NURSES' ADHERENCE TO NURSING CARE PRACTICES FOR VENTILATED PATIENTS IN THE ADULT INTENSIVE CARE UNIT AT THE UNIVERSITY TEACHING HOSPITAL, LUSAKA, ZAMBIA

BY

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CERTIFICATE OF COMPLETION OF DISSERTATION

I, Dr. Ruth Wahila, having supervised and read this dissertation, I am satisfied that this is the original work of the author under whose name it is being presented.

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DEDICATION

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ABSTRACT

Background: Adherence to nursing care practices for ventilated patients is crucial for preventing complications, ensuring patient safety, and optimizing recovery outcomes. In the intensive care unit (ICU), maintaining high adherence to these practices is essential for delivering quality care. The demand for mechanical ventilation has been increasing steadily, with an annual rise of 10% over the last five years. However, existing literature has primarily focused on general nursing competencies for critically ill patients, leaving a gap in understanding adherence to nursing care practices specifically for mechanically ventilated patients.

Aim: To assess nurses' adherence to nursing care practices for ventilated patients in the adult intensive care unit (ICU) at the University Teaching Hospital in Lusaka.

Method: This study employed a quantitative approach using a descriptive cross-sectional design. It was conducted in the ICU of the University Teaching Hospital, targeting all eligible nurses. Despite considering a census approach, not all nurses participated as some were unavailable at the time of data collection. In total, 58 nurses who met the inclusion criteria participated in the study. Data were collected using a semi-structured, self-administered questionnaire following ethical approval from the local Ethical Committee. Written informed consent was obtained from all respondents before participation. Data analysis was performed using Fisher's exact test and binary logistic regression.

Results: The study found that nurses' adherence to nursing care practices was significantly associated with their qualifications ($p = 0.033$), knowledge ($p = 0.025$), and staffing levels ($p = 0.013$). Nurses with degree qualifications were 4.2 times more likely to adhere to nursing care practices compared to those with diploma qualifications (OR = 4.2, 95% CI: 2.65 – 6.90), $p = 0.033$). Adequate knowledge was also a significant predictor, as knowledgeable nurses were 4.8 times more likely to adhere (OR = 4.8, 95% CI: 12.43–23.46, $p = 0.025$). Additionally, staffing levels played a crucial role, with nurses in well-staffed ICUs being 7.5 times more likely to adhere to nursing care practices (OR = 7.5, 95% CI: 3.28 - 4.54, $p = 0.013$).

Conclusion: Adherence to nursing care practices for ventilated patients is significantly influenced by staffing levels, knowledge, and educational qualifications. To enhance adherence and improve patient outcomes, continuous education programs for ICU nurses should be prioritized, along with strategic staffing interventions.

Nursing Implications: Policy makers should use these results to design targeted training and supportive supervision structures that promote adherence, ultimately leading to improved patient care and reduced complications among ventilated patients

Keywords: Adherence, Nurses, Nursing Care Practices, Ventilated Patients, Intensive Care Unit.

ABBREVIATIONS

ICU: Intensive Care Unit

UTH: University Teaching Hospitals

WHO: World Health Organization

MoH: Ministry of Health

VILI: Ventilator-Induced Lung Injury

VAP: Ventilator-Associated Pneumonia

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CHAPTER ONE
INTRODUCTION AND BACKGROUND

1.0 Overview

This chapter begins by outlining the introduction and background of the study, followed by a clear statement of the problem that the research seeks to address. It further presents the objectives that guide the study, along with the significance and justification for conducting the research. The chapter also includes the scope and delimitations of the study, as well as key operational definition

1.1 Introduction

Nursing care practices are pivotal in ensuring the safety and recovery of ventilated patients in intensive care units (ICUs). Mechanically ventilated patients are critically ill and require specialized care to prevent complications such as ventilator-associated pneumonia (VAP), pressure ulcers, and other adverse outcomes (Alkubati et al., 2022; Soh et al., 2021). Nurses, as frontline healthcare providers in the ICU, are essential in delivering evidence-based care that promotes the well-being and survival of these patients. However, adherence to recommended nursing care practices varies, potentially compromising patient outcomes (Myatra et al., 2022; Alotaibi et al., 2020). This study establishes nurses' adherence to essential nursing care practices for ventilated patients in the Adult Intensive Care Unit (ICU) at the University Teaching Hospital (UTH) in Lusaka, Zambia. Nursing care practices for ventilated patients in the ICU is a framework used in clinical settings to ensure optimal patient outcomes and promote a conducive environment for recovery (Ministry of Health [MoH], 2020; Boltey et al., 2021).

Adherence to nursing care practices is paramount in ensuring optimal patient outcomes and promoting overall healthcare efficacy. The consistent and rigorous adherence to established care protocols, particularly in the context of ventilated patients in ICU contributes significantly to the prevention of complications, reduction of healthcare-associated infections, and overall improvement in patient well-being (Cox et al., 2021). Adherence enhances the quality of patient care by minimizing the risk of ventilator-associated complications, facilitating timely interventions, and fostering a structured and patient-centered approach. Moreover, it plays a pivotal role in achieving positive healthcare outcomes, including reduced mortality rates, shorter hospital stays, and improved long-term recovery prospects (Harvey et al., 2021). Beyond

individual patient benefits, widespread adherence contributes to the broader goals of healthcare institutions, enhancing resource utilization efficiency, lowering healthcare costs, and reinforcing the credibility and trust in healthcare systems.

The need to establish adherence to nursing care practices for ventilated patients in the ICU at the University Teaching Hospitals (UTH) in Lusaka, Zambia is therefore important in order to establish areas for improvement and enhance the overall quality of healthcare delivery. This chapter comprises of various sections to provide a comprehensive description of the topic under study. It presents the background information, a brief articulation of the problem statement, study justification, and a thorough examination of the theoretical frameworks that form the foundation of this research. Furthermore, the chapter outlines the research objectives, question and hypothesis. Additionally, the research variables are explained.

1.2 Background

The ICU serves as a specialized unit that caters for patients with life-threatening conditions, requiring constant monitoring and advanced life support interventions, such as mechanical ventilation (Vincent et al., 2018). Globally, 2 to 3 million intensive care unit patients receive invasive mechanical ventilation per year at estimated costs of 15-27 billion dollars (WHO, 2020). In the United States, hundreds of thousands of patients undergo mechanical ventilation in ICUs annually (WHO, 2020). In China, with its massive population and a rapidly developing healthcare infrastructure, over 5 million of patients require mechanical ventilation each year (Alhazzani et al., 2020). In the Swedish intensive care units, 20% of patients require mechanical ventilation for more than seven days (Carl et al., 2023). In developed European countries like Germany, mechanical ventilation remains a fundamental aspect of critical care, contributing to the well-being and recovery of numerous patients (Nunn et al., 2020).

In Africa, the utilization of mechanical ventilation in ICU varies, exemplified by the case of Nigeria. With an estimated population of over 200 million, Nigeria faces challenges in meeting the demand for critical care interventions. According to recent data (Mumba et al. 2021), the limited availability of ventilators poses significant barriers to providing widespread access to mechanical ventilation. Additionally, respiratory infections, such as pneumonia, contribute to the demand for ventilator support. In contrast, South Africa, with a more developed healthcare infrastructure, demonstrates a higher prevalence of mechanical ventilation use in ICUs. Recent

statistics (Jones et al., 2021) indicate a considerable number of patients undergoing mechanical ventilation annually, improving from 65% to 80%, reflecting the impact of a more robust healthcare system.

In Zambia, approximately 800 patients, including 55% males and 45% females, receive mechanical ventilation each year. Patient demographics reveal that the majority, around 45%, fall within the 46-65 age group. Respiratory ailments, particularly pneumonia and acute respiratory distress syndrome, account for 60% of ventilation cases, followed by cardiovascular conditions (20%), neurological disorders (15%), and other medical conditions (5%). This demand is on a steady rise, with an annual increase of 10% over the last five years, this has led to increased resource allocation by the government to help mitigate the yearly increases (MoH, 2021; WHO. 2020).

Mechanical ventilation totally or partially replaces spontaneous ventilation and is indicated for numerous clinical and physiological reasons such as respiratory failure, acute respiratory distress syndrome (ARDS), and neuromuscular disorders (Tobin, 2010). Even though mechanical ventilation saves lives, it can lead to serious side effects and complications which include ventilator-associated pneumonia (VAP), ventilator-induced lung injury (VILI), and barotrauma. VAP is a prevalent concern, as the invasive nature of mechanical ventilation increases the risk of bacterial infections in the respiratory system (Sonika et al., 2019). This heightened susceptibility underscores the critical importance of stringent infection control measures and vigilant monitoring of ventilated patients to mitigate the potential complications associated with VAP, thereby enhancing the overall quality of care in intensive care units. Additionally, VILI can occur, characterized by damage to lung tissues caused by the mechanical forces exerted during ventilation (Ramani, 2021). This fosters the need for a delicate balance in ventilator settings and a personalized approach to ventilation strategies, ensuring that the benefits of mechanical support outweigh the potential risks of lung injury, thereby promoting the safety and well-being of ventilated patients in intensive care settings. Barotrauma is also another notable complication that results from excessive pressure within the lungs leading to tissue damage (Liu et al., 2018). These side effects underscore the delicate balance that healthcare professionals must strike when utilizing mechanical ventilation, necessitating vigilant monitoring, precise adjustment of parameters, and

adherence to best practices to mitigate the risk of these potentially severe complications (Xiao et al., 2022).

Mechanical ventilation stands as a critical life-saving intervention in the field of intensive care, playing a pivotal role in supporting patients with respiratory failure or compromised lung function (Smith et al., 2022). By delivering controlled and assisted breaths, mechanical ventilation ensures adequate oxygenation and ventilation, allowing the respiratory system to rest and recover. This intervention is particularly crucial in cases of severe illnesses, trauma, or surgeries where natural breathing is compromised (Sonika et al., 2022). Mechanical ventilation not only sustains life during critical periods but also provides healthcare professionals with a tool to optimize oxygen delivery, manage carbon dioxide levels, and prevent respiratory complications. Its importance extends beyond immediate survival, contributing significantly to the comprehensive care and recovery of patients in intensive care units, ultimately improving overall healthcare outcomes.

To avert the serious side effects and complications that may occur in patients on a ventilator there are core evidence-based collaborative principles which underpin the nursing management of such patients in ICU in order to ensure safety of patients and optimize patient outcomes (Perth, 2021). A useful strategy for promoting the safety and optimization of client outcomes for mechanically ventilated patients is to implement the nursing care practice framework (Smith, 2020). Nursing care practices framework, simply known as nursing care practices for ventilated patients encompass a range of activities aimed at providing comprehensive care to critically ill patients (Clarke, 2023). These practices include: Continuous monitoring of vital signs, assessment of ventilator settings, regular suctioning of respiratory secretions, proper positioning to prevent complications, administration of prescribed medications, maintenance of infection control measures, and effective communication with patients and their families.

Adherence to the implementation of nursing care practices is therefore vital for maximizing patient outcomes, reducing complications, and creating a safe environment for recovery. Nurses are very key in executing these practices. Overseeing and delivering these care practices underscores the importance of nursing adherence in promoting comprehensive patient care and fostering a conducive environment for recovery.

Given the critical role of the ICU, establishing nursing care practices for ventilated patients in ICU is important to ensure the provision of high-quality care (Liu et al., 2023). In Zambia, various initiatives and interventions have been implemented to promote adherence to nursing care practices for ventilated patients in ICU at UTH (Banda and Daka, 2023). Training programs for nurses on ventilator management, and efforts to improve infrastructure and resource allocation in ICU are being implemented to enhance the overall competency of nursing staff, ensure standardized and evidence-based care, and address challenges related to the availability of essential resources (Zulu et al., 2019). These efforts aim to create a supportive and conducive environment in the ICU, ultimately contributing to improved patient care, reduced complications, and better outcomes for ventilated patients.

Additionally, evidence-based guidelines on ventilator care and management tailored to the Zambian context have been developed to standardize and optimize the delivery of care for ventilated patients in the ICU at UTH. These guidelines encompass specific protocols for ventilator settings, infection prevention measures, patient positioning, and regular assessments (Zulu et al., 2024). By tailoring the guidelines to the Zambian healthcare landscape, the aim is to enhance the relevance and effectiveness of these protocols, ensuring that they align with the unique challenges and resources available in the local context. This development is crucial for providing a structured framework that supports nursing staff in delivering high-quality care to ventilated patients, ultimately contributing to improved patient outcomes and the overall quality of intensive care services.

Despite adherence to nursing care practices in the management of ventilated patients being well studied around the world, there are a few studies that have been conducted in Zambia. Therefore, this study is aimed at investigating the adherence of nurses' adherence to nursing care for ventilated patients in the intensive care unit at UTH. The study is expected to provide valuable insights to guide the development of targeted interventions, training programs, and quality improvement initiatives to enhance the care provided to ventilated patients in ICU

1.3 Statement of the Problem

Year	No. of Admissions	No. of Patients on ventilators admitted	Percentage of Patients on ventilators admitted	No. of patients with Ventilator-Associated Complications	Percentage of patients with Ventilator-Associated Complications
2020	580	210	36.2	32	15.2
2021	620	230	37.0	36	15.7
2022	670	250	37.3	39	15.6
Total	**1870**	**690 (36.9%)**	**36.9%**	**107**	**15.5%**

Patients undergoing mechanical ventilation in the ICU are highly dependent on nurses for care due to the severity of their conditions, which renders them unable to perform self-care activities (Katuti, 2018; Vincent, 2018). Consistent adherence to evidence-based nursing care practices is essential to prevent complications associated with mechanical ventilation and to promote positive patient outcomes (Simenda et al., 2019). Despite efforts by the University Teaching Hospital (UTH) to implement strategies aimed at improving nursing adherence to care standards, there remains limited comprehensive data on the actual level of compliance in practice. Table 1 below shows the percentages of admissions of patients on a ventilator and ventilator-associated complications at UTH ICU from the year 2020 to 2022.

Table 1: Admissions and Ventilator-Associated Complications among ventilated patients in ICU at UTH

The statistics table 1 above indicates that in 2020, 36.2% of ICU admissions representing 210 patients required mechanical ventilation, with 15% experiencing ventilator-associated complications. In 2021, the percentage of ventilated patients increased slightly to 37%, and complications rose to 15.7%. In 2022, the percentage of admissions for patients on a ventilator was 37.3% while VAP was 15.6%, which was a reduction of 1% from the previous year. Over the three years, the percentage of admitted patients on a ventilator in ICU had remained almost the same with an average of 36.9%.

The consistent occurrence of complications such as ventilator-associated pneumonia (VAP) points to potential gaps in adherence to VAP prevention bundles and other nursing protocols. Non-adherence to established nursing care practices may lead to compromised patient safety, prolonged hospital stays, heightened healthcare costs, and, most importantly, an elevated risk of morbidity and mortality among ICU patients (Jones & Brown, 2018).This trends underscore the urgent need to assess the extent of nurses' adherence to ventilator care practices at UTH in order to inform targeted interventions, strengthen care delivery, and improve patient outcomes , emphasizing the urgency of a comprehensive assessment of nurse's adherence to nursing care practices in ICU at UTH.

1.3 Justification

The study on adherence to nursing care practices for ventilated patients plays a critical role in shaping patient outcomes and assessing the effectiveness of current healthcare strategies. Simufwe (2020) underscores the importance of such investigations, emphasizing their ability to pinpoint gaps in nursing care and drive targeted interventions for meeting patients' specific needs. Furthermore, global evidence from studies conducted by Ntirenganya et al. (2019) and Magiz et al., (2023) underscores the impact of adherence on the quality of care, highlighting the ongoing need for improvements in healthcare services. Despite this, the research landscape in Zambia, particularly within the context of the University Teaching Hospital (UTH) in Lusaka, reveals a significant gap. Existing studies, like those by Banda et al. (2020), predominantly focus on assessing the overall competence of ICU nurses or the general care provided to critically ill patients, leaving unexplored specific areas where nurses might exhibit inadequate adherence and the potential correlation between adherence and patient outcomes.

This study aims to bridge these critical gaps by concentrating on the unique challenges and dynamics within UTH. Through an evaluation of current practices, the research seeks to identify nuanced areas for improvement, ultimately elevating the quality of care for ventilated patients.

1.4 Conceptual Framework

In understanding the complexities surrounding adherence to nursing care practices for ventilated patients in the ICU, this section delves into relevant frameworks. Examining frameworks such as the Promoting Action on Research Implementation in Health Services (PARiHS) framework provides a conceptual lens to explore factors influencing adherence and outcomes in critical care settings.

1.4.1 Description of PARiHS Framework

This study adopts the Promoting Action on Research Implementation in Health Services (PARiHS) framework, developed by Allison, Gill, and Brendan (1998), as a theoretical model within the broader conceptual framework. The PARiHS framework is widely recognized for guiding the successful implementation of evidence-based practices in healthcare settings. It presents a systematic view of how three concepts namely, evidence, context, and facilitation interact to influence outcomes.

The utilization of the PARiHS framework asserts that it serves as a supportive companion for the purposeful implementation of evidence-based practices (Cheryl et al. 2011). Allison, Gill, and Brendan describe the three concepts as follows:

a) **Evidence -** In the PARiHS framework, the nature and quality of evidence play a central role in successful implementation. The framework distinguishes between three types of evidence: research evidence (scientific knowledge), clinical experience (practitioners' expertise), and patient values and preferences. It emphasizes the need for clear, relevant, and applicable evidence to support change and innovation in healthcare practice.

b) **Context -** Context refers to the environment or setting in which the implementation takes place. This includes organizational culture, leadership, resources, and the overall climate for change. The framework recognizes that what works in one context may not necessarily work in another. Understanding and assessing the context is crucial for tailoring

interventions to specific settings, thereby enhancing the likelihood of successful implementation.

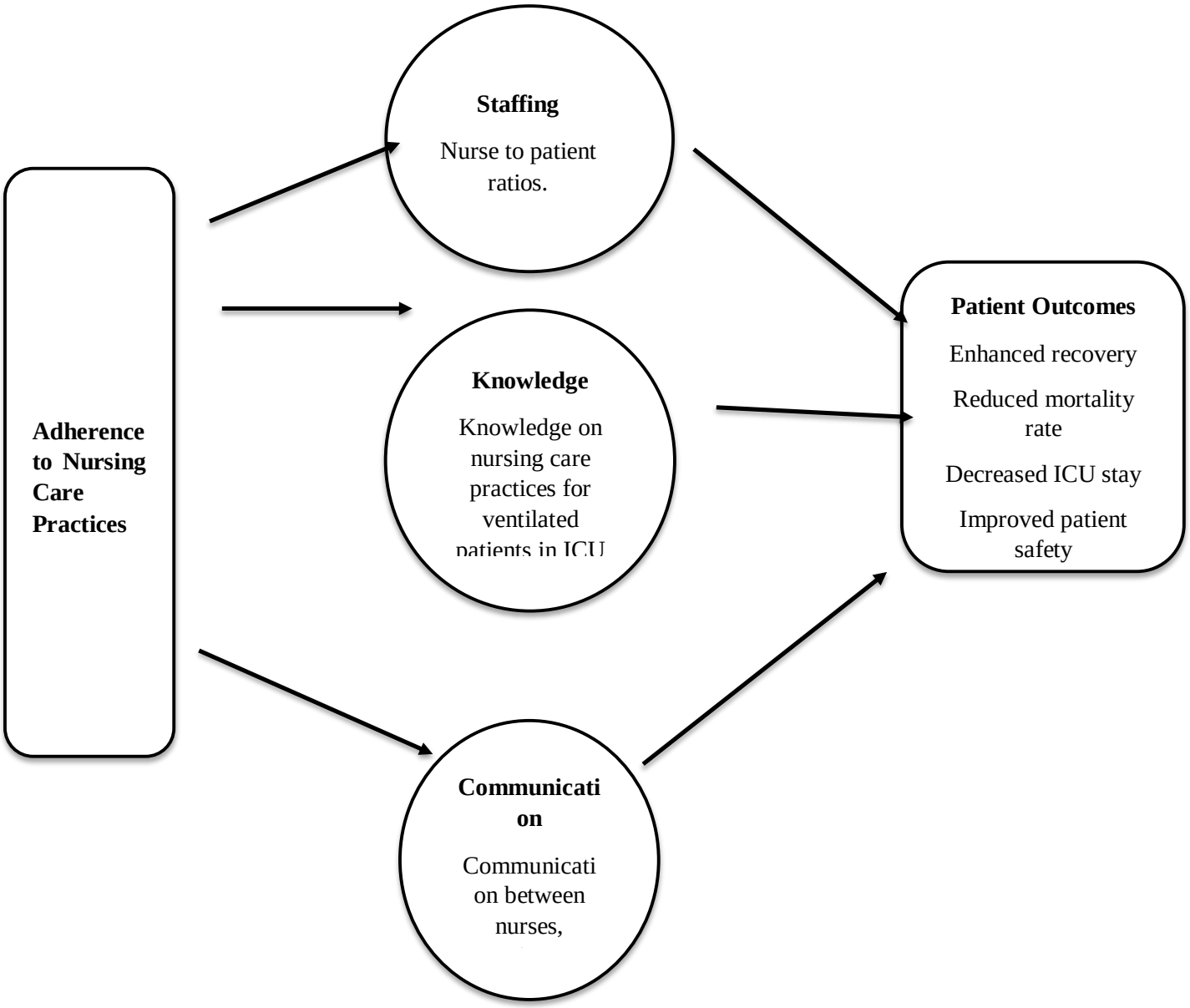
c) **Facilitation -** Facilitation refers to the process of enabling and supporting individuals or teams to implement change. It involves skilled individuals, known as facilitators or change agents, who guide and support the implementation process. Effective facilitation is essential for navigating the challenges associated with change, addressing resistance, and ensuring that evidence is appropriately integrated into practice.

Application of the PARiHS Framework to the Study

The utilization of the PARiHS framework, assert that the framework serves as a supportive companion for the purposeful implementation of evidence-based practices (Cheryl et al. 2011). According to our study, in the context of adherence to nursing care practices for ventilated patients in the ICU, evidence would include research findings and best practices related to ventilator management, infection control, and overall patient care. For example, relevant studies may provide evidence on the impact of specific nursing interventions on patient outcomes, the reduction of ventilator-associated complications, and improvements in overall patient safety.

The context in an ICU setting encompasses factors such as the organizational culture, available resources, leadership support, and the complexity of patient conditions (Rycroft-Malone et al., 2004). For instance, the high-stress environment in ICU may influence how nursing care practices are implemented. Factors such as nurse-to-patient ratios, staff training, and the availability of necessary equipment may significantly impact the feasibility and success of implementing evidence-based practices.

Facilitation in the ICU context involves strategies and processes to support nurses in implementing evidence-based practices. This could include educational programs, mentoring, and the development of clear protocols and guidelines. Facilitators play a crucial role in addressing the challenges specific to the ICU setting, such as the fast-paced nature of patient care and the need for quick decision-making.



1.4.2 Figure 1: Conceptual Framework Showing the Interplay between Adherence to Nursing Care Practices and its Key Components.

1.5 Objectives

1.5.1 General Objective

To assess nurses 'adherence to nursing care practices for ventilated patients in the adult intensive care unit at UTH, Lusaka, Zambia.

1.5.2 Specific Objectives

1. To assess the level of adherence to established nursing care practices for ventilated patients in ICU at UTH, Lusaka, Zambia.
2. To determine the level of knowledge levels among ICU nursing staff on nursing care practices for ventilated patients in ICU at UTH, Lusaka, Zambia.
3. To assess communication levels that impact adherence to nursing care practices for ventilated patients in ICU at UTH, Lusaka, Zambia.
4. To determine the staffing levels and their impact on the adherence to nursing care practices for ventilated patients in ICU at UTH, Lusaka, Zambia.

1.6 Hypothesis

Null Hypothesis (H0): There is no significant difference between nurse's adherence to nursing care practices for ventilated patients in the ICU at UTH and knowledge, staffing and communication levels

1.7 Study Variables

1.7.1 Dependent Variables

Adherence to nursing care practices

1.7.2 Independent Variable

1. Knowledge of nurses on nursing care practices for ventilated patients.
2. Communication among nurses on the provision of nursing care practices for ventilated patient
3. Staffing levels among nurses on the provision of nursing care practices.

Table 2: Variables, Indicators, Cut-off Points, and Type of Measurement

Variable	Conceptual Definition	Operational definition of variables	Level of measurement		
			Indicators	**Cut-off points**	**Type**
Dependent variable					
Adherence to nursing care practices	Adherence to nursing care practices refers to the consistent and diligent application of established activities, instructions standards, protocols, and guidelines by healthcare professionals, particularly nurses, in the delivery of patient care (Garrett.,2020).	The study will refer to the consistent and effective application of nursing care practices by nurses managing ventilated patients in the ICU, including thorough assessment, timely interventions, continuous monitoring, and patient-centered care	Adherent to nursing care practices	Score of 70% and above on observation to adherence of nursing care practices	Nominal
			Non-adherent to nursing care practices	Score of less than 70% on observation to adherence of nursing care practices	

Independent Variable					
Knowledge on nursing care practice for ICU patients	Knowledge in nursing care practices refers to the nurses' understanding and expertise in the principles, protocols, and procedures necessary for providing effective care to patients (Benner, 2001).	This will refer to the consistent application of knowledge-driven nursing care practices by nurses managing ventilated patients in the ICU, including the integration of theoretical and clinical knowledge in thorough assessment, the application and utilization evidence-based knowledge for timely interventions	Adequate	Score at least 70% and above on knowledge questions	Nominal
			Inadequate	Score less than 70% on knowledge questions	

Communication among nurses in ICU	Communication in nursing refers to the exchange of information, thoughts, feelings, and instructions between healthcare professionals, patients, and their families to facilitate effective and compassionate care (Prabhakaran., 2021).	The study will refer to the communication of nurses managing ventilated patients in the ICU, including clear and concise handovers to ensure continuity of care, effective interdisciplinary collaboration to coordinate complex treatment plans, and timely communication with patients' families to provide updates and address concerns	Good	Score at least 80% on communication questions	Nominal
			Poor	Score between 60% and 80% on communication questions	

Staffing	Staffing refers to the process of determining the appropriate number and mix of healthcare professionals, particularly nurses, needed to provide safe, effective, and high-quality patient care Garcia and (Rodriguez., 2021).	This study will refer to the adequate staffing of nurses managing ventilated patients in the ICU, including maintaining appropriate nurse-to-patient ratios and well-balanced skill mix within the ICU team to meet the complex and diverse needs of ventilated patients	High	Score of at least 50% on staffing questions	Ordinal
			Low	Score of $\leq$ 49% on staffing questions.	

1.8 Conclusion

In conclusion, this chapter has established the critical need to assess and improve adherence to nursing care practices for ventilated patients in the ICU at UTH, Lusaka, Zambia. The background has outlined the significance of effective adherence to these practices in ensuring optimal patient outcomes, particularly in preventing complications such as ventilator-associated pneumonia and other ventilator-induced conditions. The chapter has further introduced the research objectives, justification, and conceptual framework that guide the study, emphasizing the importance of nursing knowledge, communication, and staffing levels in influencing adherence to care protocols. By identifying gaps in current practices, this study aims to contribute valuable insights for enhancing ICU nursing care and patient safety at UTH.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The literature review examines key factors that influence adherence to nursing care practices, including nursing staff knowledge, communication within healthcare teams, and staffing dynamics. Adherence to nursing protocols is essential for ensuring patient safety and improving clinical outcomes, particularly in ICU settings where complex medical conditions are routinely managed. The review underscores the importance of a well-informed nursing workforce, noting that nurses with advanced knowledge and education tend to provide higher-quality care. Effective communication among healthcare team members is identified as a critical component in promoting adherence, ultimately contributing to improved patient outcomes. Furthermore, staffing levels are shown to have a significant impact on adherence, with adequate and experienced nursing personnel enhancing both patient safety and recovery. The literature was gathered using databases such as PubMed, CINAHL, Google Scholar, and Science Direct, utilizing search terms like "adherence to nursing care practices" and "ICU nursing care."

The chapter is organized into sections that explore: the socio-demographic characteristics of ICU nurses and their influence on nursing practices, an overview of adherence to nursing care practices, the relationship between nursing staff knowledge and adherence, the impact of staffing levels, and the role of communication in fostering adherence. Each section builds on existing literature to identify gaps and suggest strategies for improving nursing care, especially for ventilated patients in ICU settings.

2.1 Socio-Demographic Characteristics of Intensive Care Unit Nurses

Exploring the intricacies of nursing care practices in ICUs goes beyond clinical considerations to include the social demographic characteristics of nursing staff (Smith and Johnson, 2016). The age and experience of nurses are pivotal factors shaping their adaptability and proficiency within the dynamic ICU environment, with a diverse age range contributing to varied perspectives and technological proficiency (Brown et al., 2019). Moreover, the educational background of nursing staff significantly influences their knowledge base and skill set, with those holding advanced degrees demonstrating higher levels of critical thinking and evidence-based practice (Miller and

White, 2020). Examining the educational composition of nursing staff informs strategies for continuous professional development across diverse backgrounds. Gender composition,

Predominantly female, within the nursing profession influences communication styles, team dynamics, and patient interactions (Wilson et al., 2021). Understanding gender distribution may uncover unique dynamics impacting the overall work environment. Cultural and ethnic diversity among nursing staff is essential for providing culturally competent care, emphasizing the importance of investigating workforce composition to identify potential competency gaps and training needs (Chen et al., 2019). Social demographic characteristics intersect with job satisfaction and burnout among nursing staff, with factors like workload, work-life balance, and support systems influencing overall well-being (Adams and Thomas, 2020). Assessing social demographic characteristics alongside job satisfaction and burnout rates guides interventions to improve working conditions and, consequently, the quality of care in ICUs.

2.2 Overview of adherence to nursing care practices for ventilated patients

Adherence to nursing care practices is a fundamental aspect of healthcare delivery, ensuring the consistent implementation of established protocols, guidelines, and evidence-based procedures. In healthcare settings, adherence plays a pivotal role in maintaining standardized care, promoting patient safety, and ultimately influencing health outcomes positively. The commitment to adherence is particularly crucial in preventing complications, reducing the risk of infections, and optimizing patient recovery across various medical contexts (Jones et al., 2018). Nurses, as frontline caregivers, bear the responsibility of upholding adherence to established care practices. This includes rigorous adherence to infection control measures, medication administration protocols, and patient monitoring standards. Research underscores the significance of strict adherence in minimizing errors, enhancing patient satisfaction, and contributing to overall healthcare quality (Smith et al., 2017). Within the healthcare landscape, the emphasis on adherence becomes increasingly critical in specialized care units. The dynamic nature of patient conditions demands meticulous adherence to established guidelines, and any deviation from these standards can have implications for patient safety. As healthcare evolves, understanding the factors influencing adherence and continuously assessing its level across diverse clinical settings remain imperative for sustaining high standards of care.

The successful management of ventilated patients in ICU requires a high level of adherence to established nursing care practices. Previous research has emphasized the significance of adhering to infection control protocols, respiratory care guidelines, and patient monitoring standards (Jones and Brown, 2019). Understanding the current level of adherence is crucial for identifying potential areas of improvement and enhancing patient care outcomes. The adherence to nursing care practices for ventilated patients in the ICU is globally recognized as a critical component of delivering high-quality care, as underscored by (Adele 2022). On the other hand, other researchers such as Chakalala et al., (2023) emphasized on ventilated patients necessitate specialized care to ensure their safety and optimal outcomes. Martinez et al. (2020), went on to provides a broader landscape, research in critical care nursing, explaining that nurses illuminated the important role of effective nursing care practices. The above regional study identified the impact of staffing variations and nurse-patient ratios on patient safety and outcomes, emphasizing the need for tailored strategies to address staffing challenges.

Within the African context, the study conducted by Ntirenganya et al. (2019) aligns closely with the current research focus, revealing significant gaps in the alignment of nurse competencies with adherence to nursing care practices in the ICU. This study highlights the imperative of assessing and improving nursing care practices within the African region. Focusing on Zambia, Chanda et al. (2020) explored the relationship between nursing workload and patient outcomes, emphasizing the critical role of adequate staffing in ensuring patient satisfaction and safety within the unique healthcare challenges of the country.

This current study is poised to address the gaps identified in these global, regional, African, and Zambian studies. By systematically assessing the adherence to nursing care practices of nursing care practices for ventilated patients, it aims to contribute valuable insights for developing targeted strategies aligned with best practices, ultimately enhancing patient safety and outcomes within the local Zambian context. Furthermore, the study has the potential to serve as a model for improving care practices in similar settings across Africa and globally, emphasizing its significance within the broader healthcare landscape.

2.3 Knowledge of nurses on adherence to Nursing Care Practices

Nursing staff knowledge plays a pivotal role in delivering effective care to ventilated patients. A comprehensive assessment of the level of knowledge among ICU nursing staff is essential for identifying gaps and implementing targeted educational interventions. Prior studies have highlighted the correlation between staff knowledge and patient outcomes, emphasizing the need for continuous education and training. A study conducted by Wilson et al. (2020) underscored the

Critical role of nursing expertise in ICU. Frank et al. (2018) outlined the pivotal role of acquiring knowledge based on current within ICU settings, revealing that seasoned nurses demonstrated enhanced capabilities in handling complex patient conditions and delivering more efficient care. The two research studies research illuminated that nurses possessing a comprehensive understanding of critical care concepts and protocols were better equipped to deliver high-quality care. However, the study identified a notable gap concerning the variability in knowledge levels among nurses within the ICU, emphasizing the need for consistent expertise and proficiency within the healthcare team.

On the other hand, Mumba et al. (2019) delved into variations in nursing expertise in the context of Congo. Their research shed light on the impact of disparities in access to educational resources on nurses' expertise levels, revealing a gap that called for more equitable access to knowledge-building opportunities for healthcare professionals.

Gonzalez and Ramirez (2019) explored the influence of continuous education and training on nursing expertise and patient care. Findings affirmed the positive impact of ongoing education programs on enhancing nurses' expertise and the quality of care they provide. However, the study also pinpointed inconsistencies in the global availability and accessibility of these educational initiatives, underscoring an area where standardization is lacking.

In another study, Kagame et al. (2020) research revealing variations in nursing expertise levels across Rwanda. They linked these disparities to uneven access to educational resources for healthcare professionals, stressing the urgent need for more equitable access to knowledge-building opportunities among healthcare workers to address these expertise gaps effectively.

2.4 Nursess staffing levels in the intensive care unit and adherence to nursing care practices

The relationship between staffing levels and adherence to nursing care practices is a critical aspect of ICU management. Under-staffing may lead to increased workload and potential compromises in patient care. Investigating the impact of staffing levels at UTH will provide insights into the challenges faced by nursing staff and potential areas for intervention. Research has demonstrated the association between adequate staffing levels and improved patient safety in critical care settings. A study by Mitchell et al. (2018) highlighted the pivotal role of nursing experience in ICU context. This research demonstrated that experienced nurses were better equipped to handle

Complex patient conditions, contributing to more efficient and effective care delivery. However, the study revealed a gap related to the variability in experience levels among ICU nursing staff, emphasizing the importance of maintaining consistent experience and skill levels within the healthcare team.

Similarly, Garcia and Rodriguez (2021) investigated the impact of nursing experience on patient outcomes in ICUs across diverse healthcare settings. Their findings indicated that experienced nurses played a crucial role in achieving better patient outcomes. Despite these positive effects, the study identified a gap concerning the challenge of retaining experienced nursing staff, particularly in regions with high turnover rates.

Kabongo and Mwewa (2019) conducted research focusing on the significance of experienced nurses in the context of the Democratic Republic of Congo. Their study emphasized that experienced nurses were better equipped to navigate the unique challenges of healthcare settings in the region. The gap they identified highlighted the need for targeted strategies to retain and develop experienced nursing staff within the healthcare workforce.

Examining the Tanzanian healthcare landscape, Ng'andu et al. (2022) conducted a study emphasizing the essential role of experienced nurses in Tanzanian ICUs. Their findings indicated that experienced nurses excelled in managing patient acuity and ensuring safety. However, the study also brought attention to the gap associated with the challenge of retaining experienced nursing staff, particularly in the context of limited resources.

2.5 Communication among the Intensive care unit and Adherence to Nursing Care

Effective communication is integral to the coordination and delivery of care in the ICU setting. Examining the impact of communication on adherence to nursing care practices for ventilated patients is essential for identifying communication barriers and promoting strategies for improvement. Studies have shown that clear and open communication among healthcare professionals positively influences patient care outcomes. In a study conducted by Rodriguez et al. (2018) in Spain it was outlined that, effective communication within the ICU was a central focus. Their research underscored that cohesive communication among healthcare teams was closely linked to better patient outcomes.

However, the study identified a gap in the consistency of communication practices across healthcare institutions, emphasizing the need for standardized communication protocols.

Chen and Wong (2019) in China explored communication practices in ICUs across different countries. In another Fernández et al. (2019) study findings indicated that cultural and language differences could significantly affect communication among healthcare professionals, potentially leading to communication breakdowns. The gap they noted was the absence of universally applicable guidelines for cross-cultural communication within the global ICU context, highlighting the need for a standardized approach. Moradi et al (2018) argued that nursing care services provided to ventilated patients is heavily dependent on good communication amongst ICU nurses and other health care professionals. The gap identified was altering communication practices resulted in diminished patient outcomes and eventually lead to life threatening complication.

Ogundipe et al. (2020) in Malawi conducted research that examined communication challenges in healthcare systems. This study highlighted the major concerns to language diversity and the complex nature of healthcare provider-patient communication in diverse cultural settings. The gap they identified was the pressing need for strategies to address language and communication barriers to ensure effective patient care in healthcare settings.

In Zambia, Musonda and Sitali (2018) conducted a study emphasizing the importance of effective communication in ICUs. Their findings underlined the role of communication in mitigating errors and enhancing patient safety. The gap noted was the challenge of ensuring consistent

communication practices, particularly in healthcare settings with limited resources and linguistic diversity.

2.6 Conclusion

From the reviewed literature, it is evident that a plethora of factors influence adherence to nursing care practices and research has proved that the nurse's level of knowledge has a great impact on adherence to nursing care practices. Furthermore, staffing, communication and the social cultural factors of the patients are imperative and significantly influence adherence to nursing care practices. The reviewed literature clearly demonstrates that a multitude of factors influence adherence to nursing care practices, with research consistently indicating that nurses' knowledge levels significantly impact their compliance with established care protocols. Additionally, factors such as staffing levels, effective communication, and patients' sociocultural backgrounds play critical roles in shaping adherence to nursing care practices.

Notably, good communication, the availability of essential supplies, and adequate staffing not only facilitate the consistent implementation of care practices but also promote effective collaboration among healthcare providers. The literature reviewed spans studies conducted across European, Asian, and African contexts, including several West African countries such as Nigeria. These studies particularly focus on adherence to nursing care practices for ventilated patients, with the majority reporting shorter patient recovery times and enhanced healthcare outcomes. Furthermore, this research endeavors to provide valuable comprehension for healthcare professionals, administrators, and policymakers, facilitating informed decisions to foster evidence-based practices.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter outlines the methodology employed for the study, including the research design, study setting, population, sampling technique, and data collection methods. The methods used were designed to ensure the reliability and validity of the results.

3.1 Study Design

A quantitative approach using a descriptive cross-sectional study design was chosen. This study design had been selected due to its ability to provide a snapshot of the then-current state of nursing care practices in the ICU setting. According to Polit and Beck (2017), descriptive cross-sectional studies are suitable for identifying patterns, frequencies, and relationships among variables in a defined population without manipulating the study environment. This design is especially appropriate for healthcare research where the aim is to examine the status of a phenomenon such as adherence to clinical practices without inferring causality. In the fast-paced and dynamic environment of the ICU, where patient conditions and healthcare practices could change rapidly, a cross-sectional approach provided an efficient way to gather data without the logistical challenges associated with longitudinal studies. The quantitative approach within this design allowed for numerical analysis, providing statistical insights into adherence levels. Overall, the choice had been pragmatic, aligning with the need for a practical and methodologically sound exploration of nursing care practices in the ICU environment at UTH.

3.2 Study Setting

The study was conducted at the main ICU of UTH in Lusaka, Zambia. UTH held significant importance within the healthcare landscape of Zambia as the largest tertiary healthcare facility in the country, playing a pivotal role in providing specialized medical services, including critical care, to a diverse and substantial population. The hospital boasted a bed capacity of 1655 and comprised four core departments: medicine, surgery, pediatrics, and gynecology, along with supportive departments such as pharmacy, microbiology, radiology, and pathology. Within the department of medicine, critical care was housed under specialized units. The hospital's ICU

consisted of three units: neonatal, pediatric, and adult ICU. A multidisciplinary team was involved in service care delivery in these units, including nurses, doctors, physiotherapists, pharmacists, lab technologists, radiologists, and nutritionists. At the time of the study, the bed capacity for the main adult critical care units was 25. The ICU admitted approximately 690 patients needing intensive care, catering to a wide array of conditions such as head injuries, acute renal failure, diabetic ketoacidosis, respiratory failure (including acute respiratory distress syndrome (ARDS) or chronic obstructive pulmonary disease (COPD)), and cardiovascular conditions (such as heart attack, congestive heart failure, or severe arrhythmias), some of which required ventilator management.

3.3 Study Population

The study population comprised of all nurses working in the adult ICU at the UTH in Lusaka, Zambia, during the study period.

3.3.1 Target Population

The target population comprised of all nurses working in the adult ICU at the UTH in Lusaka, Zambia, during the study period

3.3.2 Accessible population

The accessible population, however, consisted of registered nurses working specifically in the adult ICU at UTH in Lusaka during the period of data collection. These were the individuals who met the inclusion criteria and were physically available and willing to participate in the study.

3.4 Sample Size Determination

In this research, a comprehensive approach was taken by including all accessible subjects at the research site, effectively constituting a census of eligible participants. This method was considered ideal because it minimizes bias by encompassing the entire population of interest, ensuring a comprehensive representation of the study group. The census comprised 63 nurses, who represented the entire eligible population for the study. However, out of the 63 eligible participants, only 58 were captured in the study, comprising 92.1% of the total population.

3.5 Sampling Method

The study employed a census method, where all nurses who met the inclusion criteria were invited to participate. Since the population of ICU nurses at the UTH was relatively small, a census approach ensured that every nurse directly involved in the care of ventilated patients had the

opportunity to participate. This method was chosen to avoid selection bias and ensure a comprehensive understanding of the factors influencing adherence to nursing care practices among the entire relevant population of ICU nurses.

3.5.1 Inclusion Criteria

i. All the working in the ICU regardless of their level of qualification

ii. Nurses directly involved in the care of patients on a ventilator

iii. All nurses who have continuously worked for a period of 6 months or more in ICU

iv. Nurses who consented to participate in the study.

3.5.2 Exclusion Criteria

All ICU nurses who will not be available at the time of data collection due to various reasons such as being sick or local leave will be excluded from the study.

3.6 Data Collection Tool

Data were collected using a self-administered structured questionnaire adapted from the Ventilator Bundle Questionnaire (VBQ) developed by Jansson et al. (2014). The VBQ consists of 38 multiple-choice questions designed to assess critical care nurses' knowledge, adherence levels, and barriers to evidence-based guidelines (EBGs) for preventing ventilator-associated conditions (VACs). The tool has been validated and widely used in studies across healthcare systems similar to Zambia's, demonstrating its reliability and applicability.

The VBQ has been employed in studies such as Assessment of Knowledge and Compliance with Evidence-Based Guidelines for VAP Prevention Among ICU Nurses in Tanzania (Bankanie et al., 2021) and Knowledge of Intensive Care Nurses Towards Prevention of Ventilator-Associated Pneumonia in North West Ethiopia Referral Hospitals, 2021: A Multi-Center, Cross-Sectional Study (Getahun et al., 2021). The questionnaire includes three parts: socio-demographic characteristics, adherence to EBGs, and knowledge regarding EBG practices. Its reliability has been confirmed with a Cronbach's alpha ranging from 0.99 to 1 and an intraclass correlation coefficient ranging from 0.93 to 1. Published under a Creative Commons license, the VBQ can be

used without formal authorization as long as the original authors are cited. For this study, all relevant sections of the tool were adopted, and proper acknowledgment was given to the developers.

3.7 Data Collection Technique

Data collection commenced following ethical clearance from the University of Zambia Biomedical Research Ethics Committee (UNZABREC) and approval from the University Teaching Hospital (UTH) Adult Hospital and the University of Zambia (UNZA) School of Nursing Sciences. Critical care nurses with at least six months of ICU experience were recruited based on specific eligibility criteria. Eligible participants were informed about the study's purpose and objectives, and written informed consent was obtained.

The data collection process involved a step-by-step approach. The researcher introduced herself to each participant, explained the study, and assured participants of privacy, confidentiality, and anonymity through the use of serial numbers on the questionnaires. Self-administered structured questionnaires were distributed in a private room to ensure participant comfort and confidentiality. Participants completed the questionnaires on the spot if ready, while others were given additional time, with arrangements made for collection within a week. The researcher reviewed completed questionnaires for consistency and completeness and expressed gratitude to the participants for their cooperation. The questionnaire comprised sections on socio-demographic characteristics, adherence to evidence-based guidelines, and knowledge of evidence-based guideline practices. This structured approach ensured that the data collection was systematic, comprehensive, and efficient.

3.8 Validity and Reliability

3.8.1 Validity

In this study, both internal and external validity were rigorously examined to ensure the robustness of the research design. Internal validity, as defined by Polit and Hungler (2002), refers to the extent to which the study accurately assessed the relationships between variables within its framework. To enhance internal validity, careful attention was given to formulating clear, concise, and brief questions in the survey instrument. Moreover, all variables associated with competence in

demographic factors were comprehensively included in the questionnaire, minimizing the risk of confounding factors and bolstering the internal validity of the study.

External validity, on the other hand, pertained to the generalizability of the study findings beyond the specific sample and context. To address external validity concerns, efforts were made to design the study in a manner that reflected the characteristics of the broader population.

The sampling strategy was carefully considered to ensure a representative and diverse sample, and the research instruments were crafted with considerations for applicability across various healthcare settings. By attending to both internal and external validity, this study aimed to provide results that were not only accurate within the defined scope but also applicable and relevant to a broader context, thus strengthening the overall validity of the research.

3.8.2 Reliability

For this study, reliability was a consideration, indicating the consistency of measures obtained through the data collection instruments and serving as an indicator of the potential random error in the measurement method (Burns and Grove, 2020). The instruments were expected to yield accurate information, ensuring that if the same instruments were used at a later time, they would elicit consistent responses. To assess reliability, the instruments were standardized, with the researcher enlisting experts/supervisors to review them before administration. A pilot study with similar characteristics was conducted before the main study to test the tools, ensuring the stability of the data collection method. The adopted pretested questionnaire had interclass correlation coefficient ranging from 0.93 to 1 and a cronbach alpha ranged from 0.99 to 1, which are considered appropriate for objectively measuring participants' level of knowledge and adherence.

The questionnaire had a balanced distribution of difficulty levels and questions that effectively discriminated between participants, making it more likely to yield reliable data. Researchers could use this information to assess the internal consistency and validity of the questionnaire, which were key aspects of its reliability.

3.9 Data Management and Storage

Data management involved systematic processes of coding, cleaning, and validation. Data entry was conducted using a secure system with double-entry checks to identify and correct discrepancies. Standardized coding schemes were applied to ensure consistency, with variables

like adherence and knowledge scored on Likert scales (e.g., strongly agree to strongly disagree coded from 5 to 1) and categorical variables (e.g., adherence to practice of evidenced based guidelines) coded as 0 and 1 to represent non-adherence and adherence. Validation procedures, including checks for completeness and accuracy, ensured the dataset was reliable and ready for analysis.

To uphold confidentiality, all data were stored in password-protected databases to prevent unauthorized access. Additionally, encrypted cloud-based platforms were used for secure and reliable storage, allowing for easy retrieval for future reference or follow-up studies. These platforms ensured data integrity while adhering to ethical standards and regulatory guidelines. These measures guaranteed that the collected data remained secure, accurate, and accessible throughout the research process, enabling thorough and credible analysis.

3.10 Data Analysis

Data were first checked for completeness, entered into Microsoft Excel for cleaning, and exported to SPSS version 26 for statistical analysis. Numerical values were assigned to categorical variables to facilitate interpretation, and appropriate statistical methods were applied based on the research objectives and data type.

Descriptive statistics were used to summarize demographic characteristics such as age, gender, years of experience, and educational background. Means, standard deviations, frequencies, and percentages were employed to analyze these variables, as well as responses assessing nurses' knowledge, communication, and staffing. This provided an overview of trends and areas requiring improvement.

To evaluate associations between adherence to nursing care practices (dependent variable) and factors such as communication, knowledge, and staffing (independent variables), Fisher's exact test was applied. Bivariate and multivariate binary logistic regression analyses were conducted to calculate unadjusted and adjusted odds ratios. A significance level of 0.05 and a 95% confidence interval were used, with p-values below 0.05 considered statistically significant.

3.11 Pilot Study

A pilot study was conducted at Levy Mwanawasa Teaching Hospital, chosen for its similarities to the University Teaching Hospital (UTH) in terms of patient demographics, healthcare infrastructure, and staff composition. Both facilities serve diverse patient populations and have specialized ICUs staffed by critical care nurses with comparable qualifications, experience levels, and workloads. This made Levy Mwanawasa Teaching Hospital an ideal setting for testing the data collection tool and procedures for the main study.

Fifteen participants who met the inclusion criteria from a population size of 25 were recruited for the two-week pilot study. Feedback highlighted issues with some questionnaire items, leading to rewording for clarity. For example, "How often do you follow the recommended procedures?" was revised to specify ICU practices like aseptic techniques or catheter care. Similarly, "Do you feel adequately supported in your role?" was clarified to "Do you feel that you have sufficient resources and staff support to carry out your nursing responsibilities effectively?" Ambiguous terms and broad questions were refined to ensure specificity and measurability.

Additional questions were added based on participant suggestions to capture critical aspects of nursing care. These included items like "Do you feel that the nurse-to-patient ratio in your ICU allows for optimal care delivery?" and "How frequently do you use standardized communication tools like SBAR during patient handovers?" These improvements enhanced the tool's reliability, ensuring it effectively captured variables central to the main study.

3.12 Ethical Considerations

Ethical approval for this study was sought and obtained from the University of Zambia Biomedical Research Ethics Committee (UNZABREC REF No: 4776-2023) and the National Health Research Authority (NHRA) (Reference No: NHRA938/15/02/2024). Permission to conduct the study was also granted by the Senior Medical Superintendents of UTH and Levy Mwanawasa Hospital. Written informed consent was obtained from participants before the study commenced. The researcher introduced herself and explained the purpose and nature of the study to the participants. Participants were assured of confidentiality, with no names or any form of identification appearing on the information sheet and self-administered questionnaire. Each participant was assigned a confidential study number, which was used for collecting and reporting information. This approach ensured that all participant information remained anonymous and secure throughout the study.

3.13 Conclusion

The methodology chapter outlines the comprehensive approach used to investigate adherence to nursing care practices in the ICU at UTH. A cross-sectional study design provided a snapshot of the current practices, while a census sampling method ensured a robust representation of the study population. Data collection was conducted using a validated and reliable questionnaire, ensuring the accuracy and relevance of findings. Ethical considerations, pilot testing, and rigorous data management protocols further strengthened the study's validity and reliability.

The chosen methods align well with the study's objectives, offering a structured framework for exploring factors influencing adherence to evidence-based guidelines in ICU nursing care. By adopting this methodology, the study aims to contribute meaningful insights to enhance critical care nursing practices, improve patient outcomes, and inform future research in similar settings.

CHAPTER FOUR

RESULTS

4.0 Introduction

This chapter presents the results from the data collected from 58 nurses working in the Adult ICU at UTH, which comprised a response rate of approximately 92.1% (58 out of 63). The researcher proposed to conduct a census study, capturing data from 58 nurses at UTH ICU. Data was analyzed using various statistical methods, including descriptive statistics and binary logistic regression. The results aim to provide a comprehensive view of the trends observed in the data, allowing for an understanding of how they relate to the study's hypothesis. No interpretations or discussions are made in this section; rather, the focus remains on objectively presenting the outcomes of the analysis.

4.1 Presentation of Results

The results of this study are organized to reflect the primary research objectives, starting with the socio-demographic characteristics of the respondents, including their age, gender, marital status, level of education, and years of experience in ICU nursing. Results on adherence to nursing care practices for ventilated patients are then presented, covering key practices such as assessment of airway patency, suctioning techniques, use of septic technique during suctioning to prevent infection and the monitoring and documentation of patient parameters. The level of knowledge among nurses regarding ICU care for ventilated patients is analyzed, highlighting its impact on adherence to nursing care practices.

Communication among nurses is explored, focusing on handover quality, the use of standardized communication tools, and participation in interdisciplinary rounds. Staffing levels, including nurse-to-patient ratios and their adequacy, are also examined to assess their influence on nursing care quality. Finally, the Fisher's exact test results determined significance by analyzing the association between variables while, the binary logistic regression model is presented, revealing significant predictors of adherence, such as education level, knowledge scores, communication effectiveness, and staffing ratios, along with their respective odds ratios.

The results of the study were presented in summary form using, percentages frequency tables, cross-tabulations, and bar charts. The incorporation of the bar charts was intended to enhance the visual clarity and comprehensibility of the data, facilitating an easier way of understanding the results. The frequency tables summarized the results of the study for easy reference and comprehension. Cross-tabulations of the variables helped to clearly show the relationship between variables and examine the interrelationships between key variables, providing deeper insight into their associations.

4.1.1 Socio-demographic characteristics of the respondents

The socio-demographic characteristics of the participants, including age, gender, marital status, education level, and work experience, are shown in Table 4.1 below. The social demographic characteristics of the respondents showed a statistical significance in predicting nurses' adherence to nursing care practices for ventilated patients.

Table 4.1: Socio-demographic characteristics of respondents (N = 58)

Variables	Frequency	Percentage
Age Group		
25 - 29 years	7	12.1
30 - 34 years	10	17.2
35 - 39 years	10	17.2
40 - 44 years	15	25.9
45 years and above	16	27.6
Gender		
Male	16	27.6
Female	42	72.4
Marital status		
Unmarried	20	34.5
Married	38	65.5
Level of qualification		
Diploma	52	89.7
Degree	6	10.3
Experience		
Less than 2 years	38	65.5
2 years or more	20	34.5
Total	**58**	**100**

Table 4.1 above shows that the majority (72.4%, 42) of the respondents were female, and most (65.5%, 38) were married. The age groups with the highest number and percentage of respondents were 40–44 years, with 25.9% (15), and 45 years and above, with 27.6% (16). The majority (89.7%, 52) of the respondents had attained a diploma qualification in either nursing or midwifery, and most (65.5%, 38) had less than two years of work experience in the ICU.

4.1.2 Adherence to nursing care Practices for ventilated patients

Adherence to nursing care practices for ventilated patients was assessed using a variety of questions that included a rating scale with responses categorized as always, frequently, occasionally, and rarely. The questions and responses are outlined in Table 4.2 below. The scores obtained from these questions were subsequently aggregated and categorized into two groups: good and poor adherence. This categorization is depicted in the chart presented in Figure 4.1. A score of 70% and above on the observation of adherence to nursing care practices reflects good adherence, while scores less than 70% indicate poor adherence.

Table 4.2: Responses to questions on adherence to nursing care practices for ventilated patients.

Questions	Frequency	Percentage
Clinical assessment of airway patency to ensure it is clear		
Always	40	69
Frequently	10	17
Occasionally	8	14
Suctioning only when clinical signs indicate the need (e.g., audible secretions, dyspnea)		
Always	58	100%
Applying Aseptic technique during suctioning to prevent infection		
Always	20	34
Frequently	38	66
Using a closed system catheter for suctioning mechanically ventilated patients		
Always	4	07
Occasionally	36	62
Rarely	18	31
Calculating the appropriate size of the suction catheter based on the inner diameter of the endotracheal tube		
Always	13	22

Frequently	36	62
Occasionally	9	16
Total	58	100
Maintaining suctioning pressure within the recommended range of 100mmHg-120mmHg		
Always	19	33
Frequently	35	60
Occasionally	4	07
Ensuring suctioning duration does not exceed 15 seconds to minimize oxygen desaturation		
Always	18	31
Frequently	40	69
Pre-oxygenating patients before suctioning to prevent hypoxia		
Always	58	100
Monitoring patient's oxygen saturation and heart rate before, during, and after suctioning		
Always	58	100
Assessing the need for suctioning based on patient-specific criteria rather than routine		
Always	58	100
Total	**58**	**100**

4.1.3 Adherence Level to Nursing Care Practices for Ventilated Patients *(N=58)*

Category	Frequency	Percentage
Adherence	52	90
Non adherence	06	10
Total	58	100

Table 4.3 above from data indicated that out of 58 respondents, majority 90% (52) demonstrated good adherence to nursing care practices for ventilated patients, while fewer 6 (10%) showed poor adherence.

4.1.4 Knowledge of ICU nurses on nursing care practices for ventilated patients

Knowledge was assessed through a set of ten questions covering key nursing care practices for ventilated patients. Scores were aggregated, with participants scoring 70% or higher classified as having adequate knowledge, and those scoring below 70% classified as having inadequate knowledge. Table 4.4 below presents the results of the questions assessing knowledge, showing the frequencies and percentages for each question. Furthermore, the histogram in Figure 4.1 summarizes the findings, following the categorization procedure mentioned above.

Table 4.4: Responses to questions on knowledge on nursing care practices for ventilated patients (N = 58)

	Knowledge Level				
Questions	**Less**	**Basic**	**Good**	**Advanced**	**Expert**
1. Understanding of airway management principles for ventilated patients	0 (0.0%)	6 (10.3%)	29 (50.0%)	14 (24.1%)	9 (15.5%)
2. Knowledge of suctioning techniques and their indications	0 (0.0%)	1(1.7%)	10 (17.2%)	18 (31.0%)	29 (50.0%)
3. Familiarity with aseptic techniques and infection control measures	0 (0.0%)	0(0.0%)	29 (50.0%)	19 (32.8%)	10 (17.2%)
4. Understanding of the use and management of closed system catheters	0 (0.0%)	20 (34.5%)	37 (63.8%)	1 (1.7%)	0 (0.0%)
5. Ability to calculate the correct size of suction catheters	0 (0.0%)	0 (0.0%)	19 (32.8%)	32 (55.2%)	7 (12.1%)
6. Knowledge of the recommended suctioning pressure range and its importance	0 (0.0%)	0 (0.0%)	18 (31.0%)	32 (55.2%)	8 (13.8%)
7. Understanding of the guidelines for suctioning duration and frequency	0 (0.0%)	0 (0.0%)	29 (50.0%)	16 (27.6%)	13 (22.4%)
8. Knowledge of pre-oxygenation techniques and their rationale	0 (0.0%)	0 (0.0%)	0 (0.0%)	58 (100.0%)	0 (0.0%)
9. Familiarity with monitoring and assessment techniques for ventilated patients	0 (0.0%)	0 (0.0%)	0 (0.0%)	14 (24.1%)	44 (75.9%)
10. Understanding of current best practices and guidelines for ventilated patient care	0 (0.0%)	15 (25.9%)	22 (37.9%)	9 (15.5%)	12 (20.7%)

Table 4.4 above reveals that respondents possess strong competencies in critical care skills. Half, 50.0% (29), demonstrated expert knowledge in suctioning techniques, with an additional 31.0% (18) showing advanced knowledge, underscoring solid preparedness in this area. Similarly, 63.8% (37) had good knowledge of closed system catheter management, though 34.5% (20) reported only basic knowledge, indicating room for improvement. Notably, all respondents, 100.0% (58), demonstrated advanced knowledge in pre-oxygenation techniques, highlighting universal proficiency in this essential skill.

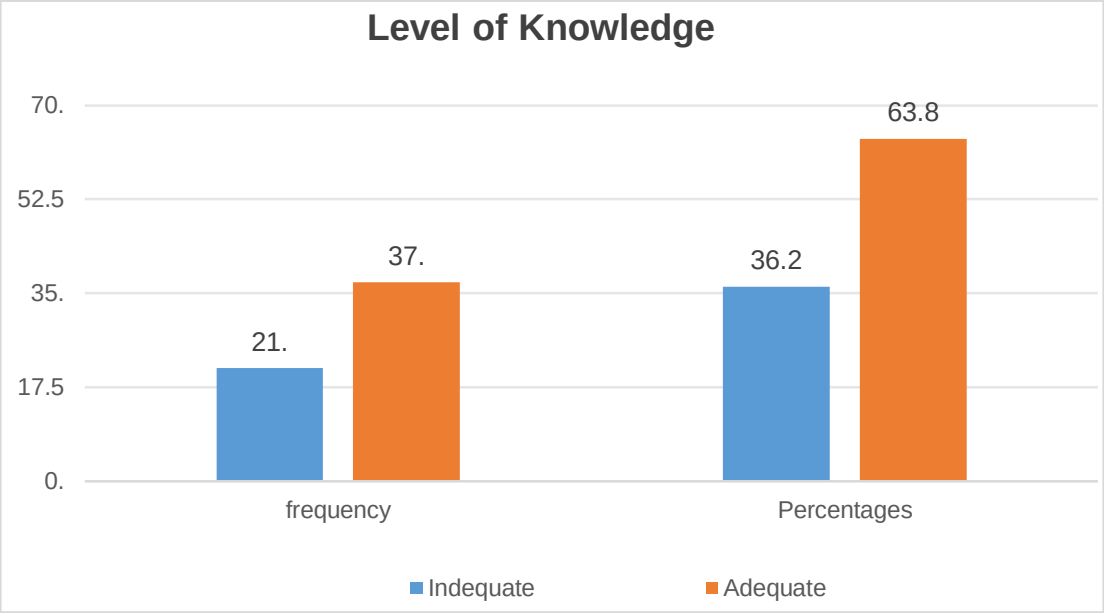


Figure 4.1: Knowledge on Nursing Care Practices for ventilated patients (N=58)

Figure 4.1 above shows the knowledge level on nursing care practices among respondents. A majority, 63.8% (37), demonstrated adequate knowledge, indicating a strong foundation in nursing care practices. Conversely, 36.2% (21) of respondents exhibited inadequate knowledge, suggesting there is room for improvement within this group.

4.1.5 Communication practices among nurses in ICU

Communication was assessed using ten questions, with participants rating their responses on a Likert scale ranging from "Strongly Disagree" to "Strongly Agree." The responses were then categorized into "Good" and "Bad" communication, allowing for a clearer interpretation of the findings. The detailed results are depicted in the table 4.5 below, and a summary of the assessment is illustrated in the bar graph below.

Table 4.5: Communication practices in ICU (N=58)

Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. The guidelines for nursing care practices in my unit are communicated clearly.	0 (0.0%)	0 (0.0%)	33 (56.9%)	25 (43.1%)	0 (0.0%)
2. Our team meetings effectively address issues related to nursing care practices.	0 (0.0%)	15 (25.9%)	28 (48.3%)	15 (25.9%)	0 (0.0%)
3. The communication training I received has adequately prepared me for my role.	0 (0.0%)	0 (0.0%)	0 (0.0%)	39 (67.2%)	19 (32.8%)
4. The communication channels in place facilitate efficient discussion about patient care.	0 (0.0%)	0 (0.0%)	0 (0.0%)	57 (100.0%)	0 (0.0%)
5. Feedback on nursing care practices is regularly provided and constructively used.	0 (0.0%)	34 (58.6%)	20 (34.5%)	4 (6.9%)	0 (0.0%)
6. There is open and honest communication among all members of the healthcare team.	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	58 (100%)
7. I feel comfortable voicing concerns and suggestions related to patient care.	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	58 (100%)
8. Collaboration with other healthcare professionals is encouraged and facilitated.	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	58 (100%)
9. Interdisciplinary meetings contribute to the improvement of patient care.	0 (0.0%)	0 (0.0%)	0 (0.0%)	24 (41.4%)	34 (58.6%)
10. Information about changes in nursing care practices is promptly shared with all relevant staff.	0 (0.0%)	0 (0.0%)	0 (0.0%)	30 (51.7%)	28 (48.3%)

The communication assessment results in Table 4.5 highlighted several key findings. Most respondents (56.9%, 33) were neutral regarding the clarity of nursing care guidelines, while 43.1% (25) agreed that these guidelines were communicated effectively. In team meetings, a notable 48.3% (28) remained neutral on effectively addressing nursing care issues, with equal proportions (25.9%, 15) disagreeing and agreeing. The majority (67.2%, 39) reported that their communication training had adequately prepared them for their roles, and 32.8% (19) strongly agreed.

All respondents (100%, 58) confirmed that the communication channels facilitated efficient patient care discussions. In contrast, the majority (58.6%, 34) disagreed that feedback on nursing care practices was regular and constructive, while 34.5% (20) were neutral, and only 6.9% (4) agreed. Open communication, comfort in voicing concerns, and collaboration with other healthcare professionals each received unanimous strong agreement (100%, 58), indicating strong support in these areas. Additionally, 41.4% (24) agreed, and 58.6% (34) strongly agreed, that interdisciplinary meetings contributed to patient care improvement. Information sharing on nursing care changes was also viewed positively, with 51.7% (30) agreeing and 48.3% (28) strongly agreeing.

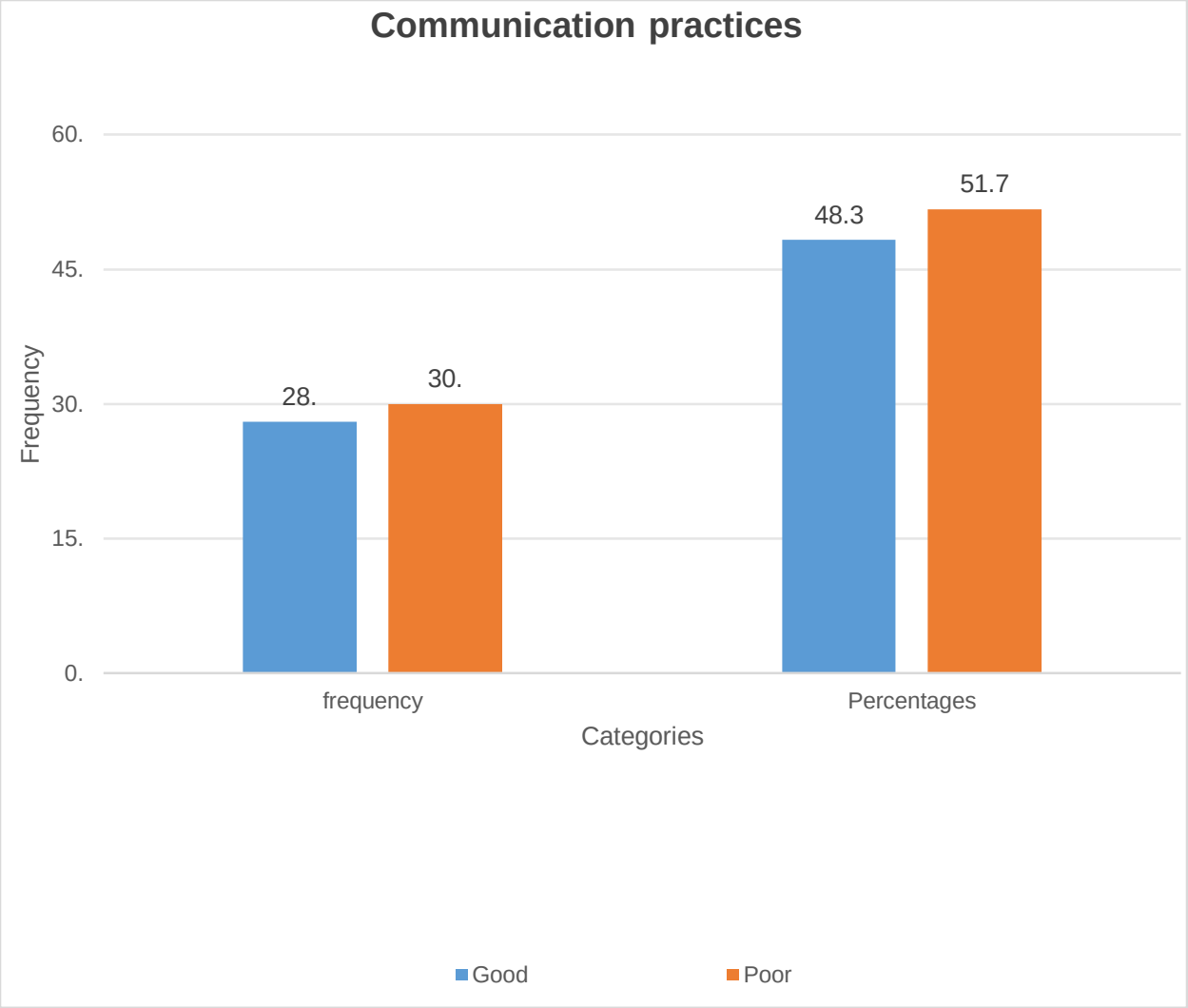


Figure 4.2: Level of Communication Practices among Nurses in ICU (N=58)

Figure 4.2 shows that 48.2% (28) of respondents rated communication among nursing staff in the ICU as good, while slightly over half, at 51.7% (30), reported it as poor.

4.1.4.: Staffing levels of nurses in the intensive care unit.

This section focuses on the key dimensions of staffing within the critical care environment, The assessment tool used a Likert scale to measure respondents' views on various aspects of staffing. Responses ranged from "strongly disagree" to "strongly agree" on a five-point scale. For the purpose of analysis, results were dichotomized into two categories: "Agree" (combining 'agree' and 'strongly agree') and "Disagree" (combining 'neutral,' 'disagree,' and 'strongly disagree'). The summary of the results based on these two categories is presented in figure 4.3.

Table 4.6: Staffing in the Intensive Care Unit (N=58)

Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. The nurse-to-patient ratio in my unit supports thorough and attentive care.	0 (0.0%)	37 (63.8%)	21 (36.2%)	0 (0.0%)	0 (0.0%)
2. My workload is manageable and does not compromise the quality of care provided.	0 (0.0%)	27 (46.6%)	23 (39.7%)	8 (13.8%)	0 (0.0%)
3. Our team has a balanced mix of skills and expertise, conducive to high-quality care for ventilated patients.	0 (0.0%)	0 (0.0%)	44 (75.9%)	10 (17.2%)	4 (6.9%)
4. The shift lengths in my unit are appropriate and do not negatively impact patient care or staff well-being.	0 (0.0%)	0 (0.0%)	37 (63.8%)	21 (36.2%)	0 (0.0%)
5. There are sufficient resources and equipment to provide high-quality care to ventilated patients.	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	58 (100.0%)

6. The staffing levels in my unit are adequate to meet the demands of patient care, even in peak times.	6 (10.3%)	41 (70.7%)	11 (19.0%)	0 (0.0%)	0 (0.0 %)
7. Continuous professional development opportunities are available and encouraged for all staff.	0 (0.0%)	0 (0.0%)	0 (0.0%)	42 (72.4%)	16 (27. 6%)
8. There is a supportive culture in my unit that prioritizes patient safety and quality care.	0 (0.0%)	0 (0.0%)	12 (20.7%)	46 (79.3%)	0 (0.0 %)
9. Staff well-being is considered a priority, with measures in place to prevent burnout and stress.	0(0.0%)	13(22.4%)	40(69.0%)	5 (8.6%)	0 (0.0 %)
10. Feedback from nursing staff is taken into account when making decisions about the work environment and staffing.	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	58 (10 0.0 %)

Table 4.6 reveals that the analysis of the selected questions provides critical insights into staffing among nursing staff in the ICU. A significant majority (63.8%, n=37) of respondents disagreed that the nurse-to-patient ratio supports thorough and attentive care, indicating concerns about insufficient staffing levels. Additionally, nearly half (46.6%, n=27) felt that their workload was unmanageable, suggesting potential compromises to the quality of care provided. In contrast, all respondents (100%, n=58) agreed that there are sufficient resources and equipment available for high-quality care of ventilated patients, highlighting that while the ICU is well-equipped, addressing staffing and workload issues is essential for improving overall care quality.

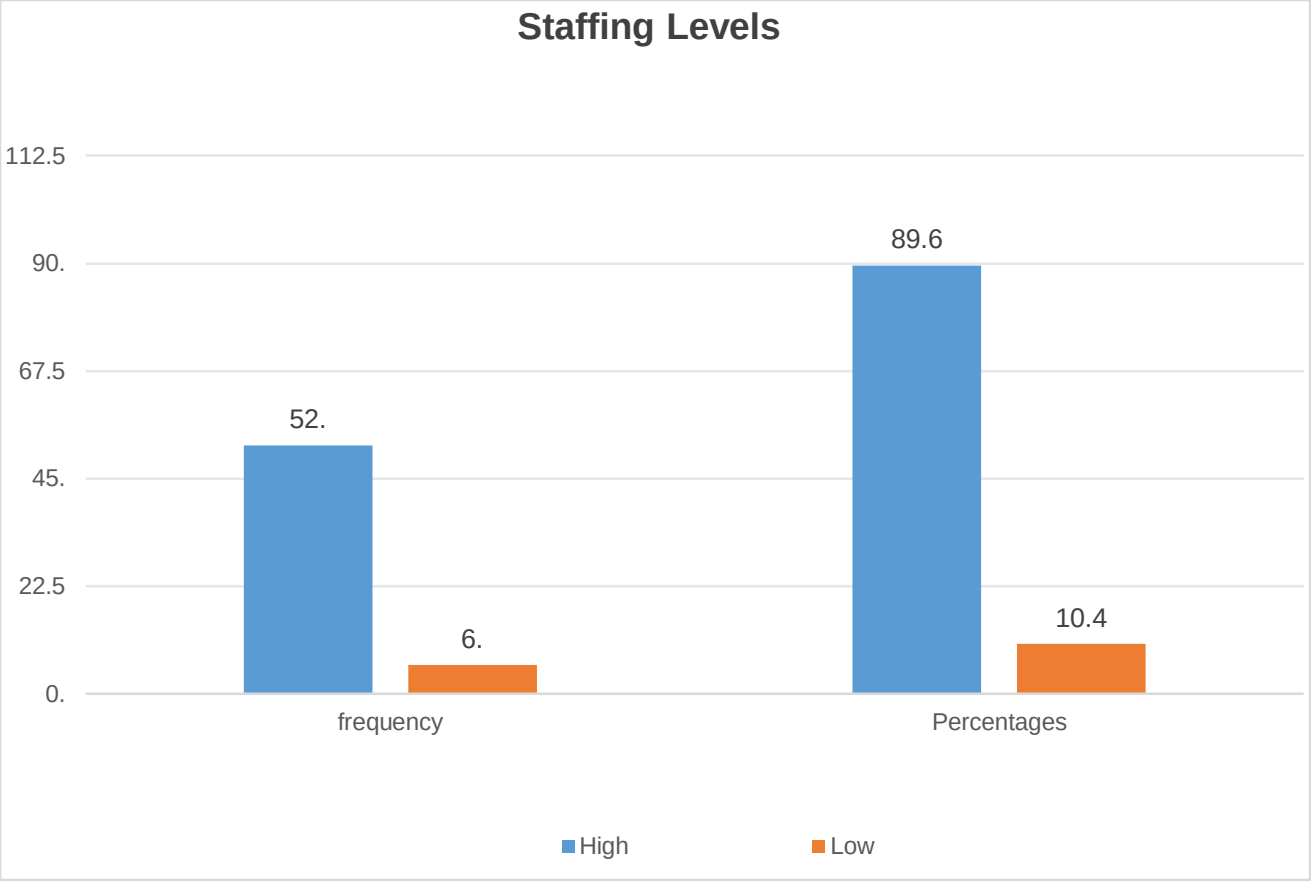


Figure 4.3: Staffing Levels in ICU (N=58)

Figure 4.3 shows that the majority of respondents (89.6%, n=52) rated the staffing levels as high, while 10.4% (n=6) rated the staffing levels as low.

4.1.7. Statistical Analysis of Nurses' Adherence to Nursing Care Practices for Ventilated Patients: Fisher's exact test results

Table 4.7 presents the results of the Fisher's tests, examining the associations between adherence to nursing care practices for ventilated patients and various independent variables, including gender, age group, marital status, work experience, knowledge, and communication and staffing levels. These tests were employed to assess the statistical significance of relationships between adherence and above-mentioned categorical variables.

Table 4.7: Fisher's Exact test results (N=58)

Variables	Adherence				
	Non-Adherence		Adherence		
	Frequency	Percentage	Frequency	Percentage	P-Value
Marital status					
Unmarried	1	5	19	95	
Married	5	13.2	33	86.8	
Total	6		52		0.781 FE*
Qualification					
Diploma	6	11.5	46	88.5	
Degree	0	0.0	6	100.0	
Total	6		52		0.038 FE*
Years of Experience					
Less than 2 years	5	13.2	33	86.8	
2 years or more	1	5.0	19	95.0	0.158 FE*
Total	6		52		
Knowledge					0.011 FE*

Inadequate	5	23.8	16	76.2	
Adequate	1	2.7	36	97.3	
Total	6		52		
Communication					
Poor	5	16.7	25	83.3	
Good	1	3.6	27	96.4	
Total	6		52		0.102 FE*
Staffing					
Low	3	50.0	3	50.0	
High	3	5.8	49	94.2	0.011 FE*
Total	6		52		

** = Significant finding, FE= Fishers 'exact*

Table 4.6 above shows that qualification ($p = 0.038$), knowledge ($p = 0.011$) and staffing levels ($p = 0.011$) have statistically significant relationships with adherence ($p < 0.05$), indicating that these factors may influence adherence outcomes.

4.1.8 Predictors of Adherence to Nursing Care Practices for Ventilated Patients

Data analysis was conducted to assess predictors of adherence to nursing care practices for ventilated patients based on significant results from the Fisher's exact test results. The results are presented in the table 4.8 below.

Table 4.8. Binary Logistic Regression Results: Predictors of Adherence to Nursing Care Practices for Ventilated Patients (N=58)

Adherence	UOR	P>z	[95% CI]		AOR	[95% CI]		P>z
Age group								
25 to 29 years	1				1			
30 to 34 years	0.475	0.714	0.008	1.454	4.349	0.723	8.762	
35 to 39 years	5.302	0.449	0.070	397.906	3.052	2.027	5.496	
40 to 44 years	1.497	0.848	0.024	12.416	1.001			
>45 years	4.067	0.494	0.072	226.873	2.853	0.549	65.749	0.134
Staffing								
Low	1							
High	10.54	0.122	0.534	208.2	7.532	3.281	4.538	0.013*
Knowledge								
Inadequate	1							
Adequate	8.523	0.146	0.473	153.4	4.855	12.434	23.456	0.025*
Qualification								
Diploma	1							
Degree	3.015	2.652	3.190	10.875	4.245	2.6556	6.903	0.033*

AOR =Adjusted odd ratio, UOR= Unadjusted odd ratio, CL= Confidence Interval, P>z= P-values, * Statistical significance.

Table 4.8 illustrates the strength and direction of the relationship between demographic factors (age group), staffing levels, knowledge adequacy, and qualifications with adherence to nursing care practice. The analysis presents unadjusted odds ratios (UOR) and adjusted odds ratios (AOR)

with their corresponding 95% confidence intervals (CIs) and P-values. The reference groups for comparison are defined as follows: Age = 25–29 years, Staffing = Low, Knowledge = Inadequate, and Qualification = Diploma.

Table 4.8 reveals that in the adjusted regression model, staffing levels, knowledge, and qualification are significant predictors of adherence to nursing care practices for ventilated patients. High staffing levels demonstrated a strong positive association with adherence (AOR = 7.532, p = 0.013). Similarly, adequate knowledge was identified as a significant factor, increasing the likelihood of adherence (AOR = 4.855, p = 0.025). Moreover, nurses with a degree qualification were significantly more likely to adhere to nursing care practices compared to those with a diploma qualification (AOR = 4.245, p = 0.033).

4.2 Conclusion

This chapter presented the results of the study on nurses' adherence to nursing care practices for ventilated patients in the Adult ICU at UTH. The results showed that most nurses demonstrated adherence to these practices, with adequate knowledge of critical care for ventilated patients. However, communication was generally poor, and staffing levels were insufficient, impacting on the quality of care offered to ventilated patients. Fisher's Exact Test revealed that age, qualification, knowledge, and staffing levels were significantly related to adherence. The binary logistic regression model identified staffing levels, knowledge, and qualification as key predictors of adherence. These results highlight the importance of improving staffing and education to enhance adherence to nursing care practices in the ICU.

CHAPTER FIVE

DISCUSSION

5.0 Introduction

This chapter interprets the results of the study on nurses' adherence to nursing care practices for ventilated patients in the ICU at the UTH in Lusaka, Zambia. The discussion situates the study's results within the context of its objectives, drawing comparisons with existing literature and integrating theoretical perspectives, particularly the Promoting Action on Research Implementation in Health Services (PARiHS) framework. Key themes emerging from the findings, including socio-demographic characteristics, knowledge, communication, and staffing, are explored to understand their relevance to adherence levels to nursing care practices.

5.1.1 Socio-Demographic Characteristics and Workforce Implications

The demographic characteristics of the ICU nursing workforce at the UTH in Lusaka reveal critical insights into the capacity and sustainability of intensive care nursing in low-resource settings. The overwhelming majority of respondents being female mirrors the broader global trend in nursing, but in the Zambian context, this gender distribution carries unique implications for professional growth and retention. Female nurses often shoulder dual roles of caregiving at work and at home, which may hinder their access to postgraduate or in-service training due to time constraints and financial dependency (Mulenga et al., 2020).

Furthermore, the predominance of diploma-level qualifications (89.7%) underscores the limitations in Zambia's nursing education infrastructure. The scarcity of locally available critical care training programs means that many ICU nurses are thrust into high-acuity environments without adequate preparation, a situation that directly impacts care quality. This is in stark contrast to higher-income countries like the United States, where Bachelor of Science in Nursing (BSN)-prepared nurses demonstrate enhanced clinical reasoning, improved patient outcomes, and stronger adherence to protocols (James et al., 2021).

The alarming statistic that 65.5% of nurses had less than two years of ICU experience points to a high attrition rate, possibly driven by burnout, poor remuneration, and lack of professional development opportunities. This phenomenon, often referred to as the "leaky pipeline" in sub-

Saharan African health systems (Mumba et al., 2021), deprives ICUs of institutional memory and mentorship, which are essential for safe, consistent care delivery. The Promoting Action on Research Implementation in Health Services (PARiHS) framework identifies organizational context including staffing stability as a critical determinant of successful evidence implementation. Therefore, interventions such as structured orientation programs, continuous professional development, and clinical ladder systems could help stabilize the workforce and enhance competence over time.

5.1.2 Adherence to Nursing Care Practices

The study reveals a paradox in adherence behaviors, where nurses excel in performing routine, observable infection control tasks such as suctioning (100%) but demonstrate significantly lower adherence to complex, less visible procedures like aseptic technique (34%). This dichotomy is not unique to UTH but has been observed in similar resource-constrained environments like Iraq (Alkubati et al., 2022), where immediate patient care often takes precedence over preventative protocols due to time, staffing, and supply constraints.

This behavioral trend reflects a form of clinical pragmatism, where nurses, in the absence of adequate resources or reinforcement systems, prioritize what is feasible over what is ideal. The "evidence" component of the PARiHS framework provides a lens through which to interpret these discrepancies. When clinical guidelines are not adaptable to local resource realities or are perceived as burdensome within the existing workflow, they are likely to be bypassed or altered.

Contrasting these results with studies from high-income countries, such as those by Boltey et al. (2021) in the U.S., reinforces the impact of structural enablers like stable supply chains, continuous supervision, and adequate staffing on protocol adherence. The results emphasize the importance of resource allocation and continuous professional development (CPD) in addressing these gaps. Their study revealed a statistically significant association between adherence to nursing care practices and participation in CPD activities ($p = 0.002$), underscoring the role of ongoing education in fostering compliance with more complex protocols. Rather than focusing on knowledge deficits alone, policy and training interventions must aim to produce implementation-sensitive guidelines tailored to the Zambian ICU environment. Strategies could include simplified

care bundles that align with WHO's "My 5 Moments for Hand Hygiene," with adaptations for common ICU procedures like mechanical ventilation and catheter care.

Cox et al. (2019) reported a significantly lower adherence rate of 58% for closed system catheters in a resource-limited environment, with a p-value of 0.010 demonstrating the impact of resource scarcity on adherence. The slightly higher rate of 62% observed in this study may be attributed to better resource allocation at UTH, though qualitative feedback from nurses highlighted persistent challenges in accessing supplies, especially during peak admission periods. Addressing these barriers through enhanced procurement policies and supply chain management could significantly improve adherence to complex nursing protocols, ultimately reducing complications such as ventilator-associated pneumonia (VAP).

The conceptual framework employed in this study, the Promoting Action on Research Implementation in Health Services (PARiHS) framework, provides a lens to understand these results. Adherence to nursing care practices is influenced by the interplay between evidence, context, and facilitation. Evidence, such as research-based guidelines on aseptic techniques, underscores the critical importance of these practices in preventing VAP. However, the context characterized by resource limitations and inconsistent training can hinder the implementation of these guidelines. Facilitation, through structured CPD programs and mentorship, emerges as a vital strategy to bridge the gap between evidence and practice. The strong association between CPD participation and adherence levels observed in this study reflects the framework's emphasis on facilitation as a key enabler of evidence-based practice.

5.1.3 Knowledge Levels of ICU Nurses on Adherence to Nursing Care Practices

Knowledge is a foundation of professional competence, and its role in promoting adherence to nursing care practices is well-documented in critical care literature. The results of this study reinforce this connection, demonstrating that nurses with higher knowledge levels were significantly more likely to adhere to nursing care practices ($p = 0.025$). Adequate knowledge equips nurses with the ability to understand, interpret, and implement evidence-based protocols effectively, thereby reducing errors and improving patient outcome.

The disconnect between theoretical knowledge and its practical application emerges as a critical issue in this study. While all participating nurses demonstrated sound knowledge of pre-

oxygenation a routine, often-performed procedure only 32.8% could accurately perform complex tasks such as catheter sizing calculations. This pattern resonates with cognitive load theory, which posits that individuals in high-stress environments tend to rely on familiar and frequently rehearsed actions, while struggling with low-frequency or complex tasks (Gonzalez & Ramirez, 2019).

The results of this study suggest that current training modalities, which often rely on didactic lectures or brief in-service sessions, may not be effective in promoting retention and application of critical care skills. The "facilitation" dimension of the PARiHS framework calls for context-specific, learner-centered approaches. Simulation-based mastery learning (SBML), successfully implemented in countries like Rwanda (Kagame et al., 2020), offers a promising model for Zambia. SBML allows repeated practice in realistic scenarios, supporting skill retention and performance under pressure.

Additionally, the introduction of point-of-care decision aids such as pocket guides or wall charts on catheter sizing or medication dilution could bridge the knowledge-to-practice gap without significantly increasing the cognitive burden on nurses. These tools serve as visual prompts that support decision-making during high-pressure procedures and reduce errors stemming from forgetfulness or uncertainty.

Theoretical insights from the Promoting Action on Research Implementation in Health Services (PARiHS) framework further contextualize these findings. Knowledge corresponds to the "evidence" component of the framework, which emphasizes the importance of research-based evidence and clinical expertise in implementing effective practices. Adequate knowledge serves as a foundation for evidence-based practice, enabling nurses to apply research results effectively in the ICU setting. However, knowledge alone is insufficient without supportive "context" and "facilitation." Factors such as resource availability, organizational support, and mentorship are crucial for translating knowledge into actionable adherence to nursing care practices.

5.1.4 Qualification Levels of ICU Nurses and Their Impact on Adherence to Nursing Care Practice

Qualification is a key determinant of professional competence and directly influences adherence to nursing care practices, particularly in critical care environments. The results of this study highlight a significant association between qualification levels and adherence to nursing care

practices, with nurses holding higher qualifications being 4.2 times more likely to adhere to established protocols compared to those with lower qualifications ($p = 0.033$). Advanced qualifications equip nurses with specialized skills and deeper understanding, enabling them to effectively implement evidence-based practices, reduce errors, and improve patient outcomes.

Previous studies have corroborated these results, emphasizing the positive impact of higher education on clinical competencies and evidence-based practice. For instance, Merez et al. (2020) highlighted that degree-qualified nurses possess greater critical thinking skills and are better equipped to implement evidence-based interventions. Similarly, Gonzalez and Ramirez (2019) demonstrated that continuous professional development, often associated with higher qualifications, significantly improves adherence to standardized care protocols. These studies align

with the current study results, indicating that degree-qualified nurses are more adept at adhering to essential nursing care practices for ventilated patients.

Similarly, studies by Patel and Morgan (2019) further highlight the role of higher qualifications in improving nursing performance. Their research found that ICU nurses with advanced qualifications were more likely to demonstrate critical thinking, decision-making, and problem-solving skills, resulting in better adherence to care protocols and improved patient outcomes. Nurses with postgraduate qualifications demonstrated a 30% higher adherence to aseptic techniques compared to their counterparts with basic qualifications ($p = 0.001$). This aligns with the results of the current study, which also found significant differences in adherence rates based on qualification levels

The underlying reasons for this disparity may stem from differences in curriculum content and emphasis between diploma and degree programs. Degree programs typically integrate advanced theoretical knowledge, research skills, and clinical decision-making, which are crucial for managing the complex needs of ventilated patients. For example, degree-qualified nurses are more likely to understand the nuances of ventilator management, infection control, and patient safety, leading to better adherence to nursing care practices. This finding is consistent with the assertions by Frank et al. (2018), who noted that advanced educational qualifications provide nurses with a broader perspective on patient care, enabling them to address clinical challenges effectively.

Using the Promoting Action on Research Implementation in Health Services (PARiHS) framework further enhances our understanding of how qualifications influence adherence. The framework highlights the interaction of evidence, context, and facilitation in implementing evidence-based practices. In this study, evidence refers to the theoretical and practical knowledge gained through advanced education, while context involves the ICU environment a high-stress, resource-intensive setting requiring precise and informed decision-making. Facilitation is evident in how degree-qualified nurses are better prepared to serve as change agents, promoting adherence to evidence-based nursing care practices and effectively mentoring their peers. Degree-qualified nurses, equipped with a solid foundation of evidence-based knowledge, are more adept at navigating the complex ICU context, ensuring high adherence levels.

Additionally, degree-qualified nurses often have greater exposure to interdisciplinary training, which fosters collaboration and enhances their ability to implement comprehensive care plans. This aspect aligns with the PARiHS framework's facilitation component, as these nurses frequently act as leaders who drive the adoption of best practices within their teams.

By ensuring that evidence-based care is not only understood but also appropriately contextualized and facilitated, they enhance overall adherence to nursing care practices.

Moreover, the context within the ICU often demands that nurses handle high patient acuity, limited resources, and the need for swift clinical decisions. Degree-qualified nurses are better equipped to adapt to these challenges, leveraging their advanced education to improve adherence to protocols and deliver patient-centered care. This is particularly important in settings like UTH, where resource constraints and staffing challenges further compound the complexity of ICU care.

However, the study also highlights that the majority of the ICU nurses at UTH hold diploma qualifications (89.7%), with only 10.3% having degree qualifications. This imbalance may contribute to the observed challenges in adherence to nursing care practices. Addressing this gap requires targeted interventions, such as promoting advanced education for ICU nurses and implementing continuous professional development programs to bridge the competency divide between diploma and degree holders. Kalaba et al. (2020) emphasized similar strategies, advocating for educational reforms to improve the quality of nursing care in resource-limited settings like Zambia..

The study underscores the importance of higher educational qualifications in fostering adherence to nursing care practices for ventilated patients. Enhancing the qualifications of ICU nurses through advanced education and ongoing training is imperative for improving patient outcomes and optimizing ICU care. Healthcare institutions should prioritize educational initiatives and policies that support the professional growth of nursing staff, ensuring that all nurses possess the competencies needed to deliver high-quality care to critically ill patients.

5.1.5 The Staffing Mirage: Quantity Versus Competence

Staffing levels emerged as a critical factor influencing adherence to nursing care practices in the ICU. The discrepancy between reported high staffing levels (89.6%) and the reality of inadequate care coverage (63.8%) exposes a critical flaw in how staffing adequacy is measured. Traditional metrics such as nurse-patient ratios fail to capture the nuance of skill mix whether the staff on duty possess the expertise required for critical tasks like managing mechanical ventilation, hemodynamic instability, or sepsis care. Similar trends were reported by Kabongo and Mwewa (2019) in the Democratic Republic of Congo, where ICUs were numerically staffed but functionally under-resourced in terms of competence. This situation creates an illusion of sufficiency what may be termed a “staffing mirage.” The PARiHS framework's context element encourages a shift from quantitative assessments to qualitative evaluations of staff capabilities and team functionality. In this context, implementing a tiered staffing model pairing junior nurses with experienced critical care nurses can maximize the impact of existing personnel.

Furthermore, leveraging technology, particularly telemedicine, can offer real-time guidance and specialist input from regional centers. Mitchell et al. (2022) demonstrated the viability of such models in Kenyan ICUs, where tele-ICU programs provided continuous support to understaffed facilities. This approach could serve as a scalable model for Zambia, especially during peak admission periods or when specialized staff are unavailable.

.5.1.6 Communication Breakdowns and Hierarchical Cultures

Effective communication is a cornerstone of teamwork in the ICU, directly influencing nurses' adherence to nursing care practices. However, this study revealed that communication practices were not significantly associated with adherence to nursing care practices ($p = 0.102$). While 100% of participants reported open communication among staff, only 41.4% received constructive

feedback The statistical analysis revealed a negative association between communication practices and adherence to nursing care practices (p = 0.05.This reveals a nuanced communication breakdown rooted in hierarchical workplace culture. On the surface, relationships may appear collegial, but deeper analysis shows reluctance among junior staff to challenge authority or provide upward feedback. This is consistent with findings from Chanda et al. (2020), who highlighted the persistence of power imbalances in African clinical settings, where questioning senior staff may be perceived as disrespectful or insubordinate.

This dynamic inhibits critical thinking and knowledge exchange, both of which are essential for evidence-based care. Although structured communication tools like SBAR (Situation-Background-Assessment-Recommendation) have been successful in European contexts (Rodriguez et al., 2018), their effectiveness in Zambia may be limited unless accompanied by broader cultural change initiatives. According to the PARiHS framework, successful implementation must consider context, including existing professional norms and power structures.

Thus, communication strategies in the Zambian ICU setting must move beyond technical tools. Culturally adapted training sessions on communication safety, team dynamics, and psychological safety could help build an environment where feedback is normalized, and junior staff feel empowered to speak up. Integrating reflective practice and debriefing into routine operations may further reinforce these changes.

5.6 Conclusion

The discussion highlights critical systemic challenges affecting ICU nursing practice at UTH, particularly in areas of training, communication, staffing, and protocol adherence. The predominance of under qualified and inexperienced staff underscores the need for sustainable education and retention strategies, while the adherence paradox reveals a disjunction between visible routine care and more complex infection prevention measures. The gap between theoretical knowledge and its practical translation further indicates that current training methods may not sufficiently prepare nurses for ICU realities.

Hierarchical cultural norms present significant communication barriers, undermining knowledge sharing and team learning, while traditional staffing metrics mask deep competency gaps.

Addressing these issues requires a contextualized, evidence-informed approach as outlined in the PARiHS framework. Strategies such as simulation-based training, culturally tailored communication tools, competency-based staffing models, and telemedicine collaborations offer promising avenues to bridge the quality gap in Zambia's critical care landscape

5.2 Implications of the Results

5.2.1 Nursing Practice

The study reveals significant practice gaps linked to both clinical experience and the availability of resources, underscoring the need for context-specific, evidence-based protocols. Nurses in ICUs must be equipped not only with theoretical knowledge but also with the capacity to apply this knowledge in high-pressure, resource-constrained environments. Adopting simplified, high-impact interventions such as context-adapted infection prevention bundles can enhance adherence while promoting patient safety. Additionally, routine implementation of simulation-based training for critical yet infrequent procedures can help improve clinical accuracy and reduce complications, ultimately enhancing the quality of patient care.

5.2.2 Nursing Education

Nursing education in Zambia must evolve to bridge the theory-practice gap evident in ICU settings. Curricula should integrate more clinical simulation training, with a focus on low-frequency, high-risk procedures to reinforce skill retention. The inclusion of critical care modules at diploma and undergraduate levels would better prepare nurses for specialized settings. Educational institutions should also strengthen partnerships with clinical sites to ensure ongoing clinical exposure and mentorship. Additionally, faculty development in competency-based instruction and assessment is essential to prepare graduates who are practice-ready for complex care environments like the ICU.

5.2. Nursing Management

Nursing managers must prioritize the development and implementation of supportive structures that address workforce instability and skill deficiencies. This includes establishing structured mentorship programs, clinical ladder systems, and nurse residency pathways that enable novice nurses to transition into competent ICU professionals. Managers should also advocate for competence-based staffing models rather than relying solely on numerical nurse-patient ratios,

ensuring that each shift includes personnel with critical care competencies. Further, promoting a culture of psychological safety that encourages constructive feedback and Interprofessional communication is crucial to enhancing teamwork and overall unit effectiveness.

5.2.4 Nursing Research

There is a pressing need for ongoing research that examines the translation of knowledge into practice in resource-limited ICUs. Future studies should focus on evaluating the effectiveness of interventions such as simulation-based learning, cognitive aids, and tiered staffing models in improving clinical outcomes. Qualitative research exploring the lived experiences of nurses navigating systemic barriers and hierarchical cultures could provide deeper insights into context-specific challenges and inform the development of culturally sensitive implementation strategies. Moreover, participatory research approaches involving frontline nurses could ensure that solutions are both practical and sustainable.

3. Recommendations

1. The **Strengthen Critical Care Training at Pre-Service and In-Service Levels**

   There is a critical need to integrate formal critical care modules into both diploma and degree nursing curricula in Zambia. Nursing schools should collaborate with healthcare institutions to incorporate specialized ICU competencies, including infection prevention, equipment handling, and ventilator care. Regular in-service training and certification programs should also be implemented to upskill practicing ICU nurses, particularly in high-risk, low-frequency procedures.

2. **Implement Structured Nurse Residency and Mentorship Programs**

   To address the high turnover and inexperience among ICU staff, healthcare facilities especially tertiary centers like UTH should establish structured residency programs for new ICU nurses. These programs should include mentorship from experienced critical care nurses, performance monitoring, and clear competency milestones to support career progression and skills retention.

3. **Adopt Competence-Based Staffing Models**

Nursing management should shift from relying solely on headcount to competence-based staffing approaches. This involves pairing novice nurses with critical care experts on every shift and ensuring balanced skill mix across teams. Additionally, health institutions should explore digital support systems, such as tele-ICU consultations, to supplement care in times of specialist shortages.

4. **Promote Context-Sensitive Infection Prevention Strategies**

Given the resource limitations observed, infection prevention guidelines should be adapted to the local ICU context. This includes prioritizing simplified, high-impact interventions such as the WHO's "My 5 Moments for Hand Hygiene" and ensuring reliable availability of essential supplies. Training on these adapted protocols should be routinely provided, supported by visual reminders and clinical audits.

5. **Enhance Communication Culture through Feedback-Safe Environments**

Hospitals should invest in creating communication cultures that encourage constructive feedback across all professional levels. This can be achieved by training staff in tools such as SBAR (Situation, Background, Assessment, Recommendation) alongside workshops on psychological safety and respectful communication. These strategies should aim to reduce the impact of hierarchical barriers and empower junior nurses to participate meaningfully in clinical decision-making.

6. **Support Ongoing Research and Evaluation**

There is a need for continuous research on ICU nursing practice in Zambia, particularly studies that assess the impact of training, mentorship, and staffing models on patient outcomes. Collaborative research involving nurses as co-investigators should be encouraged to ensure practicality and relevance. Institutions should also invest in monitoring and evaluation frameworks that track adherence to best practices and inform continuous quality improvement.

1. 5.4 Plan for Dissemination and Utilization of Results

The results of this study will be disseminated to relevant stakeholders to ensure that the recommendations are implemented, leading to tangible improvements in nursing care practices in the ICU. An executive summary of the research findings will be submitted to the Lusaka District Medical Office, informing district-level healthcare policy and guiding decisions on resource allocation, staffing, and training initiatives within Lusaka's healthcare facilities.

The full research report will be submitted in hard copy to the University of Zambia (UNZA) School of Nursing Sciences, the UNZA Medical Library, and the University Teaching Hospital (UTH). At UNZA, the findings will support nursing educators and students, particularly in critical care nursing courses. The submission to the Medical Library will ensure that researchers and advanced nursing students can access the findings, while the copy for UTH will enable ICU managers and nursing staff to utilize the results for improving protocol adherence and optimizing staffing.

The results will also be presented at conferences on nursing and critical care to share insights with a broader audience and foster collaboration. This will allow for critical feedback, facilitate the adoption of evidence-based practices, and promote improvements in ICU care globally.

In terms of data utilization, the results will be actively applied to influence ICU practices by guiding resource allocation, enhancing training programs, and optimizing staffing levels. Specifically, recommendations for improving adherence to nursing protocols, including aseptic techniques and closed system catheter use, will be directly implemented in ICU settings. Additionally, healthcare institutions will be encouraged to adopt standardized communication protocols like SBAR, integrate technological innovations such as automated monitoring systems, and conduct regular audits to ensure adherence to best practices. This holistic approach will directly impact patient outcomes, staff satisfaction, and operational efficiency in ICUs.

To ensure continued engagement and monitoring, a copy of the research will be retained by the researcher for future reference and follow-up studies. Finally, the study will be submitted to a peer-reviewed journal in critical care nursing, where it can contribute to the global body of evidence and directly influence nursing practice in ICUs worldwide.

5.10 Strengths and limitations of the study

5.10.1 Strengths

This study has several strengths that enhance its validity and applicability to ICU nursing practices. First, the use of a structured and validated data collection tool ensured consistency and reliability in capturing information on adherence to nursing care practices. This approach allowed for accurate measurement of adherence levels and the identification of factors influencing these practices. The structured and validated data collection tool was pretested in a similar healthcare setting, ensuring that it accurately measured adherence to nursing care practices. Items on the tool were refined based on feedback to improve clarity, eliminate ambiguity, and ensure alignment with international standards for ICU nursing care. This process enhanced both its face and content validity.

Second, the study focused on a critical care setting, which is an area of significant importance in healthcare due to its impact on patient outcomes. The study's significant importance lies in its ability to identify actionable factors, such as knowledge gaps and communication barriers, that directly impact adherence to nursing care practices, ultimately informing targeted interventions to improve patient outcomes in resource-limited ICUs.

Third, the study utilized statistical analysis to establish significant associations between socio-demographic factors, knowledge, communication, staffing levels, and adherence to protocols. This analytical rigor provides robust evidence to inform policy and practice changes.

Finally, the results have direct practical implications for improving nursing education, administrative policies, and clinical practices in ICUs. The study’s results are actionable and can be used to design interventions to enhance adherence and improve patient outcomes.

5.10.2Limitations

Despite its strengths, this study has certain limitations that warrant consideration when interpreting the findings:

Single-institution Study

The study was conducted at the University Teaching Hospital in Lusaka, potentially limiting the generalizability of its findings to other healthcare facilities, particularly those in different geographical regions or with varying resource levels. A census sampling approach was employed to ensure the comprehensive inclusion of all eligible nurses in the ICU, thereby enhancing the reliability of the findings for similar settings.

Cross-sectional Design

The study's cross-sectional design captured adherence and its associated factors at a single point in time, which limits the ability to establish causality between variables. To address this limitation, statistical methods such as binary logistic regression were used to identify significant predictors of adherence, laying the groundwork for future longitudinal studies that could assess trends over time.

Self-reported Data and Response Bias

The reliance on self-reported data may have introduced response bias, as participants could have overstated adherence levels to align with perceived expectations. Anonymity and confidentiality were ensured during data collection to encourage honest responses. Neutral and non-leading language was used in the questionnaire to reduce the influence of social desirability bias.

Resource and Time Constraints

Constraints related to resources and time limited the scope of the study, excluding variables such as organizational culture and patient outcomes that could provide a more comprehensive understanding of adherence in ICUs. The study focused on key variables knowledge, communication, and staffing that were most relevant to adherence and practical for policy and clinical interventions, ensuring actionable insights within the study's scope. Future research should explore additional variables to build on these findings.

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APPENDICES

Appendix I: Participant Information Sheet

Study Title: Assessing Implementation of Nursing Care Practices for Ventilated Patients in the Intensive Care Unit at the University Teaching Hospitals in Lusaka, Zambia

Principal Investigator: Rabbeca Bwalya

Introduction:

You are being invited to participate in a research study. Before you decide, it is important for you to understand why the research is being done and what it involves. Please take your time to read the following information carefully. Feel free to ask questions and discuss this study with the research team or other people important to you. Your participation is voluntary, and you may withdraw at any time without consequences.

Purpose of the Study:

The purpose of this study is to assess the implementation of nursing care practices for ventilated patients in the Intensive Care Unit at the University Teaching Hospitals in Lusaka, Zambia.

Study Procedures:

You will be asked to complete a questionnaire regarding nursing care practices.

The estimated time required for your participation is approximately 20 to 30 minutes.

Risks and Benefits:

There are minimal risks associated with this study, such as the possibility of minor discomfort or inconvenience while completing the questionnaire. However, every effort will be made to minimize these risks.

The potential benefits of this study include contributing to scientific knowledge in the field of nursing care for ventilated patients in the Intensive Care Unit. By participating, you have the opportunity to help improve patient care and the quality of nursing practices in the ICU at the University Teaching Hospitals in Lusaka, Zambia.

Your participation in this study is entirely voluntary.

You have the right to withdraw from the study at any time, for any reason, without penalty or loss of benefits to which you are otherwise entitled.

Contact Information:

If you have any questions, concerns, or wish to discuss your participation further, please contact:

Rabbeca Bwalya: Phone: 0979280589

UNZABREC chairperson; s.munsaka@unza.zm or Mobile; +260977925304

This study has been approved by the University of Zambia biomedical research committee and complies with ethical standards.

Consent:

If you agree to participate, you will be asked to provide informed consent. By signing the consent form, you confirm that you understand the study and voluntarily agree to participate.

By continuing with the study, you are indicating your informed consent to participate in accordance with the terms outlined above.

Participant's Signature: _____ Date: _____

Thank you for considering participation in this study. Your contribution is valuable and greatly appreciated.

Appendix II: Data collection tool

Nursing Care Practices Assessment Survey

Dear Participant,

Thank you for participating in this study. Your input is valuable in evaluating nursing care practices for ventilated patients in the ICU UTH in Lusaka, Zambia. Please take a few minutes to complete this survey honestly and to the best of your knowledge.

SECTION A

Demographic Information

Name: _____

Position/Title: _____

What is your gender?

- Male
- Female

Age..... (Please indicate in years)

What is your marital status?

- Married
- Unmarried

What is your highest level of educational qualification in nursing?

- Diploma
- Degree
- Masters

What is your level of experience?

- Less than 2 year
- 2 years or more

Have you received specialized training in critical care nursing?

- Yes
- No

Nursing Care Practices

1. How frequently do you adhere to nursing care protocols when providing care to ventilated patients?

☐ Always (8-10)

☐ Sometimes (4-7)

☐ Rarely (1-3)

Knowledge

2. On a scale of 1 to 10, how would you rate your knowledge regarding ventilated patient care protocols?

☐ 10 (Very Knowledgeable)

☐ 7-9 (Knowledgeable)

☐ 4-6 (Moderately Knowledgeable)

☐ 1-3 (Not Knowledgeable)

Experience

3. How many years of experience do you have in providing care to ventilated patients in the ICU?

☐ Less than 2 years

☐ 2 years or more

Staffing:

4. What is the nurse-to-patient ratio in your ICU?

☐ 1:2

☐ 1:1

Communication

5. How would you rate the clarity and consistency of communication between healthcare team members, patients, and nurses in your ICU?

☐ Clear and Consistent

☐ Frequently Unclear and Inconsistent

Equipment

6. How often do you experience shortages of necessary equipment in your ICU?

☐ Rarely or Never

☐ Frequently

Additional Questions

7. What challenges do you face in adhering to nursing care protocols for ventilated patients?

☐ Lack of Training

☐ Time Constraints

☐ Limited Resources

☐ Communication Issues

☐ Other (please specify): _____

8. How do you think the current staffing levels affect the quality of care provided to ventilated patients in your ICU?

…….

9. What improvements, if any, would you suggest to enhance communication among healthcare team members, patients, and nurses in your ICU?

……

10. Are there specific types of equipment that are frequently in shortage? Please specify.

SECTION B

Part I: Adherence to Nursing Care Practices

Question Number	Practice	Always	Frequently	Occasionally	Rarely
1	Clinical assessment of airway patency to ensure it is clear	[ ]	[ ]	[ ]	[ ]
2	Suctioning only when clinical signs indicate the need (e.g., audible secretions, dyspnea)	[ ]	[ ]	[ ]	[ ]
3	Applying aseptic technique during suctioning to prevent infection	[ ]	[ ]	[ ]	[ ]
4	Using a closed system catheter for suctioning mechanically ventilated patients	[ ]	[ ]	[ ]	[ ]
5	Calculating the appropriate size of the suction catheter based on the inner diameter of the endotracheal tube and performing oral care.	[ ]	[ ]	[ ]	[ ]
6	Maintaining suctioning pressure within the recommended range of 100mmHg-120mmHg	[ ]	[ ]	[ ]	[ ]
7	Ensuring suctioning duration does not exceed 15 seconds to minimize oxygen desaturation	[ ]	[ ]	[ ]	[ ]
8	Pre-oxygenating patients before suctioning to prevent hypoxia	[ ]	[ ]	[ ]	[ ]
9	Monitoring patient's oxygen saturation and heart rate before, during, and after suctioning of ventilated patients	[ ]	[ ]	[ ]	[ ]
10	Assessing the need for suctioning for ventilated patients based on patient-specific criteria rather than routine	[ ]	[ ]	[ ]	[ ]

Part II: Knowledge Assessment

Assessment of Knowledge on Nursing Care Practices

Question No	Aspect of Care	No Knowledge	Basic Knowledge	Good Knowledge	Advanced Knowledge	Expert Knowledge
1	Understanding of airway management principles for ventilated patients	[ ]	[ ]	[ ]	[ ]	[ ]
2	Knowledge of suctioning techniques and their indications	[ ]	[ ]	[ ]	[ ]	[ ]
3	Familiarity with aseptic techniques and infection control measures	[ ]	[ ]	[ ]	[ ]	[ ]
4	Understanding of the use and management of closed system catheters	[ ]	[ ]	[ ]	[ ]	[ ]
5	Ability to calculate the correct size of suction catheters	[ ]	[ ]	[ ]	[ ]	[ ]

6	Knowledge of the recommended suctioning pressure range and its importance	[ ]	[ ]	[ ]	[ ]	[ ]
7	Understanding of the guidelines for suctioning duration and frequency	[ ]	[ ]	[ ]	[ ]	[ ]
8	Knowledge of pre-oxygenation techniques and their rationale	[ ]	[ ]	[ ]	[ ]	[ ]
9	Familiarity with monitoring and assessment techniques for ventilated patients	[ ]	[ ]	[ ]	[ ]	[ ]
10	Understanding of current best practices and guidelines for ventilated patient care	[ ]	[ ]	[ ]	[ ]	[ ]

Part III:

Assessment of Communication Effectiveness on Nursing Care Practices.

Question Number	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	The guidelines for nursing care practices in my unit are communicated clearly.	[ ]	[ ]	[ ]	[ ]	[ ]
2	Our team meetings effectively address issues related to nursing care practices.	[ ]	[ ]	[ ]	[ ]	[ ]
3	The communication training I received has adequately prepared me for my role.	[ ]	[ ]	[ ]	[ ]	[ ]
4	The communication channels in place facilitate efficient discussion about patient care.	[ ]	[ ]	[ ]	[ ]	[ ]
5	Feedback on nursing care practices is regularly provided and constructively used.	[ ]	[ ]	[ ]	[ ]	[ ]
6	There is open and honest communication among all members of the healthcare team.	[ ]	[ ]	[ ]	[ ]	[ ]
7	I feel comfortable voicing concerns and suggestions related to patient care.	[ ]	[ ]	[ ]	[ ]	[ ]
8	Collaboration with other healthcare professionals is encouraged and facilitated.	[ ]	[ ]	[ ]	[ ]	[ ]

9	Interdisciplinary meetings contribute to the improvement of patient care.	[ ]	[ ]	[ ]	[ ]	[ ]
10	Information about changes in nursing care practices is promptly shared with all relevant staff.	[ ]	[ ]	[ ]	[ ]	[ ]

Part IV: Staffing Assessment of Staffing Levels

Question Number	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	The nurse-to-patient ratio in my unit supports thorough and attentive care.	[ ]	[ ]	[ ]	[ ]	[ ]
2	My workload is manageable and does not compromise the quality of care provided.	[ ]	[ ]	[ ]	[ ]	[ ]
3	Our team has a balanced mix of skills and expertise, conducive to high-quality care for ventilated patients.	[ ]	[ ]	[ ]	[ ]	[ ]
4	The shift lengths in my unit are appropriate and do not negatively impact patient care or staff well-being.	[ ]	[ ]	[ ]	[ ]	[ ]
5	There are sufficient resources and equipment to provide high-quality care to ventilated patients.	[ ]	[ ]	[ ]	[ ]	[ ]
6	The staffing levels in my unit are adequate to meet the demands of patient care, even in peak times.	[ ]	[ ]	[ ]	[ ]	[ ]
7	Continuous professional development opportunities are available and encouraged for all staff.	[ ]	[ ]	[ ]	[ ]	[ ]
8	There is a supportive culture in my unit that prioritizes patient safety and quality care.	[ ]	[ ]	[ ]	[ ]	[ ]
9	Staff well-being is considered a priority, with measures in place to prevent burnout and stress.	[ ]	[ ]	[ ]	[ ]	[ ]
10	Feedback from nursing staff is taken into account when making decisions about the work environment and staffing.	[ ]	[ ]	[ ]	[ ]	[ ]

MINISTRY OF HEALTH

NATIONAL HEALTH RESEARCH AUTHORITY

The Health Research Act

(Act No. 2 of 2013)

CERTIFICATE OF REGISTRATION

THIS IS TO CERTIFY THAT

Bwalya Rabbeca

has been registered as a Health Researcher

Dated this 9th August 2023

Registration number NHRAR-R-749/08/08/2023

DIRECTOR

PROF. GODFREY BIEMBA

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12th December, 2023

The chairperson,
UNZABREC,
The University of Zambia,
Ridgeway campus,
Lusaka.

Dear Sir/Madam,

RE: PROPOSAL SUBMISSION FOR ETHICAL REVIEW: RABECCA BWALYA

Rabecca Bwalya presented her research proposal entitled, **"Nurses adherence to nursing care practices for ventilated patients in the adult Intensive Care Unit at University Teaching Hospital, Lusaka, Zambia",** to the School of Nursing Sciences Graduate Proposal Presentation Forum. The supervisor has confirmed that the corrections and recommendations to the research proposal have been attended to.

This serves as a supporting letter for the student to submit the proposal for ethical review to UNZABREC.

Yours faithfully

Brenda Sianchapa (Ms)
ASSISTANT DEAN -Postgraduate

Cc: Head, Department of Basic and Clinical nursing sciences
File

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BIOMEDICAL RESEARCH ETHICS COMMITTEE

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Federal Assurance No. FWA00000338 IRB00001131 of IORG0000774 NHRAR-REC No 2021-05-0002

31st January 2024

Your REF. No. 4776-2023

Ms. Rabecca Bwalya,
University of Zambia,
School of Nursing Sciences,
P.O Box 50110,
Lusaka.

Dear Ms. Bwalya,

RE: NURSES' ADHERENCE TO NURSING CARE PRACTICES FOR VENTILATED PATIENTS IN THE ADULT INTENSIVE CARE UNIT AT THE UNIVERSITY TEACHING HOSPITAL, LUSAKA, ZAMBIA (REF. NO. 4776-2023)

The above-mentioned research proposal was presented to the Biomedical Research Ethics Committee on 31st January, 2024. The proposal is **approved**. The approval is based on the following documents that were submitted for review:

a) Study proposal
b) Questionnaires
c) Participant Consent Form

APPROVAL NUMBER : REF. No. 4776-2023.

This number should be used on all correspondence, consent forms and documents as appropriate.

i. **APPROVAL DATE : 31st January 2024**
ii. **TYPE OF APPROVAL : Standard**
iii. **EXPIRATION DATE OF APPROVAL : 30th January 2025**
iv. After this date, this project may only continue upon renewal. For purposes of renewal, a progress report on a standard form obtainable from the UNZABREC Offices should be submitted one month before the expiration date for continuing review.
v. **SERIOUS ADVERSE EVENT REPORTING**: All SAEs and any other serious challenges/problems having to do with participant welfare, participant safety and study integrity must be reported to UNZABREC within 3 working days using standard forms obtainable from UNZABREC.

vi. **MODIFICATIONS**: Prior UNZABREC approval using standard forms obtainable from the UNZABREC Offices is required before implementing any changes in the Protocol (including changes in the consent documents).

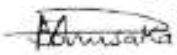
vii. **TERMINATION OF STUDY**: On termination of a study, a report has to be submitted to the UNZABREC using standard forms obtainable from the UNZABREC Offices.

viii. **NHRA:** You are advised to obtain final study clearance and approval to conduct research in Zambia from the National Health Research Authority (NHRA) before commencing the research project.

ix. **QUESTIONS**: Please contact the UNZABREC on Telephone No. +260977925304 or by e-mail on unzarec@unza.zm.

x. **OTHER**: Please be reminded to send in copies of your research findings/results for our records. You are also required to submit electronic copies of your publications in peer-reviewed journals that may emanate from this study. Use the online portal: unza.rhinno.net for further submissions.

Yours sincerely,



Prof. Sody Mweetwa Munsaka, BSc., MSc., PhD
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NATIONAL HEALTH RESEARCH AUTHORITY

Lot No. 18961/M, off Kasama Road, Chalala, P.O. Box 30075, LUSAKA

Tell: +260211 250309 | Email: znhrasec@nhra.org.zm | www.nhra.org.zm

Ref No: NHRA938/15/02/2024 **Date:6th March, 2024**

The Principal Investigator,
Rabecca Bwalya,
University of Zambia,
School of Nursing Sciences,
Lusaka, Zambia.

Dear Ms Bwalya,

Re: Request for Authority to Conduct Research

The National Health Research Authority is in receipt of your request for authority to conduct research titled **"Nurses' Adherence to Nursing Care Practices for Ventilated Patients in the Adult Intensive Care Unit at the University Teaching Hospital, Lusaka, Zambia."**

I wish to inform you that following submission of your request to the Authority, our review of the same and in view of the ethical clearance, this study has been **approved** on condition that:

1. The relevant Provincial and District Medical Officers where the study is being conducted are fully appraised;
2. Progress updates are provided to NHRA bi-annually from the date of commencement of the study;
3. The final study report is cleared by the NHRA before any publication or dissemination within or outside the country;
4. After clearance for publication or dissemination by the NHRA, the final study report is shared with all relevant Provincial and District Directors of Health where the study was being conducted, University leadership, and all key respondents.

Yours sincerely,

Prof Victor Chalwe
Acting Director/Chief Executive Officer
National Health Research Authority