allocation, policy creation, and ongoing evaluation of SBE initiatives, as noted by Dzioba et al. (2014) and Wang (2022).

This study found that limited decision-making among administrators, educators, and clinicians within the institutions hinders the effective implementation of simulation-based education (SBE). Supporting studies emphasize the need for stakeholder involvement for successful SBE integration, but the lack of decision-making autonomy among these groups highlights the gap between organizational ideals and actual practices. Studies by Baayd et al. (2023) and Lawaetz et al. (2023), have reported that a dedicated individual is essential for effectively managing and organizing SBE programs.

In the absence of key stakeholder involvement, SBE cannot be fully utilized, as this leads to poor coordination, insufficient dedicated time for faculty members to teach SBE, and the burden of clinical work overload. Stakeholder involvement and institutions should establish transparent reporting mechanisms for SBE. This involves creating systems that track and report the outcomes and effectiveness of simulation activities, which helps to maintain accountability and facilitate continuous improvement. Adhering to specific standards when integrating SBE into medical and healthcare programs is also essential. These standards ensure that the integration process is conducted systematically and that the simulation activities align with educational objectives and best practices. Incorporating outcome sharing into daily practice is another critical aspect. Institutions should encourage the regular sharing of results and experiences related to SBE among all involved parties. This practice promotes a culture of learning and collaboration, allowing institutions to benefit from collective knowledge and insights of their members (Slavinska et al., 2024).

The provision of simulation briefings and demonstrations, supported by organizational backing, can also play a crucial role in increasing interest in and support for simulation-based training. These activities help highlight the benefits and value of

SBE, potentially swaying skeptical stakeholders to see its importance and efficacy, as suggested by Lazzara et al. (2014) and Akpan (2016). Organizations willing to dedicate time, funding, and efforts to support simulation-based education are more likely to see positive outcomes in their training programs. By focusing on these key areas, institutions can ensure that their SBE initiatives are not only implemented effectively, but also sustained over the long term, ultimately leading to improved educational outcomes and better-prepared graduates.

### 5.2 Readiness of nurse and midwifery educators to implement SBE in health training institutions

The results of this study demonstrated a significantly limited readiness for a cultural shift within institutions concerning the adoption and integration of Simulation-Based Education (SBE). Several key factors contribute to this limited readiness, particularly the apparent lack of essential skills among professionals and insufficient proficiency among staff in the use of technology, which is a fundamental component of SBE. This skill gap significantly hinders institutions' ability to effectively utilize simulation as an educational tool. This reluctance may stem from a deeper organizational culture that does not prioritize or value innovative educational approaches, such as SBE, thereby increasing the potential for change.

Similar results from various studies have reported that the effectiveness of simulation-based learning relies heavily on the competency of the facilitators who lead these exercises (Byrne et al., 2021; Watts et al., 2021). Facilitators must not only understand the theoretical underpinnings of SBE but also be adept at applying these concepts in practice, ensuring that students can derive the maximum benefit from simulation experiences. Studies have indicated that faculty development programs can significantly enhance the implementation of simulation-based education (SBE) by

equipping educators with the skills necessary to facilitate high-quality simulation experiences for students (Lopreiato & Rockville, 2016; Mula, 2013).

A study by Vax et al. (2021), reported that when facilitators lack a deep understanding of simulation methodologies and tools, their ability to effectively utilize and implement simulation-based education (SBE) is greatly diminished. Moreover, the absence of adequate training opportunities creates a cycle of unpreparedness where educators are unable to gain the necessary skills and knowledge to implement SBE effectively (Nevenglosky et al., 2018).

Other studies have shown that effective simulation implementation relies on skilled and educated facilitators to guide, support, and assist participants in achieving desired results, which are essential for developing the necessary competencies within institutions (Byrne et al., 2021; Moabi & Mtshali, 2022). Evidence indicates that effective facilitators must constantly develop and maintain their skills through ongoing education and regular assessment of their facilitation abilities (Byrne et al., 2021). In contrast, studies have shown that low-skilled personnel are associated with poor implementation of SBE (Barbosa et al., 2021; Farzi et al., 2018).

The results of this study also revealed a low level of knowledge about simulation-based education (SBE) among nurse and midwife educators, which may greatly impact its effective implementation. Similarly, Seethamraju et al. (2021) evaluated faculty training in simulations and found a positive impact on the knowledge and skills gained during the training workshop. A study by Nauman Ahmed et al.(2021), stressed that educators with knowledge of SBE are more likely to enhance their effective utilization and implementation. Evidence from studies by Greenwood & Ewell (2018) and Moabi & Mtshali (2022), emphasized that incorporating simulation-based

education (SBE) into teaching increases educators' knowledge and abilities, leading to improved teaching and effective simulation implementation.

In contrast, Moabi and Mtshali (2022) reported that facilitators with limited knowledge of SBE hindered their effective and successful implementation. In contrast, instructors with sufficient simulation knowledge may guide learners through a scenario while identifying mistakes made by the learners, correcting mistakes, or confirming what they did correctly (Muhumuza et al., 2023). The INACSL Standards of Best Practice (2016) showed that using facilitators with formal training in simulation-based pedagogy helps ensure that simulations are implemented effectively and that participants' knowledge, level of experience, and intended outcomes are promoted. It is vital to evaluate the current knowledge and understanding of nurse and midwife educators to identify areas in which targeted training and support can be provided. Studies by Martins et al.(2018) and Nyamtema et al.(2022), further emphasize the importance of continuous professional development for educators, suggesting that institutions must invest in such initiatives to ensure that educators remain proficient in the latest simulation techniques and technologies. Ongoing professional development is crucial for enhancing nurse educators' ability to fully utilize their simulation skills, particularly in critical areas such as debriefing, which is essential for the success of simulation-based learning. The effective implementation and utilization of SBE rely on the availability of well-trained faculty with the necessary knowledge and skills (Chitsulo et al., 2021). Institutions must prioritize ongoing faculty development programs to build competence in key areas, such as debriefing, and address the gaps in expertise that currently hinder the broader adoption of simulation-based education (Ali et al., 2019).

Investing in the professional development of educators will help build a workforce that is not only proficient in traditional nursing education, but also capable of leading the way in SBE. This approach will ensure that educators can confidently incorporate simulation into their teaching, thereby enhancing the overall quality of nursing education and preparing students for the realities of clinical practice (Sherwood, 2024).

The results of this study indicate that nurse educators' readiness to integrate Simulation-Based Education (SBE) into their teaching is heavily influenced by their attitudes. Attitudes and behaviors, especially their ethical approach, are key indicators of readiness to adopt and implement simulation-based learning. A study by Haddeland et al.(2021) and Morgan et al.(2018), reported that negative attitudes and cultural resistance among educators are significant barriers to the readiness and effective utilization of SBE.

Conversely, Almotairy et al. (2023) reported that the positive attitudes of nurse and midwife educators towards SBE can significantly influence organizational readiness for change. When educators exhibit a positive attitude towards SBE, they not only shape their individual behavior, but also enhance their adaptability, making them more receptive to adopting and implementing simulation-based approaches in their teaching (Mansour et al., 2022; Moabi & Mtshali, 2021). These cultural norms can undermine efforts to implement simulation-based methods and create an environment that is less receptive to change.

To overcome these challenges and ensure that educators are fully prepared for simulation-based education, it is crucial that nurses and midwifery educators are not only well equipped but also maintain a positive attitude towards change and the

adoption of new teaching methodologies. Positive attitudes towards SBE, coupled with the necessary professional training and infrastructure, are essential for overcoming barriers to its implementation.

By focusing on both the attitudes and skills of educators, institutions can foster an environment conducive to the successful adoption and sustained use of simulation-based education, ultimately leading to improved educational outcomes and better-prepared healthcare professionals. As Tanzanian nursing and midwifery institutions strive to move away from traditional teaching methods, a strong focus on educator readiness, including both attitude and skill development, will be key to achieving the full potential of simulation-based education.

### 5.3 Resources to support nurse and midwife educators to incorporate simulation-based education into their teaching practices

The results show that institutions in this study have limited fiscal resources available to support Simulation-Based Education (SBE), posing a significant challenge to the successful integration and sustainability of SBE programs. These limitations extend to the personnel involved in simulation, such as simulation educators, administrative assistants, and support staff, all of whom require appropriate resources to effectively perform their roles.

The results of this study also show that institutions did not have appropriate funds for the effective incorporation of SBE. The lack of appropriate funds hindered the effective implementation of simulation-based education within these institutions. A study by Moabi and Mtshali (2022) and Sharma et al. (2014) also reported that a lack of appropriate funds for SBE contributed to the poor or partial implementation of simulation-based education. A study conducted by Elendu et al., (2024) also reported that institutions need to allocate funds for the purchase of the manikins and ensure they

are equipped with the most recent, accurate, and technologically advanced models to improve the overall quality of the simulation.

The results of this study align with those of Senvisky et al. (2023), which demonstrated that financial challenges can significantly hinder the effective use and implementation of simulation-based education (SBE), making it difficult to establish fully operational programs or even to maintain existing ones. A study by Bentley et al.(2020), reported that, funding opportunities should be specifically designed to address the unique challenges posed by simulation-based education. This could involve targeted grants or financial assistance programs that focus on overcoming financial barriers to SBE adoption. Such funding opportunities are essential for enabling institutions to invest in necessary resources and infrastructure, thereby ensuring that SBE programs are not only implemented but also sustained and continuously improved over time. Without adequate funding, institutions may struggle to establish or sustain effective SBE programs, thus limiting the potential benefits of this educational approach. Therefore, addressing the financial challenges associated with SBE through targeted funding opportunities and strategic resource allocation is critical for the success and longevity of simulation-based education in healthcare institutions.

The results of this study indicate that these institutions lack the appropriate infrastructure and equipment necessary for delivering simulation-based education. Similar studies have reported a lack of infrastructure such as inadequate space and appropriate manikins, which are essential for achieving the required fidelity and providing access to suitable scenarios. Additionally, an unsupportive environment further limits the implementation of simulation-based education (Gemuhay et al., 2019; Seethamraju et al., 2022). The study by Mwalabu et al.(2024), which reviewed the factors affecting simulation-based education, revealed a significant deficiency in

infrastructure and equipment across nursing and midwifery training institutions, underscoring the challenges faced in effectively integrating SBE. Evidence from other studies has stressed that a lack of medical simulation equipment and infrastructure hinders the effective utilization of simulation-based education (Muhumuza et al., 2023; Nyamtema et al., 2022).

This contrasts with studies by Eldoushy (2019) and Haddeland et al. (2021), which reported that creating a safe and non-threatening environment was a key aspect of the implementation of simulation-based education (SBE). Evidence from these studies has reported that the availability of simulation infrastructure and equipment for SBE is crucial for its successful implementation (Baayd et al., 2023; Seethamraju et al., 2022).According to Elendu et al. (2024) and Senvisky et al. (2023), there is a pressing need for institutions to focus on improving their infrastructure and equipment to support effective and quality delivery of SBE. This involves investing in well-equipped clinical skills laboratories and ensuring that all the necessary equipment is available and functional.

The results of this study underscore the importance of addressing the limitations of infrastructure and equipment to improve simulation experience. Prioritizing infrastructure development and overcoming the challenges associated with establishing simulation centers are essential steps in promoting the successful integration of SBE (Mwalabu et al., 2024). By focusing on these areas, institutions can enhance their simulation programs and equip students with the skills and competencies required for future careers.

The results of this study also revealed a lack of sufficient time for simulation-based education (SBE) within the institution. This aligns with the findings of Krishnan

et al. (2017), who reported that time constraints pose a significant challenge for nurse educators who often struggle to balance academic responsibilities, clinical policies, and simulation activities. Findings from these studies show that a lack of allocated time for SBE is a significant barrier to its readiness and successful implementation. Without sufficient time dedicated specifically to simulation activities, educators and students cannot fully engage with and benefit from the simulation-based learning experiences.

This lack of dedicated time not only affects the quality of the simulation but also limits its potential for enhancing students' practical skills and competencies (Moabi & Mtshali, 2021; Muhumuza et al., 2023). Additionally, Mula (2013) reported that insufficient time allocated for simulation-based education (SBE) hinders educators from fully integrating simulation experiences into their educational programs. Research indicates that increasing the time allocation for simulation practice is essential for its effective utilization and implementation (Saleem & Khan, 2023). Furthermore, a study by Krishnan et al. (2017) highlighted the difficulty of incorporating dedicated simulation time slots into an already overloaded medical curriculum. The challenge lies in finding appropriate time slots within a packed schedule, which often leads to the prioritization of other academic or clinical activities over simulation practice. This issue is compounded by the fact that many educational institutions have limited flexibility to adjust their curricula to accommodate additional simulation hours (Dinho & Swai, 2017; Koukourikos et al., 2021; Teni & Gebretensaye, 2019).By prioritizing and allocating sufficient time for SBE, institutions can enhance the quality of their educational programs and better prepare students for their professional roles. In addition, addressing time constraints is essential for successful implementation of SBE in nursing education.

Furthermore, the results of this study indicate that institutions did not have appropriate simulation technology. This was similar to the findings reported by Seethamraju et al. (2022), who also reported the absence of simulation technology in the implementation of simulation-based education, which may act as a barrier to readiness, limiting the institution's ability to fully benefit from simulation-based training. This was contrary to the findings of other studies that indicated that institutions that invest in high-quality simulation technology are likely to see significant improvements in their training programs, operational efficiency, and overall educational outcomes (Carraturo et al., 2020; Pinar, 2020).

The presence of advanced simulation technology can significantly enhance an institution's capability to integrate SBE into its curriculum and utilize it well. Simulation technology has proven to be a transformative force in the utilization and implementation of Simulation-Based Education (SBE), significantly enhancing the quality of care through effective training of individuals and healthcare systems (Bentley et al., 2020). This technological advancement has enabled institutions to offer more realistic and effective training experiences, thereby improving the overall educational outcomes and healthcare delivery.

Akpan (2016) supported the notion that technology significantly improves trainees' learning experiences. High-quality simulation technology not only provides more realistic and engaging learning environments but also helps in developing critical skills more effectively. Therefore, improving the quality of technology available for SBE can have a substantial impact on its utilization and implementation. Enhanced technology can facilitate immersive and practical simulation experiences, leading to better educational outcomes for students.

A study conducted by Jerome et al.(2024), discovered that advanced simulation technologies offer operational benefits by saving both time and money. These technologies ensure a continuous supply of the resources and materials necessary for effective simulation, thereby improving the overall implementation and utilization of SBE. By reducing operational inefficiencies and advancing simulation technologies, institutions can manage their resources more effectively, thereby ensuring that simulation-based training is both sustainable and impactful. This will facilitate its effective implementation in educational and health care settings.

Identifying and fostering innovations in practice is crucial for the advancement of Simulation-Based Education (SBE) in strategic areas. Encouraging these innovations and facilitating the sharing of best practices among institutions can significantly enhance the effectiveness and sustainability of SBE initiatives (Byrne et al. 2021). This approach ensures that institutions not only adopt the latest and most effective practices, but are also continuously improving and adapting based on successful strategies implemented by others.

The results of this study indicate a critical shortage of human resources, including the lack of dedicated personnel capable of driving the integration of simulation-based education (SBE) within the institution. A similar study that reviewed Simulation-Based Education as a solution to challenges reported a significant shortage of human resources in the field of Simulation-Based Education (SBE), which has critical implications for the effectiveness and implementation of SBE in healthcare settings. Evidence from other studies (Baayd et al., 2023; Lazzara et al., 2014; Seethamraju et al., 2022) indicates that Simulation-Based Education (SBE) is more effectively implemented when trained simulationists are available to mentors and guide others throughout the implementation process.

This challenge contrasts with the emphasis in studies such as Moabi and Mtshali (2022) and Pinar (2020), which underscore the importance of institutional support, particularly by integrating SBE into the curriculum. While these studies highlight the role of organizational support in successfully implementing SBE, they also assume that institutions possess the necessary human resources, including qualified staff, to lead and maintain these initiatives. However, the current study reveals a gap in this assumption, showing that without sufficient human resources, particularly dedicated personnel, even with organizational support, the effective utilization and implementation of SBE remain limited.

The results in this study also indicated poor sustainability in practicing SBE activities Simulation-Based Education (SBE) is a relatively new concept that enables the sustainable development of centers. It is essential for the center to establish sustainable methods for procurement, maintenance, reuse, and waste disposal. Evidence from the study by Byrne et al.(2021), reported that for the long-term sustainability of simulation-based education, it is crucial for institutions to develop a well-defined vision and mission statement that clearly articulates their goals and objectives related to SBE. Byrne et al. (2021) further emphasized that a strategic plan that includes specific guidelines for implementing and maintaining SBE is essential for guiding the institution from its current state to a desired future state. Such planning helps institutions establish clear goals, allocate resources effectively, and track progress toward achieving their SBE objectives.

Limited documentation can act as a significant hindrance to substantiating the sustainability and utilization of SBE. Without adequate records and evidence, demonstrating the impact and effectiveness of simulation programs is challenging.

Therefore, it is important for institutions to develop comprehensive documentation practices that capture key information regarding SBE activities, outcomes, and improvements. A study by Almotairy et al.(2023), reported that the implementation of sustainable practices in SBE requires comprehensive involvement of all stakeholders. By actively engaging educators, administrators, students, and other relevant parties, institutions can optimize simulation-based education. This collaborative approach ensures that all perspectives are considered and that the implementation of SBE is well-supported across the organization (Jimenez et al., 2020).

This support includes providing resources, fostering an environment conducive to simulation-based learning, and addressing any challenges that arise (Moabi & Mtshali,2021). Furthermore, institutions should establish sustainable procurement, maintenance, reuse, and waste disposal methods for the SBE programs. Developing a structured approach to these aspects ensures that simulation resources are managed efficiently and sustainably. This includes acquiring high-quality equipment, maintaining and updating simulation tools regularly, reusing resources where possible, and disposing waste in an environmentally responsible manner.

By fostering these practices and developing sustainable resource management strategies, institutions can enhance the impact of SBE and ensure its continued success in improving health care education and training. By securing and maintaining this support, institutions can create a stable foundation for the ongoing integration of SBE into their educational programs.

### 5.4 Study Limitations

Despite the successful execution of this study, the following limitations may have affected certain aspects of the study.

1. The study used only a quantitative approach; hence, it lacks the qualitative aspects that will provide in-depth insight into the issues of readiness in the implementation of SBE. Although, the data collection tool that was used was comprehensive and attempted to uncover a number of critical aspects of SBE.In future it could necessary to do a qualitative study to capture more information on SBE.
2. The sample size was from one region because of limited time and funds which might limit the generalizability of the study results. To overcome this limitation, the researcher ensured that an adequate number of institutions (six) and respondents (99) were recruited into the study to enhance their credibility. A large-scale study on faculty members from Tanzanian institutions in different regions could provide additional insight and generalization of the findings.

# CHAPTER SIX

# CONCLUSION AND RECOMMENDATIONS

## 6.1 Conclusion

The study highlighted the lack of organizational support for SBE implementation by nurses and midwife educators. The levels of readiness of nurses and midwives were found to be limited, indicating a lack of knowledge and awareness of the simulation-based methods and pedagogical approaches.

This corresponds to Sharma's (2014) readiness conceptual framework, which emphasizes that successful program implementation requires organizational support in terms of resources, policies, and staff training at both organizational and individual levels. The results of this study support the notion that resources, training, and policies are essential for implementing simulation-based education. To incorporate SBE, standardized guidelines, policies, missions, and visions must be in place to facilitate the program.

## 6.2 Recommendations

The recommendations of this study are as follows:

**Nursing and midwifery educators**: Nursing and midwifery educators need to attend short-term training in simulation-based education. Such training provides educators with practical knowledge on how to use simulation equipment and its associated software and technology. The training would also help educators to create engaging learning environments, integrate simulation into curricula, and stay current with the latest developments in simulation technology and pedagogy, resulting in high-quality simulation experiences.

**Enhance leadership engagement and collaboration**: To successfully implement Simulation-Based Education (SBE), leaders at all levels must be fully engaged. This includes clearly explaining the benefits of SBE, involving leaders in decision making, training them on SBE, and acknowledging their contributions to SBE success. Active participation and skill development opportunities among nurses and midwives' educators are critical to increasing SBE's effectiveness and impact of SBE.

**Develop institutional policies**: Nursing and midwifery institutions in Kilimanjaro should establish clear guidelines to fully support the use of Simulation-Based Education (SBE) in their programs. These guidelines should define SBE, explain how to incorporate it into current courses, and ensure that it benefits student learning.

**Resource mobilization:** Institutional managers should mobilize resources, including low-cost simulators, and allocate funds to support the use and implementation of simulation-based education in institutions.

**Areas for further research**: Nurse educators' experiences in implementing simulation-based education as a teaching method in Tanzania and Nurse educators' and student nurses' perspectives on the implementation of simulation-based education in Tanzania.

## REFERENCES


Abdulmohdi, N., & McVicar, A. (2024). Student nurses' perceptions of the role of high-fidelity simulation in developing decision-making skills for clinical practice: A qualitative research study. *SAGE Open Nursing*, *10*, 23779608241255299.

Akpan, C. (2016). Innovative practices in school administration. *International Journal of Educational Administration Planning and Research*, *6*(8), 45-53.

Akparep, J. Y., Jengre, E., & Mogre, A. A. (2019). The Influence of Leadership Style on Organizational Performance at TumaKavi Development Association, Tamale, Northern Region of Ghana. *Open Journal of Leadership*, *8*(01), 1–22. https://doi.org/10.4236/ojl.2019.81001

Akram, M. S., Goraya, M. A. S., Malik, A., & Aljarallah, A. M. (2018). Organizational performance and sustainability: Exploring the roles of IT capabilities and knowledge management capabilities. *Sustainability (Switzerland)*, *10*(10). https://doi.org/10.3390/su10103816

Ali, S., Athar, M., & Ahmed, S. M. (2019). Basics of CPB. *Indian Journal of Anaesthesia*, *49*(4), 257–262. https://doi.org/10.4103/ija.IJA

Alinier, G., & Oriot, D. (2022). Simulation-based education: deceiving learners with good intent. *Advances in Simulation*, *7*(1). https://doi.org/10.1186/s41077-022-00206-3

Almotairy, M. M., Algabbashi, M., Alshutwi, S., Shibily, F., Alsharif, F., Almutairi, W., & Nahari, A. (2023). Nursing faculty perceptions of simulation culture readiness in Saudi universities: a cross-sectional study. *BMC Nursing*, *22*(1). https://doi.org/10.1186/s12912-023-01278-w

Alrashidi, N., Pasay an, E., Alrashedi, M. S., Alqarni, A. S., Gonzales, F., Bassuni, E. M., Pangket, P., Estadilla, L., Benjamin, L. S., & Ahmed, K. E. (2023). Effects of simulation in improving the self-confidence of student nurses in clinical practice: a systematic review. *BMC Medical Education*, *23*(1), 1–12. https://doi.org/10.1186/s12909-023-04793-1

Angelina, J. A., Stephen, K. M., & Ipyana, M. (2021). The impact of low fidelity simulation on nurse competence in active management of third stage of labor: An intervention study in primary health care settings in Tanzania. *Clinical Simulation in Nursing*, *56*, 10–21. https://doi.org/10.1016/j.ecns.2021.03.009

Baayd, J., Heins, Z., Walker, D., Afulani, P., Sterling, M., Sanders, J. N., & Cohen, S. (2023). Context matters: Factors affecting implementation of simulation training in nursing and midwifery schools in North America, Africa and Asia. *Clinical Simulation in Nursing*, *75*, 1–10. https://doi.org/10.1016/j.ecns.2022.10.004

Barbosa, M. L., Atanasio, L. L. de M., Medeiros, S. G. de, Saraiva, C. O. P. de O., & Santos, V. E. P. (2021). Evolution of nursing teaching in the use of education technology: a scoping review. *Revista Brasileira de Enfermagem*, *74*(Suppl 5), e20200422. https://doi.org/10.1590/0034-7167-2020-0422

Bentley, S., Stapleton, S. N., Moschella, P. C., Ray, J. M., Zucker, S. M., Hernandez, J., Rosenman, E. D., & Wong, A. H. (2020). Barriers and Solutions to advancing emergency medicine simulation–based research: A call to action. *AEM Education and Training*, *4*(S1), S130–S139. https://doi.org/10.1002/aet2.10406

Bienstock, J., & Heuer, A. (2022). A review on the evolution of simulation-based training to help build a safer future. *Medicine (United States)*, *101*(25). https://doi.org/10.1097/MD.0000000000029503

Blackmore, A., Kasfiki, E. V., & Purva, M. (2018). Simulation-based education to improve communication skills: a systematic review and identification of current best practice. *BMJ simulation & technology enhanced learning*, *4*(4), 159.

Bozkurt, A., Gjelsvik, T., Adam, T., Asino, T. I., Atenas, J., Bali, M., Blomgren, C., Bond, M., Bonk, C. J., Brown, M., Burgos, D., Conrad, D., Costello, E., Cronin, C., Czerniewicz, L., Deepwell, M., Deimann, M., Dewaard, H. J., Dousay, T. A., … Zawacki-Richter, O. (2023). Openness in education as a praxis: From individual testimonials to collective voices. *Open Praxis*, *15*(2), 76–112. https://doi.org/10.55982/openpraxis.15.2.574

Bujang, M. A., Omar, E. D., & Baharum, N. A. (2018). A review on sample size determination for cronbach's alpha test: A simple guide for researchers. *Malaysian Journal of Medical Sciences*, *25*(6), 85–99. https://doi.org/10.21315/mjms2018.25.6.9

Burgess, A., van Diggele, C., Roberts, C., & Mellis, C. (2020). Team-based learning: design, facilitation and participation. In *BMC Medical Education* (Vol. 20). BioMed Central Ltd. https://doi.org/10.1186/s12909-020-02287-y

Byrne, D., O'dowd, E., Lydon, S., Mcdermott, R., & Connor, B. (2021). *The national simulation strategic guide for the implementation of simulation on clinical sites*. https://doi.org/10.13025/cn0z-bp50

Çağlar Doğru. (2019). Meta-analysis of antecedents and consequences of empowering

employees as a contemporary management approach. *IGI Global :Publishing Tomorrow's Research Today*.

Campos, N., Nogal, M., Caliz, C., & Juan, A. A. (2020). Simulation-based education involving online and on-campus models in different European universities. *International Journal of Educational Technology in Higher Education*, *17*(1). https://doi.org/10.1186/s41239-020-0181-y

Martins, J. C. A., Baptista, R. C. N., Coutinho, V., Fernandes, M., & Fernandes, A. (2018). Simulation in nursing and midwifery education. *Copenhagen: WHO*, 2-9.

Carraturo, F., Del Giudice, C., Morelli, M., Cerullo, V., Libralato, G., Galdiero, E., & Guida, M. (2020). Persistence of SARS-CoV-2 in the environment and COVID-19 transmission risk from environmental matrices and surfaces. *Environmental pollution*, *265*, 115010.

Chitsulo, C. G., Chirwa, E. M., & Wilson, L. (2021). Faculty knowledge and skills needs in interprofessional education among faculty at the College of Medicine and Kamuzu College of Nursing, University of Malawi. *Malawi Medical Journal*, *33*(Postgraduate Supplementary Iss), 30.

Cowperthwait, A. (2020). NLN/Jeffries simulation framework for simulated participant methodology. *Clinical Simulation in Nursing*, *42*, 12-21.

Decker, S., Alinier, G., Crawford, S. B., Gordon, R. M., Jenkins, D., & Wilson, C. (2021). Healthcare simulation standards of best practicetm the debriefing process. *Clinical Simulation in Nursing*, *58*, 27–32. https://doi.org/10.1016/j.ecns.2021.08.011

Dinho, A. E., & Swai, E. (2017). Tutor's clinical knowledge, attitude and teaching strategies in nursing schools of Mwanza Region – Tanzania. *The International Annals of Medicine*, *1*(10). https://doi.org/10.24087/iam.2017.1.10.350

Dinsdale, R. (2017). The role of leaders in developing a positive culture. *BU Journal of Graduate Studies in Education*, *9*(1), 42-45.

Dzioba, J., Cant, R., Cooper, S., Bogossian, F., & Phillips, N. M. (2014). Barriers and enablers to learning during team-based clinical simulations: Reflective interviews with final year undergraduate nursing students. *Journal of Nursing Education and Practice*, *4*(10). https://doi.org/10.5430/jnep.v4n10p32

Edgecombe, K., Seaton, P., Monahan, K., Meyer, S., LePage, S., & Erlam, G. (2013). Clinical Simulation in Nursing: A literature review and guidelines for practice. *Aotearoa: AKO National Centre for tertiary teaching excellence*.

Edward, M. I., & Chukwuka, L. (2020). Simulation in nursing education: Implications for nurse educators and nursing practice. *African Journal of Health, Nursing and Midwifery*, *3*(1), 13-23.

Elendu, C., Amaechi, D. C., Okatta, A. U., Amaechi, E. C., Elendu, T. C., Ezeh, C. P., & Elendu, I. D. (2024). The impact of simulation-based training in medical education: A review. *Medicine (United States)*, *103*(27), e38813. https://doi.org/10.1097/MD.0000000000038813

Eyikara, E., & Baykara, Z. G. (2017). The importance of simulation in nursing education. *World Journal on Educational Technology: Current Issues*, *9*(1), 2-7.

Falola, H. O., Adeniji, A. A., Adeyeye, J. O., Igbinnoba, E. E., & Atolagbe, T. O. (2020). Measuring institutional support strategies and faculty job effectiveness. *Heliyon*, *6*(3).

Farzi, S., Shahriari, M., & Farzi, S. (2018). Exploring the challenges of clinical education in nursing and strategies to improve it: A qualitative study. *Journal of education and health promotion*, *7*(1), 115.

Fegran, L., ten Ham-Baloyi, W., Fossum, M., Hovland, O. J., Naidoo, J. R., van Rooyen, D., ... & Robstad, N. (2023). Simulation debriefing as part of simulation for clinical teaching and learning in nursing education: a scoping review. *Nursing open*, *10*(3), 1217-1233.

Gemuhay, H. M., Kalolo, A., Mirisho, R., Chipwaza, B., & Nyangena, E. (2019). Factors affecting performance in clinical practice among preservice diploma nursing students in Northern Tanzania. *Nursing Research and Practice*, *2019*, 1–9.

Greenwood, K. C., & Ewell, S. B. (2018). Faculty development through simulation-based education in physical therapist education. *Advances in Simulation*, *3*, 1-12.

Haddeland, K., Slettebø, Å., & Fossum, M. (2021). Enablers of the successful implementation of simulation exercises: a qualitative study among nurse teachers in undergraduate nursing education. *BMC Nursing*, *20*(1).

Harrell, S., & Bynum, Y. (2018). Factors affecting technology integration in the classroom. *Alabama Journal of Educational Leadership*, *5*, 12-18.

Heward, M., Board, M., Spriggs, A., Blagden, D., & Murphy, J. (2021). Barriers and

enablers to implementing 'DEALTS2' simulation-based train-the–trainer dementia training programme in hospital settings across England: a qualitative study. *BMC Health Services Research*, *21*(1).

INACSL Standards of best practice: Simulation[SM] outcomes and objectives. (2016). *Clinical Simulation In Nursing*, *12*, S13–S15. https://doi.org/10.1016/j.ecns.2016.09.006

Jegan Joseph Jerome, J., Sonwaney, V., Bryde, D., & Graham, G. (2024). Achieving competitive advantage through technology-driven proactive supply chain risk management: an empirical study. *Annals of Operations Research*,

Allegranzi, B., Tartari, E., & Pittet, D. (2021). "Seconds save lives—clean your hands": the 5 May 2021 World Health Organization SAVE LIVES: Clean Your hands campaign. *Antimicrobial Resistance & Infection Control*, *10*, 1-3.

Kelly, M. A., Berragan, E., Husebø, S. E., & Orr, F. (2016). Simulation in nursing education—International perspectives and contemporary scope of practice. *Journal of Nursing Scholarship*, *48*(3), 312-321.

Koukourikos, K., Tsaloglidou, A., Kourkouta, L., Papathanasiou, I. V., Iliadis, C., Fratzana, A., & Panagiotou, A. (2021). Simulation in clinical nursing education. *Acta Informatica Medica*, *29*(1), 15–20. https://doi.org/10.5455/AIM.2021.29.15-20

Krishnan, D. G., Keloth, A. V., & Ubedulla, S. (2017). Pros and cons of simulation in medical education: A review. *Education*, *3*(6), 84-87.

Lateef, A. M., & Mhlongo, E. M. (2019). Factors influencing nursing education and teaching methods in nursing institutions: A case study of South West

Nigeria. *Global Journal of Health Science*, *11*(13), 13. https://doi.org/10.5539/ gjhs.v11n13p13

Lawaetz, J., Soenens, G., Eiberg, J., Van Herzeele, I., Konge, L., Nesbitt, C., Gentile, F., Stavroulakis, K., Weiss, S., & Nayahangan, L. J. (2023). Facilitators and barriers to implementation of simulation based education in vascular surgery in Europe. *European Journal of Vascular and Endovascular Surgery*, *66*(3), 428–436.

Lazzara, E. H., Benishek, L. E., Dietz, A. S., Salas, E., & Adriansen, D. J. (2014). Eight critical factors in creating and implementing a successful simulation program. *Joint Commission Journal on Quality and Patient Safety*, *40*(1), 21–29. https://doi.org/10.1016/S1553-7250(14)40003-5

Lopreiato & Rockville. (2016). *Healthcare simulation dictionary: the society for simulation in healthcare (SSH))* (1st Edition). The Agency for Health care Research and Quality (AHRQ) .

Marshall, S. D., & Flanagan, B. (2010). Simulation-based education for building clinical teams. *Journal of Emergencies, Trauma and Shock*, *3*(4), 360–368. https://doi.org/10.4103/0974-2700.70750

Mmari, V. B., Stephen, K. M., Mlang', K., & St, O. (2020). *Experience of nurse educators on the implementation of the competency-based curriculum for nursing and midwifery programmes in Tanzania: A mixed method study*. https://doi.org/10.21203/rs.2.17446/v2

Moabi, P. S., & Mtshali, N. G. (2021). Nursing education institutions' readiness to fully implement simulation-based education in Lesotho. *Africa Journal of Nursing and Midwifery*, *23*(1). https://doi.org/10.25159/2520-5293/8686

Moabi, P. S., & Mtshali, N. G. (2022). Simulation-based education model for under-resourced nursing education institutions in Lesotho. *Health SA Gesondheid*, *27*. https://doi.org/10.4102/hsag.v27i0.1889

Mohebi, S., Parham, M., Sharifirad, G., & Gharlipour, Z. (2018). *Social support and self - care behavior study*. *January*, 1–6. https://doi.org/10.4103/jehp.jehp

Morgan, M. C., Dyer, J., Abril, A., Christmas, A., Mahapatra, T., Das, A., & Walker, D. M. (2018). Barriers and facilitators to the provision of optimal obstetric and neonatal emergency care and to the implementation of simulation-enhanced mentorship in primary care facilities in Bihar, India: A qualitative study. *BMC Pregnancy and Childbirth*, *18*(1). https://doi.org/10.1186/s12884-018-2059-8

Muh'd Habib, M., & Yoffo, H. A. (2013). Readiness and learning: a development skill and statement strategies psychological approach. *Journal of Education and Policy Review*, *5*(2). www.cenresinpub.org

Muhumuza, A., Najjuma, J. N., MacIntosh, H., Sharma, N., Singhal, N., Hollaar, G. L., Wishart, I., Bajunirwe, F., & Santorino, D. (2023). Understanding the barriers and enablers for postgraduate medical trainees becoming simulation educators: a qualitative study. *BMC Medical Education*, *23*(1). https://doi.org/10.1186/s12909-022-03995-3

Munazza Saleem, & Khan, Z. (2023). Healthcare Simulation: An effective way of learning in health care. *Pakistan Journal of Medical Sciences*, *39*(4), 2–7. https://doi.org/10.12669/pjms.39.4.7145

Musheke, M. M., & Phiri, J. (2021). The effects of effective communication on organizational performance based on the systems theory. *Open Journal of Business and Management*, *09*(02), 659–671. https://doi.org/10.4236/ojbm.2021.92034

Mwalabu, G., Msosa, A., Tjoflåt, I., Risa, C. F., Mapulanga, P., Bø, B., Urstad, K. H., & Msiska, M. (2024). Factors influencing implementation of simulation in nursing and midwifery training in Malawi. *Health SA Gesondheid*, *29*, 1–16. https://doi.org/10.4102/hsag.v29i0.2422

Ahmed, H. N., Pasha, A. R., & Malik, M. (2021). The role of teacher training programs in optimizing teacher motivation and professional development skills. *Bulletin of Education and Research*, *43*(2), 17-37.

Nevenglosky, E. A., Cale, C., & Aguilar, P.S. (2018). Barriers to effective curriculum implementation. *Research in Higher Education Journal*, *36*(1), 112–134.

Ntlokonkulu, Z. B., Rala, N. M. D., & Goon, D. T. (2018). Medium-fidelity simulation in clinical readiness: a phenomenological study of student midwives concerning teamwork. *BMC nursing*, *17*, 1-8.

Nyamtema, A., Karuguru, G. M., Mwangomale, A. S., Monyo, A. F., Malongoza, E., & Kinemo, P. (2022). Factors affecting production of competent health workforce in Tanzanian health training institutions: a cross sectional study. *BMC medical education*, *22*(1), 662.

Pai, D. (2018). Use of simulation for undergraduate medical education. *International Journal of Advanced Medical and Health Research*, *5*(1), 3-6.

Pinar, G. (2020). An Educational Revolution and innovative technologies: the role of Simulation. *Creative Education*, *11*(11), 2218-2232.

Polit, D. F., & Beck, C. T. (2008). *Nursing research: Generating and assessing evidence for nursing practice*. Lippincott Williams & Wilkins.

Potter, K. (2024). Building strong relationships with stakeholders: Successful schools require collaboration between leaders, teachers, students, families, and community members. April.

Bagozzi, R. P., Yi, Y., & Phillips, L. W. (1991). Assessing construct validity in organizational research. *Administrative science quarterly*, 421-458.

Rubio-Martínez, R., Cadena, F. A., Albornoz, R., Vasco, M., & Ostergaard, D. (2022). Simulation-based education–how to get started. *Update in Anaesthesia*, *36*, 29-34.

Salifu, D. A., Heymans, Y., & Christmals, C. D. (2022, August). A simulation-based clinical nursing education framework for a low-resource setting: A multimethod study. In *Healthcare* (Vol. 10, No. 9, p. 1639). MDPI.

Munna, A. S., & Kalam, M. A. (2021). Teaching and learning process to enhance teaching effectiveness: a literature review. *International Journal of Humanities and Innovation (IJHI)*, *4*(1), 1-4.

Schmutz, J. B. (2022). Institutionalizing an interprofessional simulation education program: an organizational case study using a model of strategic change. *Journal of interprofessional care*, *36*(3), 402-412.

Seethamraju, R. R., Stone, K. P., & Shepherd, M. (2022). Factors affecting implementation of simulation-based education after faculty training in a low-resource setting. *Simulation in Healthcare*, *17*(1), e113-e121.

Sherwood, G. (2024). Transforming education: Developing a practice-ready

workforce. *International Journal of Nursing Sciences*, *11*(2), 159.

Slavinska, A., Palkova, K., Grigoroviča, E., Edelmers, E., & Pētersons, A. (2024). Narrative Review of Legal Aspects in the Integration of Simulation-Based Education into Medical and Healthcare Curricula. *Laws*, *13*(2), 15.

Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in science education*, *48*, 1273-1296.

Taplay, K., Jack, S. M., Baxter, P., Eva, K., & Martin, L. (2014). Organizational culture shapes the adoption and incorporation of simulation into nursing curricula: A grounded theory study. *Nursing Research and Practice*, *2014*(1), 197591.

Teni, M. T., & Gebretensaye, T. (2019). Knowledge and perception towards clinical simulation in teaching undergraduate nursing students among nurse educators working at teaching institutions in Addis Ababa, Ethiopia. *International Journal of Africa Nursing Sciences*, *10*, 81-86.

Uakarn, C., Chaokromthong, K., & Sintao, N. (2021). Sample size estimation using Yamane and Cochran and Krejcie and Morgan and Green formulas and Cohen statistical power analysis by G* power and comparisons. *Apheit Int J*, *10*(2), 76-88.

Vax, S., Farkas, M., Russinova, Z., Mueser, K. T., & Drainoni, M. L. (2021). Enhancing organizational readiness for implementation: constructing a typology of readiness-development strategies using a modified Delphi process. *Implementation Science*, *16*(1), 61.

Wang, R. (2022). Organizational commitment in the nonprofit sector and the underlying impact of stakeholders and organizational support. *VOLUNTAS:*

*International Journal of Voluntary and Nonprofit Organizations*, *33*(3), 538-549.

Watts, P. I., Rossler, K., Bowler, F., Miller, C., Charnetski, M., Decker, S., ... & Hallmark, B. (2021). Onward and upward: introducing the healthcare simulation standards of best PracticeTM. *Clinical Simulation in Nursing*, *58*, 1-4.

Wu, J., & Gu, Y. (2022). Innovation capabilities in the convergence trend of higher education from the perspective of quality management. *Frontiers in Psychology*, *13*, 979059.

# APPENDICES

## Appendix 1: Participant information sheet

Hello participant, my name is Sakanda Linus, and I am currently conducting a research study to assess the readiness of nurse/midwife educators in implementing simulation-based education in health training institutions in the Kilimanjaro area of Tanzania. This study is part of the requirements for my Master of Science Degree in Midwifery at Kamuzu University of Health Sciences in Malawi. The data collection is scheduled to take place from November 2023 to January 2024.

I want to assure you that any information you provide will be treated with the utmost confidentiality. Your identity, including your name and address, will not be required. Participation in this research is entirely voluntary. The principals of the institutions have been asked for permission to conduct the study. Following approval from CREC and COMREC, you will be given a questionnaire to complete which will take approximately 15 to 20 minutes and there is no right or wrong answer.

The information you provide will be solely used for the purpose of this study. You have the right to withdraw from the study at any time without any impact on your job. You may not directly benefit from the research. However, the information you provide will assist the nursing education sector in improving simulation-based education in Tanzania. If you have any questions regarding your rights and welfare as a research participant, please contact the following:

KCMUCO P.O. Box 2240,
MOSHI-TANZANIA
Supervisors: paulo.kidayi@kcmuco.ac.tz (+255754754151)
achimwanza@kuhes.ac.com
lilykumbani@kuhes.ac.mw
Student: sakandalinus@gmail.com (+255755703750)

Thank you for your assistance in participating.

**Sehemu A: Fomu ya taarifa za mshiriki**

Mpendwa mshiriki, Mimi ni Sakanda Linus, na sasa ninafanyia kazi utafiti wa kutathmini utayari wa waelimishaji wa wauguzi/wakunga katika utekelezaji wa elimu inayozingatia uigaji katika taasisi za mafunzo ya afya mkoa wa Kilimanjaro.Tanzania. Utafiti huu unafanywa kama sehemu ya mahitaji ya Shahada ya Uzamili ya Sayansi ya Ukunga katika Chuo Kikuu cha Kamuzu cha Sayansi Shirikishi cha Afya cha Malawi. Taarifa zimepangwa kukusanywa kuanzia Novemba 2023 hadi Januari 2024. Ninataka kukuhakikishia kwamba maelezo yote utakayonipa yatakuwa siri kabisa. Hakutakuwa na haja ya jina au anwani yako. Ushiriki wako katika utafiti utakuwa wa hiari kabisa. Mkuu wa taasisi ameombwa ruhusa ya kufanya utafiti huo. Kufuatia idhini kutoka kwa CREC na COMREC, utapewa dodoso la kujibu kadri ya uwezo wako, ambayo itachukua takriban dakka 15 hadi 20 kukamilika.

Taarifa utakazotoa zitatumika kwa madhumuni ya utafiti pekee. Unaweza kujiondoa kwenye utafiti wakati wowote, na hii haitakuwa na athari kwenye ufundishaji wako. Huenda usinufaike moja kwa moja na utafiti. Hata hivyo, taarifa utakazotoa zitasaidia sekta ya elimu ya uuguzi katika kuboresha elimu inayozingatia uigaji nchini Tanzania. Ikiwa una maswali yoyote kuhusu haki na ustawi wako kama mshiriki wa utafiti, tafadhali wasiliana na wafuatao:

wasimamizi: paulo.kidayi@kcmuco.ac.tz (+255754754151)
KCMUCo, P.O. Box 2240,
MOSHI-TANZANIA

achimwanza@kuhes.ac.com

lilykumbani@kuhes.ac.mw

Mwanafunzi: sakandalinus@gmail.com (+255755703750)
Nashukuru sana kwa kwako kushiriki.
Sakanda Linus.

**Appendix 2: Informed consent form for participant**

I have comprehended all the details of the study from the information sheet, and I willingly consent that the information I provide will be solely used to gain knowledge about the preparedness of nurse/midwife educators in implementing simulation-based education in health training institutions. I am aware that I can withdraw from the study whenever I wish to do so, without any obligation. My decision to participate in this research is entirely voluntary, and I have not faced any pressure or compulsion to do so.

Signature of the participant……Date……..…

Researcher's name…….

Researcher's signature: ……Date……...

Thank you very much for agreeing to take part in the study.

**Kiambatisho B: Fomu ya idhini iliyo na taarifa kwa mshiriki**

Ninakubali kwa hiari na nimeelewa taarifa zote kuhusu utafiti kutoka kwenye karatasi ya taarifa, na kwamba taarifa nitakayotoa itatumika tu kuzalisha ujuzi kuhusu utayari wa waelimishaji wa muuguzi/wakunga katika utekelezaji wa elimu inayozingatia uigaji katika taasisi za mafunzo ya afya. Ninaelewa kuwa nina uhuru wa kujiondoa kwenye utafiti wakati wowote, iwapo nitatamani hivyo. Ninakubali kwa hiari kushiriki katika utafiti huu na sijashinikizwa au kulazimishwa kufanya hivyo.

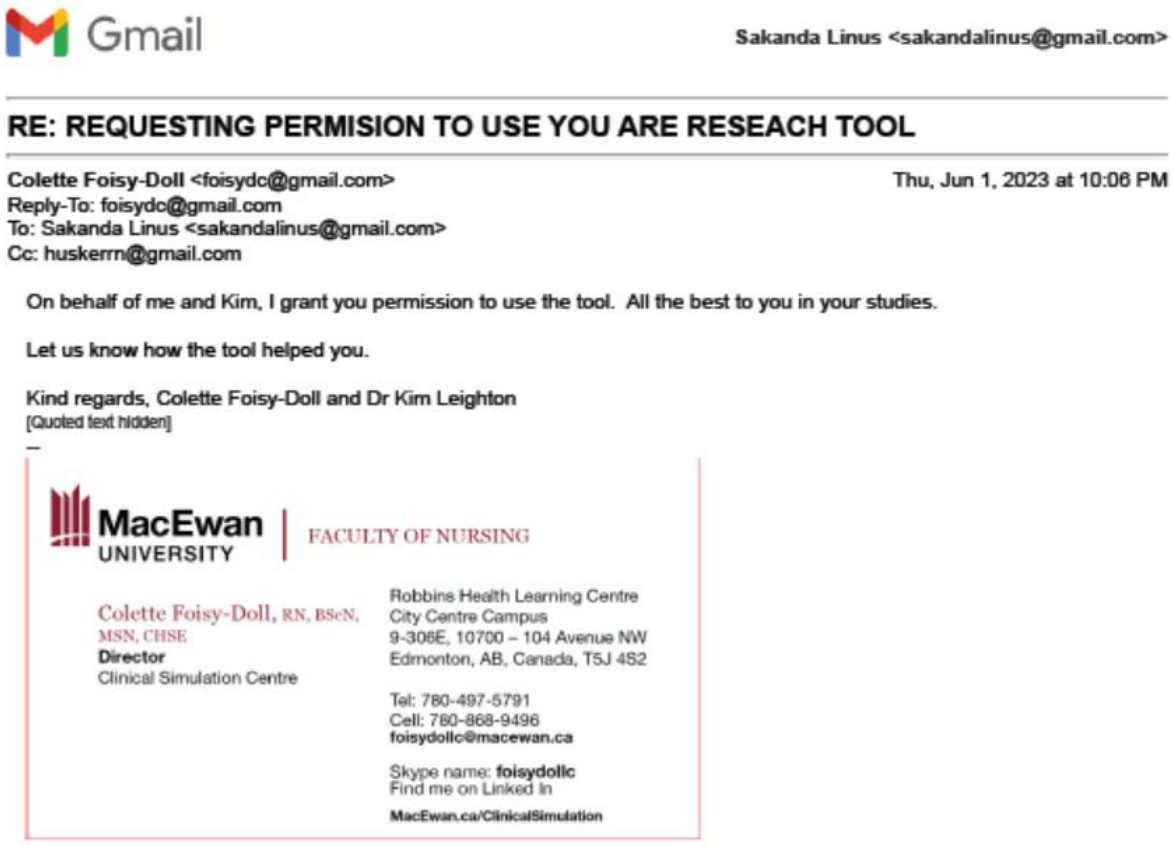
Saini ya mshiriki …… Tarehe----------

Jina la mtafiti …….

Sahihi ya mtafiti: ……

Asante sana kwa kukubali kushiriki katika utafiti.

**Appendix 3: Permission to use Simulation Culture Organizational Readiness Survey (SCORS) tool.**



Gmail

Sakanda Linus <sakandalinus@gmail.com>

**RE: REQUESTING PERMISION TO USE YOU ARE RESEACH TOOL**

**Colette Foisy-Doll** <foisydc@gmail.com> Thu, Jun 1, 2023 at 10:06 PM
Reply-To: foisydc@gmail.com
To: Sakanda Linus <sakandalinus@gmail.com>
Cc: huskerrn@gmail.com

On behalf of me and Kim, I grant you permission to use the tool. All the best to you in your studies.

Let us know how the tool helped you.

Kind regards, Colette Foisy-Doll and Dr Kim Leighton
[Quoted text hidden]

MacEwan UNIVERSITY | FACULTY OF NURSING

Colette Foisy-Doll, RN, BScN, MSN, CHSE
**Director**
Clinical Simulation Centre

Robbins Health Learning Centre
City Centre Campus
9-306E, 10700 – 104 Avenue NW
Edmonton, AB, Canada, T5J 4S2

Tel: 780-497-5791
Cell: 780-868-9496
**foisydollc@macewan.ca**

Skype name: **foisydollc**
Find me on Linked In

**MacEwan.ca/ClinicalSimulation**

**Appendix 4: Questionnaire for Nurse/Midwife Educators**

Participant's code……...

---

**PART I: Socio demographic characteristics of nurse/midwife educators**

Please put the letter in the box corresponding to your choice or write your answer in the spaces provided

| | |
|---|---|
| 1. **Educational institution** | a) Governmental<br>b) Private<br>c) Faith Based Organization |
| 2. **Age in years (**Age range) | a. 25 - 35<br>b. 36 - 45<br>c. 46 - 55<br>d. >55 |
| 3. **Gender** | a. Male<br>b. Female |
| 4. **Education qualifications** | a) PhD<br>b) MSc<br>c) BSc<br>d) Diploma |
| 5. **Teaching experience** | **a.** 6months to 1 year<br>**b.** 2 - 3 years<br>**c.** 4 - 5 years<br>**d.** Above 5 years |

**PART II: Simulation Culture Organizational Readiness Survey (SCORS)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| A | Organizational Support for Change within the institution. | None at all | A Little | Some what | Moderately | Very much | Score |
| 1 | To what extent are innovation, experiential learning and quality Student experiences clearly described as central to the mission and Philosophy of your institution? | 1 | 2 | 3 | 4 | 5 | |
| 2 | To what extent has your organization clearly defined the need to consider simulation-based education (SBE) integration? | 1 | 2 | 3 | 4 | 5 | |
| 3 | To what extent have administrators within your organization communicated a clear strategic vision for SBE? | 1 | 2 | 3 | 4 | 5 | |
| 4 | To what extent have administrators within your organization provided a written commitment to SBE? | 1 | 2 | 3 | 4 | 5 | |
| 5 | To what extent have administrators within your organization provided funding to support the commitment to SBE? | 1 | 2 | 3 | 4 | 5 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 6 | To what extent does your organization promote the need for SBE based on current evidence, standards, and guidelines? | 1 | 2 | 3 | 4 | 5 | |
| 7 | To what extent is SBE currently being used as a teaching modality in Your institution? | 1 | 2 | 3 | 4 | 5 | |
| 8 | To what extent have the educators you work with articulated a need for SBE Integration into the curriculum? | 1 | 2 | 3 | 4 | 5 | |
| 9 | To what extent have the educators in your institution verbalized a commitment to SBE integration into the curriculum? | 1 | 2 | 3 | 4 | 5 | |
| 10 | To what extent are decisions regarding SBE influenced by: | | | | | | |
| | A. Clinicians? | 1 | 2 | 3 | 4 | 5 | |
| | B. Educators? | 1 | 2 | 3 | 4 | 5 | |
| | C. Administration? | 1 | 2 | 3 | 4 | 5 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Subtotal Section A** | | | | | Potential Score 60 | |
| B | **Readiness to staff within the institution (staff attributes)** | None at All | A Little | Some what | Modera tely | Very Much | |
| 11 | In your organization, to what extent is there a critical mass of professionals who already possess strong SBE: | | | | | | |
| | A. Knowledge | 1 | 2 | 3 | 4 | 5 | |
| | B. Skills | 1 | 2 | 3 | 4 | 5 | |
| | C. Positive attitudes | 1 | 2 | 3 | 4 | 5 | |
| 12 | To what extent do administrators support culture change including the efforts required to implement and sustain SBE program integration? | 1 | 2 | 3 | 4 | 5 | |
| 13 | To what extent are there credentialed or trained simulationists who mentor/coach others, including, other simulationists? | 1 | 2 | 3 | 4 | 5 | |
| 14 | To what extent does your organization have individuals who model SBE best practice? | 1 | 2 | 3 | 4 | 5 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 15 | To what extent are staff/faculty proficient in the use of technology? (I.e. computer systems, AV and IT systems) | 1 | 2 | 3 | 4 | 5 | |
| 16 | To what extent are there graduate level prepared researchers available to assist in research to develop new knowledge, as appropriate to your organization's mission? | 1 | 2 | 3 | 4 | 5 | |
| 17 | To what extent are librarians available within your organization to help search for evidence-based practice and related simulation resources? | 1 | 2 | 3 | 4 | 5 | |
| 18 | To what extent are your librarians accessed to search for evidence-based practice and related simulation resources? | 1 | 2 | 3 | 4 | 5 | |
| 19 | To what extent do you believe that now is the right time to implement a culture change to support SBE? | 1 | 2 | 3 | 4 | 5 | |
| 20 | To what extent is the measurement and sharing of outcomes part of the culture of the organization in which you work? | 1 | 2 | 3 | 4 | 5 | |
| | **Subtotal Section B** | | | | | **Potential Score 60** | |

| C | **Resources Readiness** within the institution (**Time, Personnel)** | None at al | A little | some what | Modera tely | Very much | |
|---|---|---|---|---|---|---|---|
| 21 | To what extent are fiscal resources available to support SBE in the following areas: | | | | | | |
| | A. Human resources (simulation personnel)? | 1 | 2 | 3 | 4 | 5 | |
| | B. Education? | 1 | 2 | 3 | 4 | 5 | |
| | C. Release time to lead integration of SBE? | | | | | | |
| | D. Development of physical learning spaces? | 1 | 2 | 3 | 4 | 5 | |
| | E. Equipment? | 1 | 2 | 3 | 4 | 5 | |
| 22 | To what extent do employees in your institution have access to quality technology, including computers, audiovisual equipment, and other institutional technologies? | 1 | 2 | 3 | 4 | 5 | |
| 23 | To what extent is support available to learn and manage technologies that support education? | 1 | 2 | 3 | 4 | 5 | |
| 24 | To what extent are there existing simulation champions (people who will | 1 | 2 | 3 | 4 | 5 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | go the extra mile to advance simulation) in the current environment among: | | | | | | |
| | A. Administrators? | 1 | 2 | 3 | 4 | 5 | |
| | B. Clinicians? | 1 | 2 | 3 | 4 | 5 | |
| | C. Educators? | 1 | 2 | 3 | 4 | 5 | |
| | D. Technology Specialists? | 1 | 2 | 3 | 4 | 5 | |
| | E. Administrative assistants and support Staff? | 1 | 2 | 3 | 4 | 5 | |
| | **Subtotal Section C** | | | | | **Potential Score 60** | |
| | **Not Ready: 0-36 A Little: 37-72 Somewhat: 73-108 Moderately: 109-144 Very Much: 145-180** | | | | TOTAL OVERAL SCORE (Potential Score 180) | | |
| | SCORS SUMMARY IMPRESSION | Not ready | Getting ready | Ready but not acting | Ready to Start to Act | Past Ready & Into Action Planning | |
| | Considering all of the SCORS indicator scores, how would you rate your **organization's readiness** for SBE integration? | 1 | 2 | 3 | 4 | 5 | |
| | Looking back 6 months, how would you have rated your **organization's readiness** for SBE integration? | 1 | 2 | 3 | 4 | 5 | |

| | | |
|---|---|---|
| | Plot your overall readiness level by marking an "X" on the adjacent continuum. | **NOT READY……. A GREAT DEAL** |

**Appendix 5: Hojaji kwa Walimu Wauguzi/Wakunga**

**Namba ya mshiriki _____**

SEHEMU YA I: Sifa za kijamii za waelimishaji wauguzi/wakunga

Tafadhali weka herufi kwenye kisanduku sambamba na chaguo lako au andika jibu lako katika nafasi zilizowekwa.

| | |
|---|---|
| **6. Taasisi ya elimu** | a. Serikali<br>b. Kanisa<br>c. Binafsi |
| 7. **Umri katika miaka (**Kiwango cha umri) | a. 25 - 35<br>b. 36 - 45<br>c. 46 - 55<br>d. >55 |
| 8. **Jinsia** | a. Me<br>b. Ke |
| 9. **Sifa za elimu** | a. PhD<br>b. MSc<br>c. BSc<br>d. Diploma |
| 10. **Uzoefu wa kufundisha** | a. Miezi 6 hadi mwaka 1<br>b. 2 - 3 miaka<br>c. 4 - 5 miaka<br>d. Zaidi ya miaka 5 |

**SEHEMU II: Uigaji Utamaduni Utayari wa Shirika (SCORS)**

| A | **Hitaji Lililobainishwa na Usaidizi wa Mabadiliko** | Hakuna hata kidogo | Kidogo | Kiasi fulani | Kiasi | Sana | Alama |
|---|---|---|---|---|---|---|---|
| 1 | Ni kwa kiwango gani uvumbuzi, ujifunzaji wa kitaalamu na uzoefu wa ubora wa Mwanafunzi unaelezwa kwa uwazi kuwa msingi to the mission and Philosophy of your institution? | 1 | 2 | 3 | 4 | 5 | |
| 2 | Je, ni kwa kiwango gani taasisi yako imefafanua kwa uwazi hitaji la kuzingatia ujumuishaji wa elimu ya uigaji (SBE)? | 1 | 2 | 3 | 4 | 5 | |
| 3 | Je, ni kwa kiwango gani wasimamizi ndani ya taasisi yako wamewasilisha maono ya kimkakati ya SBE? | 1 | 2 | 3 | 4 | 5 | |
| 4 | Je, ni kwa kiwango gani wasimamizi ndani ya taasisi yako wametoa ahadi iliyoandikwa kuhusu SBE? | 1 | 2 | 3 | 4 | 5 | |
| 5 | Je, wasimamizi ndani ya taasisi yako wametoa ufadhili kwa kiasi gani ili kuwezesha utekelezaji wa SBE ? | 1 | 2 | 3 | 4 | 5 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 6 | Je, ni kwa kiwango gani taasisi yako inakuza hitaji la SBE kulingana na ushahidi wa sasa, viwango na miongozo? | 1 | 2 | 3 | 4 | 5 | |
| 7 | Je, SBE inatumika kwa kiwango gani kwa sasa kama njia ya kufundisha katika taasisi yako? | 1 | 2 | 3 | 4 | 5 | |
| 8 | Je, ni kwa kiasi gani waelimishaji unaofanya nao kazi wameeleza hitaji la Ujumuishaji wa SBE kwenye mtaala? | 1 | 2 | 3 | 4 | 5 | |
| 9 | Je, ni kwa kiasi gani waelimishaji katika taasisi yako wametamka ahadi ya kuunganisha SBE kwenye mtaala? | 1 | 2 | 3 | 4 | 5 | |
| 10 | Ni kwa kiwango gani maamuzi yanahusu SBE imeathiriwa na: | | | | | | |
| | A. Madaktari? | 1 | 2 | 3 | 4 | 5 | |
| | B. Waelimishaji? | 1 | 2 | 3 | 4 | 5 | |
| | C. Wasimamizi? | 1 | 2 | 3 | 4 | 5 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Sehemu ndogo ya A** | | | | | Alama 60 | |
| B | **Utayari wa Mabadiliko ya Utamaduni** | Hakuna hata kidogo | Kidogo | Kiasi fulani | Kiasi | Sana | Alama |
| 11 | Katika taasisi yako, ni kwa kiwango gani kuna wataalamu muhimu ambao tayari Wana uzoefu na SBE: | | | | | | |
| | A. Maarifa | 1 | 2 | 3 | 4 | 5 | |
| | B. Ujuzi | 1 | 2 | 3 | 4 | 5 | |
| | C. Mitazamo chanya | 1 | 2 | 3 | 4 | 5 | |
| 12 | Je, ni kwa kiwango gani wasimamizi wanaunga mkono mabadiliko ya kitamaduni ikijumuisha juhudi zinazohitajika kutekeleza na kudumisha ujumuishaji wa programu ya SBE? | 1 | 2 | 3 | 4 | 5 | |
| 13 | Ni kwa kiwango gani kuna waigaji waliohitimu au waliofunzwa ambao wanashauri/kufunza wengine, pamoja na waigaji wengine? | 1 | 2 | 3 | 4 | 5 | |
| 14 | Je, ni kwa kiwango gani taasisi yako ina watu binafsi wanaoiga utendaji bora wa SBE? | 1 | 2 | 3 | 4 | 5 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 15 | Je, ni kwa kiwango gani wafanyakazi/kitivo wana ujuzi katika matumizi ya teknolojia? (yaani mifumo ya kompyuta, mifumo ya AV na IT) | 1 | 2 | 3 | 4 | 5 | |
| 16 | Je, ni kwa kiwango gani kuna watafiti waliotayarishwa wa kiwango cha wahitimu kusaidia katika utafiti ili kukuza maarifa mapya, kama yanafaa kwa dhamira ya shirika lako? | 1 | 2 | 3 | 4 | 5 | |
| 17 | Ni kwa kiwango gani wasimamizi wa maktaba wanapatikana ndani ya taasisi yako ili kusaidia kutafuta mazoezi yanayotegemea ushahidi na nyenzo zinazohusiana na uigaji? | 1 | 2 | 3 | 4 | 5 | |
| 18 | Je, wasimamizi wako wa maktaba wanafikiwa kwa kiwango gani kutafuta mazoezi yanayotegemea ushahidi na nyenzo zinazohusiana na uigaji? | 1 | 2 | 3 | 4 | 5 | |
| 19 | Je, unaamini kwa kiasi gani kwamba sasa ni wakati mwafaka wa kutekeleza mabadiliko ya utamaduni ili kusaidia SBE? | 1 | 2 | 3 | 4 | 5 | |
| 20 | Je, kipimo na kushiriki matokeo ni sehemu ya utamaduni wa shirika unalofanyia kazi kwa kiasi gani? | 1 | 2 | 3 | 4 | 5 | |

| | **Jumla ndogo ya Sehemu B** | | | | | **Alama 60** | |
|---|---|---|---|---|---|---|---|
| C | **Wakati, Wafanyakazi, na Utayari wa Rasilimali** | Hakuna hata kidogo | Kidogo | Kiasi fulani | Kiasi | Sana | Alama |
| 21 | Ni kwa kiwango gani rasilimali za kifedha zinapatikana kusaidia SBE katika maeneo yafuatayo: | | | | | | |
| | A. Rasilimali watu (wafanyakazi wa kuiga)? | 1 | 2 | 3 | 4 | 5 | |
| | B. Elimu? | 1 | 2 | 3 | 4 | 5 | |
| | C. Muda wa kutolewa ili kuongoza muunganisho wa SBE? | | | | | | |
| | D. Maendeleo ya nafasi za maeneo ya kujifunza? | 1 | 2 | 3 | 4 | 5 | |
| | E. Vifaa? | 1 | 2 | 3 | 4 | 5 | |
| 22 | Je, ni kwa kiwango gani wafanyakazi katika taasisi yako wanapata teknolojia bora, ikiwa ni pamoja na kompyuta, vifaa vya sauti na taswira, na teknolojia nyingine za kitaasisi? | 1 | 2 | 3 | 4 | 5 | |
| 23 | Je, ni kwa kiwango gani msaada unapatikana katika kujifunza na kusimamia teknolojia zinazosaidia elimu? | 1 | 2 | 3 | 4 | 5 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 24 | Ni kwa kiwango gani kuna mabingwa waliopo wa uigaji (watu ambao watakwenda mbali zaidi kuendeleza uigaji) katika mazingira ya sasa kati ya: | 1 | 2 | 3 | 4 | 5 | |
| | A. Wasimamizi? | 1 | 2 | 3 | 4 | 5 | |
| | B. Madaktari? | 1 | 2 | 3 | 4 | 5 | |
| | C. Waelimishaji? | 1 | 2 | 3 | 4 | 5 | |
| | D. Wataalamu wa Teknolojia? | 1 | 2 | 3 | 4 | 5 | |
| | E. Wasaidizi wa utawala na Wafanyakazi wa usaidizi? | 1 | 2 | 3 | 4 | 5 | |
| | **Jumla ya Sehemu ndogo C** | | | | | **Potential Score 60** | |
| | **Si tayari: 0-36 kidogo: 37-72 Kiasi fulani: 73-108 Kiasi: 109-144 Sana: 145-180** | | | | JUMLA YA Alama (Potential Score 180) | | |
| | MAONI YA MUHTASARI WA SCORS | Si tayari | Kujitayarisha | Tayari lakini si hawatekelezi | Tayari Kuanza Kuchukua Hatua | Tayari na Kupanga Utekelezaji | |
| | Kwa kuzingatia alama zote za viashirio vya SCORS, unaweza kukadiriaje utayari wa taasisi yako kwa ushirikiano wa SBE? | 1 | 2 | 3 | 4 | 5 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Ukiangalia nyuma kwa miezi 6, ungeweza kukadiriaje utayari wa taasisi yako kwa ushirikiano wa SBE? | 1 | 2 | 3 | 4 | 5 | |
| | Panga kiwango chako cha utayari kwa ujumla kwa kuweka alama ya "X" kwenye mwendelezo ulio karibu. | **SIO TAYARI …… JAMBO KUBWA** | | | | | |

## Appendix 6: Ethical Approval from Kamuzu University of Health Sciences

KAMUZU UNIVERSITY
OF HEALTH SCIENCES

# CERTIFICATE OF ETHICS APPROVAL

This is to certify that the Kamuzu University of Health Sciences (COMREC), has reviewed and approved a study entitled:

**P.08/23-0243 - ASSESSING NURSE AND MIDWIVES EDUCATORS' READINESS FOR THE USE OF SIMULATION BASED EDUCATION IN HEALTH TRAINING INSTITUTIONS IN KILIMANJARO TANZANIA** by **Mr. Sakanda Linus**

on

**25/10/2023**

*As you proceed with the implementation of your study, we would like you to adhere to international ethical guidelines, national guidelines and all requirements by COMREC some of which are indicated on the next page for your study.*

Approved by
College of Medicine
25/10/2023
(COMREC)
Research and Ethics Committee

**Prof. Eric Umar (Comrec Chairperson)**

## Appendix 7: Ethical Approval from Kilimanjaro Christian Medical University College

CRERC 07

**KILIMANJARO CHRISTIAN MEDICAL UNIVERSITY COLLEGE**

*(A Constituent College of Tumaini University Makumira)*

**P. O. Box 2240, MOSHI, Tanzania.**

**RESEARCH ETHICAL CLEARANCE CERTIFICATE**

**No. PG.125 / 2023**

**Research Proposal No.** 125

**Study Title:** Assessing Nurse and Midwife educators' readiness for the use of simulation based education in health training institutions in Kilimanjaro Tanzania

**Study Area** : Health training institutions in Kilimanjaro

**PI's Name** : Sakanda Linus

Co-investigators : Angela Chimwanza, Lily C. Kumbani and Paulo Kidayi

**Institution (s) :** Kilimanjaro Christian Medical University College

**The Proposal was approved by CRERC on :** 15th August, 2023

**Duration of Study :** One year
**From :** 15th August 2023 to 14th August, 2024.

**PROF. MRAMBA NYINDO**
**Chair – CRERC**

**PROF. EPHATA KAAYA**
**Provost - KCMU College**

**Appendix 8: Support letter from the Supervisor**

KAMUZU UNIVERSITY
OF HEALTH SCIENCES

Vice Chancellor
Prof. M. Mallewa (BMedSc,
MBBS, MRCP, MRCPCH,
DTM&H, PhD)
Our Ref:
Your Ref

11th November 2024

The SMANER Postgraduate Coordinator
Kamuzu University of Health Studies

Dear Prof. Chirwa
SUPPORT LETTER FOR MR. SAKANDA LINUS

I write in support of Mr. Sakanda Linus' submission of his thesis for external and internal examination. The title of his thesis is "Nurse and Midwife Educators' Readiness for the Use of Simulation Based Education in Health Training Institutions in Kilimanjaro, Tanzania." The thesis is in partial fulfilment for his award of a Master of Science Degree in Midwifery. I am the main supervisor for the student, the other supervisors are Associate Professor Lilly Kumbani of KUHeS and Dr. Paul Kidayi of University of Kilimanjaro.

Yours sincerely,

Professor Angela Chimwaza PhD

**Appendix 9: Letter of support from the head of department**

KAMUZU UNIVERSITY
OF HEALTH SCIENCES

**SCHOOL OF MATERNAL, NEONATAL & REPRODUCTIVE HEALTH**

**To:** The Chair Person, KUREC

**FROM:** Head of department - Midwifery

**DATE:** 11th September, 2023

---

**RE: LETTER OF SUPPORT FOR SAKANDA LINUS**

I write to certify that Mr Sakanda Linus has fulfilled the proposal requirements for his Masters in Midwifery programme at KUHeS. He is planning to conduct a research study titled **" *Assessing nurse and midwife readiness for the use of simulation based education in health training institutions in Tanzania.*"** His Supervisors are Professor Angela Faith Chimwanza, Dr Lily C.Kumbani from Malawi and Mr. Paulo Kidayi from Tanzania . He has already received IRB approval from Tanzania and he is now applying for approval at KUREC. Please assist him accordingly.

If you have any questions about the student please don't hesitate to contact me at marthakamanga@kcn.unima.mw or at +(265) 999 217 985.

Sincerely,

Martha Kamanga, PhD

**Head of Department - Midwifery**

## Appendix 10: Authorization letter from Kilimanjaro Region

JAMHURI YA MUUNGANO WA TANZANIA
OFISI YA RAIS
TAWALA ZA MIKOA NA SERIKALI ZA MITAA

MKOA WA KILIMANJARO
Anwani ya Simu: **'REGCOM' KILIMANJARO**
Simu Na. Moshi +255(027)-2754236/7
E-mail: ras@.kilimanjaro.go.tz
Nukushi Na. **027-2753248 na 027-2751381**

**OFISI YA MKUU WA MKOA,**
**17 Barabara ya Florida**
**S.L.P. 3070,**
**25107 MOSHI**

Unapojibu tafadhali taja:

Kumb. Na. DC.109/228/01'I'/27

12 Septemba, 2023

Mkurugenzi wa Manispaa,
S.L.P 318,
**MOSHI;**

Mkurugenzi Mtendaji,
Halmashauri ya:
**HAI, ROMBO, MOSHI, MWANGA, SIHA** na **SAME;**

Yah: **UTAMBULISHO WA UTAFITI UNAOTATHMINI YA UTAYARI WA KUTUMIA MAZOEZI YA KUIGIZA KATIKA UTOAJI WA MAFUNZO KATIKA VYUO VYA AFYA MKOANI KILIMANJARO**

Tafadhali husika na somo tajwa hapo juu.

2. Ndugu **Sakanda Linus** ni mtumishi katika hospitali ya KCMC na mwanafunzi wa Shahada ya Uzamili (***M.Sc. Midwifery***) katika Chuo Kikuu cha Kamuzu nchini Malawi. Amepata kibali cha kufanya utafiti ikiwa ni sehemu ya masomo yake.

3. Utafiti wake unalenga kufanya tathmini ya utayari wa kutumia mazoezi ya kuigiza katika utoaji wa mafunzo katika vyuo vya afya mkoani Kilimanjaro ***"Assessing Nurse and Midwife educators' readiness for the use of simulation based education in health training institutions in Kilimanjaro, Tanzania"***

4. Kibali Na.PG 125/2023 cha tarehe 15 Agosti, 2023 kitakachoishia muda wake tarehe 14 Agosti, 2024 kimetolewa na Kamati ya Maadili ya Tafiti za Sekta ya Afya ya Chuo Kikuu Kishiriki cha Kikristo cha Tiba Kilimanjaro (KCMUCo - CRERC)

5. Kwa barua hii, nautambulisha utafiti huu kwako kwa ajili ya kutoa ushirikiano stahiki ili aweze kutembelea vitengo mbalimbali na kuonana na wadau watakaomsaidia kukamilisha utafiti wake.

6. Ninawashukuru kwa ushirikiano.

Devotha Ntapara
Kny:- **KATIBU TAWALA MKOA**

**Nakala:** Katibu Tawala Mkoa - (aione kwenye faili)

Sakanda Linus - (Simu: +255755703750)

**Appendix 11: Authorization letter from St. Theresa college of Nursing**

**THE SISTERS OF OUR LADY OF KILIMANJARO**
**ST. THERESA SCHOOL OF NURSING**
**Soweto Street, Moshi, P.O Box 256, Moshi, Kilimanjaro**
**Email: info@stson.ac.tz**
**Tel: +255767446891/783612810**
**www.stson.ac.tz**

Ref. STSON/SL/001/1 September9, 2023

Sakanda Linus,

Kilimanjaro Christian medical university College,

P.O. Box 2240,

Moshi-Tanzania.

**ACCEPIANCE LETTER TO CONDUCT RESEÁRCH AT ST. THERESA COLLEGE OF NURSING AND MIDWIFERY.**

In reference to your request to conduct a study at St. Theresa School of Nursing and Midwifery on "**Assessing Nurse and Midwife Educators' readiness for the use of simulation based education in health training institutions in Kilimanjaro Tanzania"**

The School is glad to grant you permission to conduct your study in line with the research ethical guidance.

THE SISTERS OF OUR LADY OF KILIMANJARO
PRINCIPAL
P. O. Box 256
SOWETO - MOSHI
ST. THERESA SCHOOL OF NURSING

You are warm Welcome.

.....

Sr. Walter Minja, Principal at St. Theresa School of Nursing.

## Appendix 12: Authorization letter from Zawadi Memorial Health Training

ZAWADI MEMORIAL HEALTH TRAINING INSTITUTE,
P.O.BOX 8820,
MOSHI, TANZANIA.

Sakanda Linus,

12th September, 2023

Kilimanjaro Christian medical university College,

P.O. Box 2240,

Moshi-Tanzania.

**ACCEPIANCE LETTER TO CONDUCT RESEÁRCH AT ZAWADI MEMORIAL HEALTH TRAINING INSTITUTE,**

Regarding your request to conduct a study at Zawadi Memorial Health Training Institute on **"assessing nurse and midwife educators' readiness for the use of simulation based education in health training institutions in Kilimanjaro Tanzania,"**

The college is happy to give you permission to do your research in our institutions as long as you will adhere ethical regulation of research.

Yours Sincerely,

ZAWADI MEMORIAL HEALTH TRAINING INSTITUTE * KILIMANJARO - TANZANIA * TAREHE 17/09/2023 P.O.BOX 8820 MOSHI

Msele .K.Shaghude

Principal zawadi memorial health training institute.

**Appendix 13: Authorization letter from Kilimanjaro College of Health and Allied Sciences**

JAMUHURI YA MUUNGANO WA TANZANIA

WIZARA YA AFYA

CHUO CHA AFYA NA SAYANSI SHIRIKISHI KILIMANJARO

(KICHAS)

S.L.P. 565
Moshi, Tanzania
Web:www.rdtc.go.tz

SIMU:+255-27-2753986-7
FAX: +255 272752038
E-mail:principal.kichas@afya.go.tz

**REF: KICHAS/E.1/63** **TAREHE: 12.09. 2023**

Sakanda Linus,
P.O. Box 2240
MOSHI.

Dear Sakanda,

**RE: REQUEST FOR PERMISION TO CONDUCT RESEARCH STUDY AT KILIMANJARO COHAS.**

Refer to the heading above.

The college receives the letter dated 08th September, 2023 regarding your application to conduct a study at KICHAS titled **"To Assess Nurse and Midwife Educators Reading for The use of Simulation Based Education in Health Training Institutions in Kilimanjaro, Tanzania.**

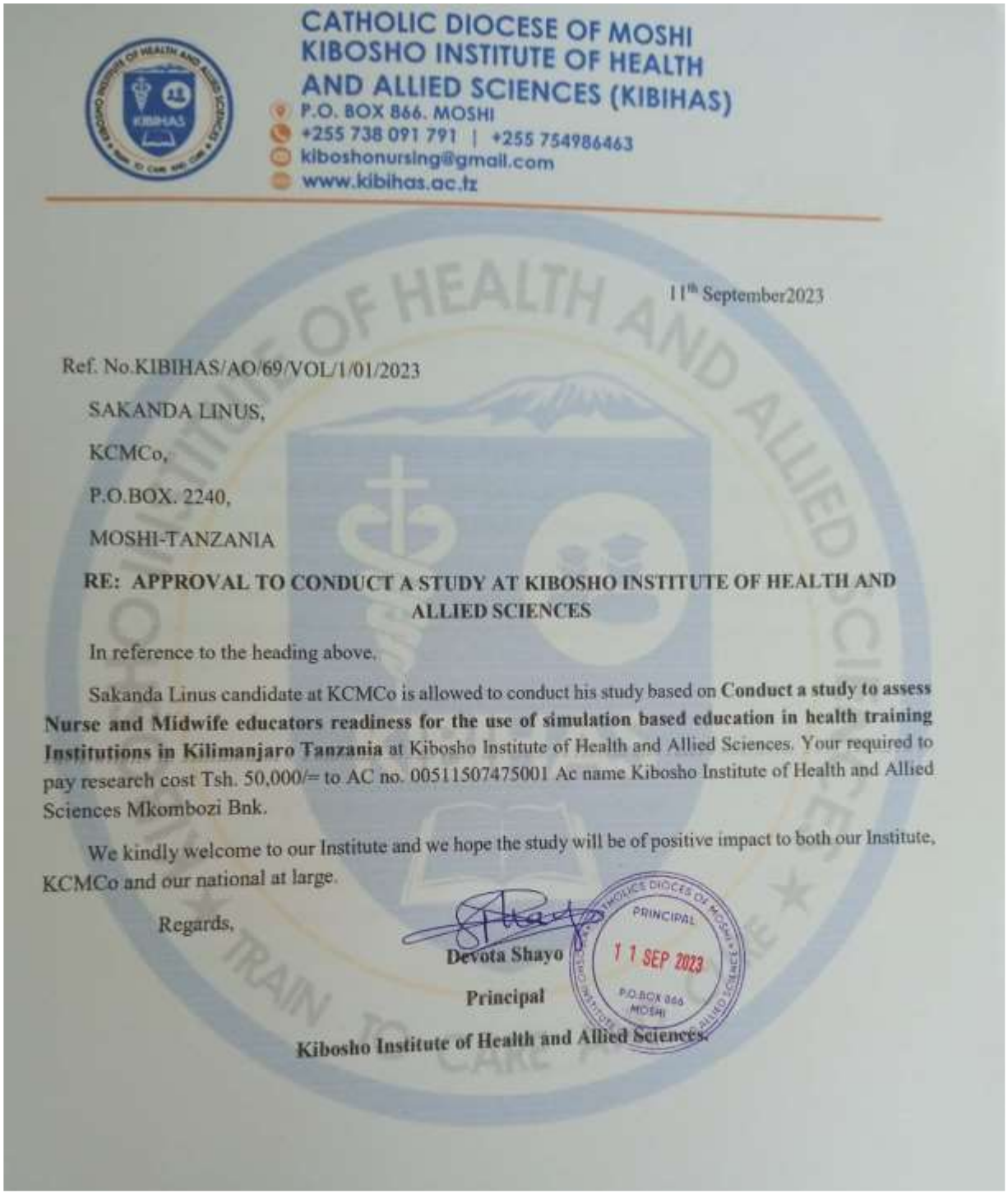
We are pleased to inform you that the permission is granted

Thank you,

KILIMANJARO COLLEGE OF HEALTH AND ALLIED SCIENCES
PRINCIPAL
S.L.P. 565
MOSHI-KCMC

Victor Minde
**FOR PRINCIPAL**

**Appendix M: Authorization letter from Kibosho School of Nursing and Midwifery**



CATHOLIC DIOCESE OF MOSHI
KIBOSHO INSTITUTE OF HEALTH
AND ALLIED SCIENCES (KIBIHAS)
P.O. BOX 866. MOSHI
+255 738 091 791 | +255 754986463
kiboshonursing@gmail.com
www.kibihas.ac.tz

11th September2023

Ref. No.KIBIHAS/AO/69/VOL/1/01/2023

SAKANDA LINUS,

KCMCo,

P.O.BOX. 2240,

MOSHI-TANZANIA

**RE: APPROVAL TO CONDUCT A STUDY AT KIBOSHO INSTITUTE OF HEALTH AND ALLIED SCIENCES**

In reference to the heading above.

Sakanda Linus candidate at KCMCo is allowed to conduct his study based on **Conduct a study to assess Nurse and Midwife educators readiness for the use of simulation based education in health training Institutions in Kilimanjaro Tanzania** at Kibosho Institute of Health and Allied Sciences. Your required to pay research cost Tsh. 50,000/= to AC no. 00511507475001 Ac name Kibosho Institute of Health and Allied Sciences Mkombozi Bnk.

We kindly welcome to our Institute and we hope the study will be of positive impact to both our Institute, KCMCo and our national at large.

Regards,

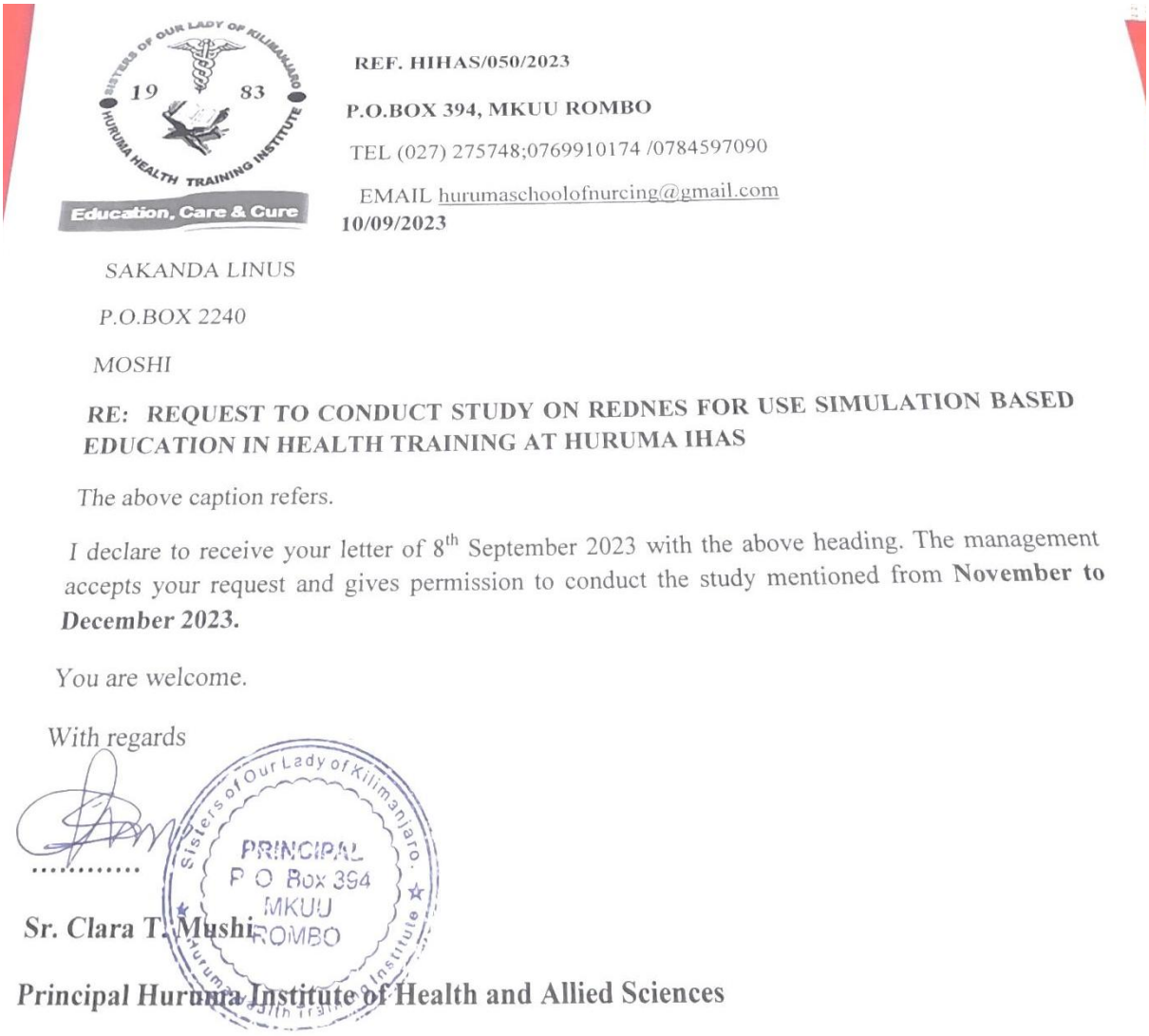
**Devota Shayo**

**Principal**

**Kibosho Institute of Health and Allied Sciences.**

PRINCIPAL
11 SEP 2023
P.O.BOX 866
MOSHI

**Appendix 15: Authorization letter from Huruma Institute of Health and Allied Sciences**



REF. HIHAS/050/2023

P.O.BOX 394, MKUU ROMBO

TEL (027) 275748;0769910174 /0784597090

EMAIL hurumaschoolofnurcing@gmail.com

10/09/2023

SAKANDA LINUS

P.O.BOX 2240

MOSHI

**RE: REQUEST TO CONDUCT STUDY ON REDNES FOR USE SIMULATION BASED EDUCATION IN HEALTH TRAINING AT HURUMA IHAS**

The above caption refers.

I declare to receive your letter of 8th September 2023 with the above heading. The management accepts your request and gives permission to conduct the study mentioned from **November to December 2023.**

You are welcome.

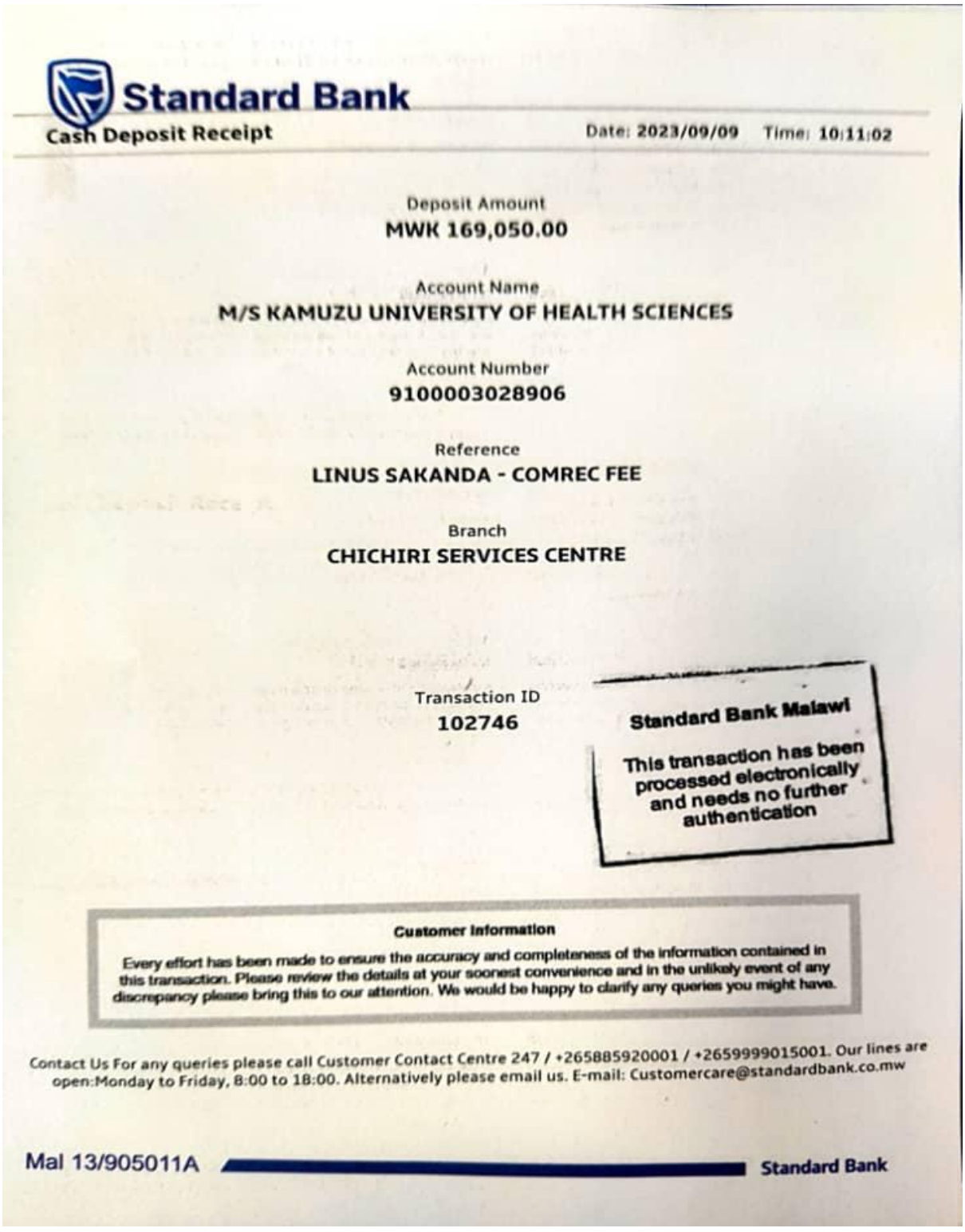
With regards

.....

**Sr. Clara T. Mushi**

**Principal Huruma Institute of Health and Allied Sciences**

**Appendix 16: Payment receipt for KUREC**



Standard Bank

Cash Deposit Receipt

Date: 2023/09/09 Time: 10:11:02

Deposit Amount
MWK 169,050.00

Account Name
M/S KAMUZU UNIVERSITY OF HEALTH SCIENCES

Account Number
9100003028906

Reference
LINUS SAKANDA - COMREC FEE

Branch
CHICHIRI SERVICES CENTRE

Transaction ID
102746

Standard Bank Malawi

This transaction has been processed electronically and needs no further authentication

Customer Information

Every effort has been made to ensure the accuracy and completeness of the information contained in this transaction. Please review the details at your soonest convenience and in the unlikely event of any discrepancy please bring this to our attention. We would be happy to clarify any queries you might have.

Contact Us For any queries please call Customer Contact Centre 247 / +265885920001 / +2659999015001. Our lines are open:Monday to Friday, 8:00 to 18:00. Alternatively please email us. E-mail: Customercare@standardbank.co.mw

Mal 13/905011A Standard Bank

## Appendix 17: Proof of payment of admin fee

National Bank of Malawi
*The Bank of the Nation*

### Authorised Batch Report with Details

| | | | | |
|---|---|---|---|---|
| Batch Number: | 674295 | | Number of Debits: | |
| Batch Type: | SALARY | | Value of Debits: | 8,808,022.00 |
| Upload Date Time: | 09-Dec-2022 | 15.36.39 | Number of Credits: | 1 |
| Currency: | MKW | | Value of Credits: | 8,808,022.00 |
| Status: | PROCESSED | | Host Reference: | FT22349MYV97 |
| Uploaded By: | dkantayeni | | Host Message: | |

| Batch Item | Amount | Payment Details | Status | Bank Reference | Dest. Bank | Destination Acct | Payee Name | Host Msg |
|---|---|---|---|---|---|---|---|---|
| 674295-1 | 8,808,022.00 | FundsfromNORHED2SBE Jan-Dec2022 | PROCESSED | FT22349DH511 | NBM | 1835696 | KCN Research Account | |

Wednesday 11 October 2023 Page 1 of 1