Working together: The Development of a Career Structure and Conceptual Framework for critical care nursing for Zambia

Chris Carter

Student Number: S11762169

A thesis submitted in partial fulfilment of the requirements of

Birmingham City University for the degree of Doctor of Philosophy

April 2025

Faculty of Health, Education and Life Sciences

Birmingham City University

Acknowledgments

I would like to thank Prof Joy Notter, my Director of Studies for her support, patience and critical guidance throughout this study. Prof Louise Toner who willingly joined the supervisory team and has worked consistently throughout and read so many drafts!

I would like to thank all the participants who participated in this study, without their input, this study would not have been possible. The Ministry of Health in Zambia, the Nursing and Midwifery Council of Zambia, the Lusaka College of Nursing and the University Teaching Hospital (Adult Hospital), Zambia, for welcoming me into their world and trusting me, without their support this study would not have been possible.

Finally, for critically ill patients, who I hope this study has made a difference to the access and level of nursing care provided.

Abstract

Background & Rationale: This thesis is a PhD study which developed a career structure and conceptual framework for critical care nursing (CCN) in Zambia. Zambia is a low-income country in Sub-Saharan Africa and at the start of the study in 2017, had fledgling critical care services, no career structure, and no recognition of specialist practice. A critical review of the literature identified the unique nature and lack of critical care and a paucity of context specific career structures and conceptual framework for education and practice. In consequence, as the study progressed it grew exponentially to develop the requisite new knowledge to develop a career structure and conceptual framework.

Aims: The aims of this study were:

- To develop and implement a culturally competent, culturally safe, and sustainable career structure and conceptual framework for critical care nurse education and practice in Zambia.
- To develop policy recommendations for a career structure for critical care nurses.

Methods: A participatory co-operative inquiry, mixed methods approach underpinned by ubuntu, an African philosophy was used. This included national e-survey questionnaires, focus groups, research workshops, documentary data analysis and a national cross-sectional survey.

Findings: Datasets revealed the remit of CCN extended beyond the physical critical care unit, with nurses leading services but without recognition. They had a formal and informal extended scope of practice which did not match their education level. Key stakeholders agreed the need address the imbalance in education opportunities for CCNs to service provision. As part of the study a mentorship model, definition and scope of practice and career structure were developed. These outputs and datasets were then used to inform the development of a conceptual framework for CCN in Zambia.

Conclusion: The career structure and conceptual framework were accepted by the Ministry of Health and the nursing regulator, and these are now being implemented. Bonus outputs have been the successful use of ubuntu as a research and education tool. There has also been a series of peer reviewed publications and national and international recognition for the outputs from this study.

Contents

List of Figures & Tables

Abbreviations

AFCCN	African Federation of Critical Care Nurses.
AIDS	Acquired Immune Deficiency Syndrome
AKI	Acute Kidney Injury
ART	Anti-retroviral treatment
BCU	Birmingham City University
BSc	Bachelor of Science
CCN	Critical Care Nurse
DOPS	Direct Observation of Procedural Skills
EN	Enrolled Nurse
GNCZ	General Nursing Council of Zambia
HAART	Highly Active Anti-Retroviral Therapy
HEA	Higher Education Authority
HIC	High Income Country
HIV	Human Immuno-Deficiency Virus
ICN	International Council of Nurses
ICU	Intensive Care Unit
ITU	Intensive Therapy Unit
LIC	Low Income Country
LMIC	Low Middle-Income Country
MSc	Master of Science
MDG	Millennium Development Goals
MOH	Ministry of Health
NCD	Non-Communicable Diseases
NHIMA	National Health Insurance Scheme
NICU	Neonatal Intensive Care Unit
NGO	Non-Governmental Organisation
NMCZ	Nursing & Midwifery Council of Zambia
NPA	Nasopharyngeal airway
OSCE	Objective Structured Clinical Examination
RCCN	Registered Critical Care Nurse
RN	Registered Nurse
RTC	Road Traffic Collision
SDG	Sustainable Development Goals
TB	Tuberculosis
TEN	Trauma and Emergency Nursing
UN	United Nations
UNZA	University of Zambia
WFCCN	World Federation of Critical Care Nurses
WHO	World Health Organization

Chapter 1: Introduction

'…But I have promises to keep, and miles to go before I sleep'

Robert Frost (1923)

This research study is based in Zambia, a country which sits in sub-Saharan Africa, with most of its landmass consisting of a high plateau, a series of rivers including the Zambezi River. The Zambezi River is a crucial source of hydro-electric power and water for the country. It is the fourth longest river in Africa, flowing through six countries from its source in north-western Zambia to the Indian Ocean (Hughes & Fannosi, 2020). Zambia is highly fertile and is the second-largest producer of copper, after the Democratic Republic of Congo. In recent decades this has contributed to the country's rapid economic growth, but an over-reliance on copper, has made its impact on the economy weaker due to falling prices (Cervantes Barron et al., 2024). Zambia is landlocked, and bordered by eight other countries, Democratic Republic of Congo, Tanzania, Malawi, Mozambique, Zimbabwe, Botswana, Namibia, and Angola (figure 1.1). It is sub-divided into ten administrative provinces and has 73 tribes across the country.

Figure 1.1 Map of Zambia (BBC, 2024)

This study was developed in response to an expressed need by the Zambian Ministry of Health (MOH). My help was requested because I had been working with key stakeholders including the Zambian MOH, national education providers and health care organisations to capacity build in critical care nursing since 2015. Acute specialist nursing such as critical care nursing was new and had not been officially recognised by the MOH, in consequence, they wanted a conceptual framework and career structure that was specifically designed for Zambia, using a format that could be integrated directly into the national strategy. However, with limited in-country technical expertise, they chose to take an unusual step and formally request that as an internationally recognised expert in critical care, whom they already knew to develop and submit a sustainable career structure and conceptual framework. This had to recognise the uniqueness of the country, the impact of social and economic factors and the role that health beliefs have on access to and take up of services.

It is important to point out that what seemed a straightforward and practical request, grew exponentially, because the study findings were not only urgently needed, but enthusiastically accepted by all participants. As a result, what had been identified and planned as post-

doctoral work became integral elements of the study. The challenge was therefore, when to stop and complete this thesis, with revised ideas for post-doctoral work discussed in the conclusion.

1.1 Background to the Study

Critical care is a relatively new branch of healthcare and was initially developed in response to the Polio epidemic in Copenhagen in 1952, when over 300 patients were artificially ventilated for several weeks, resulting in a reduction of mortality from 80% to approximately 40% (Kelly et al, 2014). Dr Bjorn Ibsen, a Copenhagen anaesthetist, and a pioneer of intensive care medicine, recognised the need for a dedicated ward area to cohort these patients, with increased nursing observation and care. Thus, the concept of intensive care was born. However, the concept of cohorting the sickest patients in one area of the hospital and providing intensive nursing care had been accepted practice for over 150 years, with its benefits being first recognised by Florence Nightingale during the Crimean War (Wallace & Kahn, 2015; Esper et al., 2022).

Today, the term intensive care is used interchangeably with other terms such as intensive therapy and critical care. For consistency in this thesis the term critical care has been used. Throughout the world, critical care services vary in terms of provision, case-mix and staffing. In low to low-middle income countries critical care services have evolved and developed in response to patient need, however, the provision and role of nurses is often unclear, with what appears to be a limited but evolving body of knowledge, mainly focused on medical provision. In most LIC, nursing is the largest proportion of the registered healthcare profession. Yet. the potential of nursing is often not recognised, although it is accepted that in LICs, nurses are the often the backbone of critical care services undertaking an undefined and/or little understood central role in the provision of services. This study focused on critical care nursing in Zambia, however, to understand the role of the nurse, the critical care provision and development of a conceptual framework and career structure for Critical Care Nursing in Zambia the context needs to be explained.

At the start of the study Zambia had recently re-introduced MSc level physician anaesthesia education, with anaesthetists providing critical care and anaesthetic services. This was a similar model of training and service provision to that provided in the UK prior to medicine recognising critical care as a medical speciality (Faculty of Intensive Care Medicine (FICM; Kelly et al 2014). In contrast critical care nursing, specialised nurse education commenced in 2012 at Advanced Diploma level (Carter & Notter, 2023; Carter et al., 2020).

For this study, the MOH saw the development of critical care nursing as a first step in addressing this imbalance in education and recognition of the need implement continuous professional development for nurses. This approach was aligned to international agenda such

as the United Nations (UN) Sustainable Development Goals (SDG) and the World Health Organisation (WHO) (UN 2025; WHO 2009; 2020).

This project utilised an innovative African philosophy to develop a career structure and conceptual framework, and career structure specifically tailored to the culture and healthcare needs of the country (Borti et al., 2024). This utilised a sequential mixed methods approach and participatory cooperative inquiry. From the start of the study, the potential outcomes included a possible wider impact and application across Sub-Saharan Africa (SSA), as many countries in this continent have no framework and or formal structure for critical care nursing. Spicer et al (2020) suggest that without a conceptual framework and model for practice, services remain fragmented and ineffective. Thus, although the long-term output initially seemed ambitious, the timing was appropriate for countries within the sub-Saharan continent. They are currently working to meet the WHO (2009) and UN (2025) recommendations to develop models for specialist practice that fit with their own cultural contexts and establish agreed standards across the region.

The career structure and conceptual framework for critical care nursing developed through this research study has provided the first nationally agreed career structure for specialist nurses in Zambia. The methodology used also provided an opportunity for nurses to work together to learn and practice the skills and expertise needed to conduct research specifically focusing on critical care. In addition, the conceptual framework has supported the move from the current specialist practice course at diploma level to graduate and higher degree level, and through this enabled Zambia to embed research and scholarly activities, leading to critical care nurses in Zambia developing their own research base.

Towards the end of the study, the Covid-19 pandemic occurred. From the start it was internationally recognised that huge numbers of patients with severe Covid-19 would need critical care services. This had a major impact on perceptions of critical nursing as prior to the pandemic, there was an international debate regarding the benefits and appropriateness of critical care resources in low-middle income countries. In consequence, initially, much of the early work was completed prior to the Covid-19 pandemic when gaining recognition for critical care in Zambia was a somewhat challenging journey. However, Covid-19 clearly established the crucial role of the critical care workforce and the need for comprehensive investment in critical care services (Ritter et al., 2021). In consequence, this study was ahead of its time and contributed to the national Covid-19 response (Mer et al., 2022).

The main aims of the research were:

> *To develop and implement a culturally competent, culturally safe, and sustainable conceptual framework for critical care nurse education and practice in Zambia.*
>
> *To develop policy recommendations for a career structure for critical care nurses.*

For clarity, the main aim was sub-divided into the following more specific objectives which identify key issues that need consideration:

Aim 1: To develop and implement a culturally competent, culturally safe, and sustainable conceptual framework for critical care nurse education and practice in Zambia.

Specific objectives included:

1. Exploration with MOH, national nursing regulators, professional organisations / unions, experienced critical care nurses, chief nurses, and educators, of the future critical care nursing priorities in Zambia.
2. A national baseline e-survey of all current critical care nurses in Zambia on their opinions relating to critical care nursing practice and education.
3. In-depth exploration of current and future critical care provision in Zambia with experienced critical care nurses, chief nurses, and educators.
4. Examination of critical care patient case-mix of adults requiring critical care admission.
5. Review of national and international policy documentation.

Aim 2: To develop policy recommendations for a career structure for critical care nurses.

Specific objectives included:

1. Evaluation of current critical care nursing education and training (including curricula) in Zambia.
2. Exploration with key stakeholders of the current and future needs in critical care nursing workforce in Zambia.
3. Design, development, and implementation of a conceptual framework from pre-service student to PhD critical care nursing in Zambia.
4. Review of national and international policy documentation and strategic plans relating to critical care provision and workforce in Zambia.
5. Recommendations for policies locally and nationally for the implementation of the career framework and model for critical care nurse education and practice.

Further detail is given in the methodology chapter. However, it is important to include information here, to provide an overview of what the project set out to achieve as this then provides context for the outputs and outcomes of the study. These were inter-dependent, inter-linked and integrated into the culture and health system in which the research took place.

As mentioned previously, the study grew exponentially from what initially appeared to be a straightforward and achievable study which would move the critical care nursing agenda forward in Zambia, instead it proved to be a major strategic change in healthcare policy,

education and practice. Reflecting back to the start of the study, it is hard to believe that the role and position of critical care that is now accepted without question by the Zambian government through the Ministry of Health, health professionals and hospitals, was not formally recognised or understood as a specialty. Although it is taken for granted in high income countries (HIC) that nursing care is crucial to health service provision and each branch of nursing has its own career structure and sets of competencies and qualifications. Therefore, when planning this study, the complex and multi-faceted activities needed could not be addressed by any single activity. Instead, a mixed method approach was needed, however, as acceptance and sustainability were key for this study any methods used, had to be delivered within a participatory context that gave Zambia control and ownership of the outcomes. Only in that way could they be implemented into policy and practice, future proofed and sustained. After consultation with the MOH and a critical review of the possible approaches, the decision was initially made to use pragmatic participatory co-operative inquiry. However, having identified ubuntu as an appropriate philosophy to underpin the study, this resulted in a change, with ubuntu leading the study in combination with the methodological approach of participatory co-operative inquiry. The ramifications of these changes enhanced the study, as it progressed and became a major journey with a life of its own. Now several years on, the MOH and other stakeholders have adopted without question the methods used, the datasets, the career structure and conceptual framework.

The timing was right for this study as Zambia was beginning to move towards higher level nursing practice and needed a model they could accept as culturally and context appropriate. The MOH having accepted the outcomes from this study has taken the lead and is now using it to develop other specialist areas of practice and nurse education programmes, these include Emergency and Trauma and Cardiovascular Nursing. For this study, the challenge was not what activities needed to be carried out, but when to stop and what to include.

1.2 Positionality ‘Treading the Tightrope’ of being an insider and outsider.

The nature of this study was such that commitment had to be made to the nurses, the educators and the MOH. This was not just a study for a PhD, it was offering a way forward and a career structure that they wanted but did not know how to achieve. At the start of the study, it was essential to consider the different roles and responsibilities that ubuntu and participatory co-operative inquiry entail. Overall, this has had a huge personal impact, which included an unplanned career change and a move into higher education. Had it not been a partnership project with a vision of hope for the future of the critical care nursing, and its community of practice, this study probably would not have been completed. However, once the commitment to partners was made and their trust and support gained, it was not possible

to walk away. In effect researchers and partners carried each other throughout the process with its ups and downs.

Understanding my positionality was crucial, as I had the dual role, of being an insider (Emic) and at the same time as the lead for the study and not being from Zambia an outsider (Etic). To make sure that bias was minimised, and the study remained truly participatory, throughout, I needed to examine my role, in the light of my background and expertise, checking that these did not unconsciously dominate the processes used (Holmes, 2020). I needed to review how my personal characteristics could influence my actions and responses to participants, as this could have impacted on every stage of the research process, including how the study was designed, conducted, and evaluated (Vaughan, 2024). As Holmes (2020) argues, elements of positionality are fixed, for example, gender, race and nationality, however, researchers need to review how their positionality and reflexivity shift continuously throughout the life of the study.

My positionality was and is based around my experiences as a **critical care nurse** and **educator**, a **researcher** and as a former **Army Officer**. Each of these, played a role in how the study progressed. I always wanted to be a **nurse** and an **educator**, however, what I thought I was going to do and what I did was very different, due to NHS staff shortages. Also, the university I chose for my pre-registration nurse education course allocated me to be part of a new placement circuit. I was one of three students in my cohort, allocated to a socio-economically deprived, multi-cultural, inner London hospital. On reflection, there were strong parallels with the population in Zambia, with the community being relatively young and significantly deprived. This exposed me to different cultures and traditions in the UK, giving me a grounding to develop into who I am today as it led to my passion for increasing access to education and healthcare opportunities as a way out of poverty. I am now an **Associate Professor**, a specialist **critical care nurse** and nurse leader; having held a variety of teaching, clinical and national positions. However, I still maintain my vision for everyone who wants to become a nurse having the opportunity to join the profession and for critical care nursing to be recognised for what it brings to a health system.

1.3 Structure of the Thesis

Chapter one has provided an introduction to the study which includes the research aims and objectives, the context and background to the study and the positionality of the researcher.

Chapter two is a critical review of the literature relating to critical care in low-income countries at the start of the study and then repeated. It illustrates the challenges facing specialist practice in a range of settings and the need for Zambia to develop its own context specific conceptual framework and career structure for critical care nursing.

Chapter three provides an overview of the philosophical underpinning this study, with a critical review of ubuntu, an African philosophy. It also includes a critical review of the education theories, identifying the differences between pedagogy, andragogy, heutagogy and ubuntugogy.

Chapter four outlines the methodology used to carry out this complex sequential mixed-methods study. It also includes a detailed positionality statement and an overview and justification for the research methods used.

Chapter five is the first cycle and includes documentary data analysis, this first step in data analysis which set the scene for the study. It gives an overview of key events in Zambian's recent independence and how colonial events shaped the transition to the newly established Zambia.

Chapter six is the second research cycle and include the findings of the strategic stakeholder workshop, where ubuntu was introduced to participants. Also, the findings from the national e-survey questionnaire, which allowed critical care nurses from across the country to participate in the study.

Chapter seven is the third cycle in this study and includes the findings from the focus groups with critical care nurses, a research workshop with students completing the advanced diploma in critical care nursing and a stakeholder engagement event. This included presentation of the previous data sets and prepared for the fourth research cycle.

Chapter eight is the fourth research cycle and presents the findings from the national cross-sectional survey and the development of a mentorship model for critical care nursing in Zambia. To achieve this all datasets, need to be compete and integrated. This led to the final stage of the study to finalise the career structure and conceptual framework.

Chapter nine outlines the development and acceptance by the MOH and nursing regulator of the first national scope of practice, career structure and conceptual framework for critical care nurses.

Chapter ten outlines the reflections on the study, conclusion and recommendations. As this study spanned the Covid-19 pandemic, reference is made to the impact of the pandemic on this research study.

Chapter 2: Critical Care in Low Income Countries

Critical care is a relatively new branch of healthcare and as with many medical advances developed in response to a major epidemic, in this case the Polio epidemic in Copenhagen in 1952 (Kelly et al., 2014). The introduction of this new speciality resulted in a reduction of mortality from 80% to approximately 40% (Kelly et al., 2014). Today, the term critical care tends to be used interchangeably with other terms such as intensive therapy and intensive care, possibly because globally, critical care services vary in terms of provision, case-mix and staffing.

Internationally it is accepted that critical care refers to a department within a hospital that provides highly specialised care to critically ill patients, and that critical care is a wider concept, referring to any location where acutely unwell or critically ill patients may be found. Over, two decades ago, the WHO (2003) stated critical care facilities must be available in hospitals where anaesthetics are provided but did not provide any information or guidance on how critical care services should be developed or delivered. The World Federation of Societies of Intensive and Critical Care Medicine point out that there are geographical variations in critical care provision (Marshall et al., 2017). However, key similarities can be found, in that they all provide highly specialist care for the most critically ill patients and include advanced monitoring and life sustaining treatments. In addition, increasingly, there is recognition that while a critical care unit or intensive care unit may be a dedicated area within a hospital, acute and critically ill patients can be found in all acute clinical areas. In consequence, specialist critical care nurses are to be found in a range of settings. Also, while the focus may be on life-sustaining treatments, the need to include the psychological and social impact of critical illness on the individual, family and communities is now widely accepted (King et al., 2019).

2.1 Critical Review of the Literature Relating to Critical Care in Low-Resource Countries

A critical review of the literature regarding critical care in LIC, was conducted at the start of the study and then revisited in 2025. However, it is important to note that when reviewing post Covid-19 literature, although a wealth of information was found focusing on the pandemic and its clinical impact, in terms of actual critical care services, possibly the only positive outcome from Covid-19 was a key change in attitude, resulting in international recognition of the need for critical care nursing in sub-Saharan Africa, (Williams et al., 2020). Therefore, this study with its focus on critical care nurse education, training and a career structure for Zambia needs to be shared with its dissemination used to contribute to the development of critical care nursing within the region.

2.1.1 Search Strategies

For the initial appraisal of current research in critical care a search was conducted using the Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Medline, guided by

inclusion and exclusion criteria (table 3.1), Inclusion criteria, peer reviewed papers from between 2017 and 2025 published in English (table 1). Search terms included “intensive care unit or icu or critical care or critical care unit) AND Zambia”, “intensive care unit or icu or critical care or critical care unit) AND Africa AND (developing countries or developing nations or third world or low-income countries)”. Grey literature including searching of reference lists, professional websites.

Table 2.1: Inclusion / Exclusion criteria

Inclusion	Exclusion
• Published between 2017 and 2025 • Published in English • Peer reviewed • LIC / LMIC Africa • Intensive care / critical care / intensive therapy • Education, practice or service delivery • Medical / nursing or AHP related • Adult and/or paediatric	• Published before 2017 (5 years) • Not published in English • Not peer-reviewed • Upper Middle Income or High-Income country • Non intensive care / critical care related • Neonatal

2.1.2 Summary of the Findings from Critical Review of the Literature

This initial literature review in 2017 identified four themes. These included a paucity of quality evidence, limited opportunities for education, lack of local, national and international protocols, guidelines and policies, and the challenges of providing highly technical services in a resource limited environment. This resulted in 22 papers being identified from within which 14 papers were included in the synthesis and critical review. The revised search six years later revealed a greater number of papers available for review with 153 papers identified and from these, 31 papers were included in the review. The increase in papers giving an indication of the increasing recognition of critical care provision.

2.1.3 Critical Discussion of the Findings

Over the past decade, despite adverse comments regarding the need for critical care services in low- and low-middle income countries, these have rapidly increased (Prin et al., 2019; Parker et al., 2015). However, it is important to note that in LIC and LMIC, populations tend to be relatively young (<60 years old) and as a result, have a unique burden of disease which differs from HIC’s (Wong et al., 2020; Krishnamoorthy et al. 2014; Firth & Ttendo 2012). In consequence, the reasons for admission and outcomes from critical care admissions also vary and it is recognised that survival from critical illness in LIC is poor (Kwizera et al., 2012; Baker et al., 2015; Parker et al., 2019). The reasons for this are multifactorial, with limited awareness of the importance of recognition of the deteriorating patient in ward settings, limited availability of blood and blood products, the high burden of human immunodeficiency disease (HIV) and

tuberculosis (TB), compounded by poor infection prevention and control practices (Crawford et al., 2020; Manpula et al., 2020; Laher et al, 2020; Bock & Cox, 2017).

Within many LIC and LMIC, sophisticated tertiary referral hospitals can be found co-existing with limited primary health care and poor healthcare infrastructures making it difficult for universal access to care, with patients often having to travel long distances to reach hospital services (Li et al., 2013; Carter 2016; Ugboma et al., 2014). Also, as indicated previously it has to be noted that in LIC and LMIC, the concept of critical care provision has been subject to ongoing debate (Wall et al., 2018; Bock & Cox, 2017; Firth and Ttendo 2012; Gomersall 2010) even, in some cases, described as a 'luxury' (Dart et al. 2017:178). Critics still argue that critical care may not significantly decrease overall mortality, and even that the development of such services is unrealistic (Schell et al., 2018; Baker et al., 2025). Their inference is that with high numbers of acute and critically ill patients outside critical care units, resources should focus on the prevention of deterioration using simple interventions (Baker et al., 2025). In addition, they go on to suggest that with critical care services being resource intensive, the focus should be on programmes such as mass-immunisation projects and developing primary healthcare services (Basnet et al., 2011; Baker et al., 2025). However, this narrow view, which does not address the increasing and changing burden of disease or recognise the right of countries to self-determination regarding development of health services has been increasingly challenged (Kwizera et al., 2022; Leligdowicz et al., 2017). It is accepted that there needs to be a health systems approach to managing critically ill patients and within the differing approaches used, countries need to develop critical care services which are context specific (Baker et al., 2025). However, the lack of foresight and future-proofing inherent in rejection of critical services in LIC and LMIC were particularly evident during Covid-19 and other highly infectious disease outbreaks such as Ebola in West Africa when the essential nature of, and need for, critical care services became internationally recognised (Kwizera et al., 2022; Leligdowicz et al., 2017).

To some extend that argument has been negated by the recent Covid-19 pandemic, with it being recognised that worldwide, regardless of the country's income, critical care (nurses) were at the frontline and carried the main burden of this disease (Williams et al., 2020; WHO, 2020). In addition, published papers are increasingly discussing the ethics of providing critical care in low resource settings, for example, Wall et al., (2018) discussed the ethical dilemmas and challenges when dealing with complex burns, however, they also discuss the cost / benefit of burn care and determining survivability and management within the resources available. Bock and Cox (2017) acknowledged the high burden of TB / HIV and the discriminatory admission practices against these groups of patients. They also recognised the increased risk of transmission of TB or HIV between patients due to undiagnosed and untreated patients being mechanically ventilated or treated in a general critical care unit. While they advocated

the provision of critical care for patients with survivable conditions regardless of past medical history, they also point out the importance of routine testing and recording of HIV and TB status to normalise these conditions and reduce stigma.

However, critical care provision in many LIC's including Zambia remains inadequate, prior to Covid-19, Dart et al., (2017) conducted a point of prevalence at the University Teaching Hospital in Zambia and based on the data gathered amongst medical and surgical ward patients. this resulted in an estimation that around 7873 adult patients would require admission to critical care annually, a major challenge as within the hospital there were only eight critical care beds, and 109 beds nationally. In consequence, many critically ill patients had to be managed on acute wards, with limited staff, resources, and lack of access to early warning scoring tools. In consequence, these often patients either die before admission to critical care is possible or they are transferred late in their disease.

The situation is compounded by evidence that despite the high burden of critical illness, in some countries critical care remains underutilised. For example, Wong et al (2020) reported bed utilisation in Malawi was underutilised and attributed this to the absence of an admission and discharge protocol. Thus, the limited availability of critical care beds, escalation protocols and admission / discharge policies all add to the complexity of managing a critically ill patient and can adversely affect outcomes. In addition, in some countries there is a lack of a brain stem death policy which results in patients with severe head injuries remaining ventilated which reduces critical care availability (Wong et al., 2020). Wong et al's (2020) finding was supported by Kifle et al's (2022) country wide review of critical care services in Ethiopia, which reported critical care beds were only found in the capital city, with challenges in accessing the few available beds. As Prin et al (2020) pointed out in a study exploring the day of the week and time of day of critical care admissions, many patients are only admitted during daytime hours on weekdays, however, they found no statistical link between time and day of admission with mortality. This limited period for admission could in part be due to the availability of senior staff, who are often more available during the daytime and may have the decision-making skills and responsibility regarding admission and discharge in critical care units.

Given the high costs associated with critical care in terms of finance, workforce, and resources it is crucial to use tools to identify critical illness severity and risk of death, as this could be used to determine potential outcomes for particular groups of patients and depending on the tool used, help to justify the need for resources. Prin et al (2019) proposed the development of a critical care risk stratification model which could be used to assess severity and prognosis. However, many of the risk stratification tools available were based on HIC populations therefore, Prin et al (2019) evaluated a series of risk models and early warning scoring tools for use in LIC setting and compared them within a prospective ICU population in Malawi. They concluded that all tools selected had poor to moderate discrimination in determining outcomes

and argued that further work is required. Their approach is supported by Banda et al (2020) who identified that appropriate tools could identified acute kidney injury (AKI), diabetes mellitus (DM), respiratory disease requiring ventilator support, and presence of HIV all of which they found were key predictors of critical care mortality. However, currently in Zambia, no mortality stratification tools are used which makes it difficult to assess the outcomes from critical care, a situation which urgently needs addressing through further research

The difficulty with using tools based on HIC populations was also identified by Bowen et al (2017) in their paediatric study. They argued that when dealing with critically ill children it is crucial to calculate the child's weight to determine crucial elements of care such as drugs, fluids, endotracheal tube sizes and ventilation strategies. However, high rates of malnourishment and exact age unknown due to limited recording of births in many LIC, make it difficult to use age or heigh based formulae to estimate the weight of children, highlighting a significant paediatric patient safety issue for critical care staff. Bowen et al (2017) went on to report that the best indicator of determining a child's weight is the Broselow tape, however if this is not available the original Advanced Paediatric Life Support (APLS) formula of (2 x age) + 8 can be used (Birarent et al., 2010). Their study demonstrates the need for studies to be conducted in LIC settings as tools developed in HIC may is not applicable or available. whereas adaptation of older more generic tools may be more applicable.

There is also urgent need for researchers in LIC to develop their own context specific research and evidence. For instance, Andrews et al (2017) implemented an early resuscitation protocol for sepsis care, following international standards. However, the study identified a higher mortality in the group that received early interventions compared with the usual care. Research revealed this was due to applicability challenges of HIC protocols that emerged during implementation, revealing that guidelines developed for use in HIC settings may, in the wrong context have a harmful effect on patient care.

Review of the case mix in some critical care units identified the high burden of disease due to trauma (including traumatic brain injury), obstetrics, HIV, TB, tetanus, and snakebites (Banda and N'gambi, 2019; Carter & Viveash 2017; Muteya et al., 2013). In addition, critical care units may admit both adult and paediatric patients to the same units (Jungxi et al., 2022; Murphy et al. 2015; Muteya et al. 2013; Tomlinson et al. 2013; Jungxi et al., 2022). In consequence, Bishop et al (2019) compared mortality of critically ill paediatric patients admitted to dedicated paediatric intensive care units (PICU) and non-paediatric critical care units in South Africa. They concluded children admitted to non-PICU were more likely to be malnourished, require vasopressors and have a higher mortality. While PICU services in many LIC settings remain very limited, their study justifies the need for specialist PICU services, which include specialist critical care nurses with paediatric critical care skills.

While Langenegger et al (2019) identified that due to the limited availability of critical care beds in many hospitals, another group, critically ill maternal patients are at increased risk when unable to access services, which may be a contributory factor to rising maternal deaths. In consequence, of these findings, the development of obstetric critical care units was proposed as a solution. This suggestion is supported by Prin et al (2019) who reported that obstetric patients requiring critical care admission in Malawi numbered nearly 1 in 4 women and this was associated with a high mortality. However, a limitation to Langenegger et al's (2019) study was that they did not provide any evidence on outcomes to determine if dedicated obstetric critical care units do or do not reduce or improve maternal mortality. Langenegger et al (2019) do go on to identify several challenges with dedicated obstetric critical care units including medical leadership (intensivist versus obstetricians), the role of critical care nurses and the need for specialised equipment as well as the ability to resuscitate neonates. Nevertheless, their work identifies that staffing needs to include registered and enrolled nurses but interestingly, makes no mention of midwives. While in some countries nurses may be dual trained, the importance of the nurse-midwife maintaining competence in both areas of practice is crucial. Still in the field of maternal mortality, Bishop et al (2019) conducted an international, prospective, observational cohort study and found that maternal mortality after a Caesarean delivery in Africa is 50 times higher than in HIC. They reported this was due to peripartum haemorrhage and anaesthetic complications, findings that identify the need for expert midwives and as with Langenegger et al (2019) work, identifies challenges in the availability and effectiveness of intensivist services and critical care provision.

Trauma is another public health emergency, often requiring critical care and representing an increasing threat to global health. In 2020, the Global Burden of Disease Study identified the incidence of road traffic injuries surpassed the mortality from HIV/AIDS and Malaria (Vos et al., 2020). In Zambia, trauma remains a leading cause of death which appears to be increasing, causing an estimated 1 in 5 premature deaths and 7% of all deaths annually (Paichadze et al., 2022; IHME, 2025). A situation compounded by poor road traffic safety and the increased use and ownership of vehicles. In addition, road infrastructure has not kept pace with economic and industrial development, resulting in increased traffic, with motorbikes, cars, bicycles, and pedestrians all competing on the same narrow streets (Brouillette et al., 2014; WHO, 2017). In addition, major trauma is associated with head injuries, and other acute neurological illnesses including cerebrovascular disease and traumatic brain injury (TBI), which are disproportionally found in many LIC to LMIC. In LIC settings there is also a persistently high burden of central nervous system infections such as tuberculosis, neurocysticercosis, and HIV related opportunistic infections and complications (Prust et al., 2022). As Prust et al (2022) study identified, neurocritical care expertise is rare in LIC settings but is urgently needed to meet the changing burden on disease and to improve outcomes.

It is important to note that as this review indicates, critical care is an umbrella term that encompasses several specialities such as, paediatric, neonatal, general, neurological, cardiothoracic and transplant critical care units. However, as Prust et al, (2022); Jungxi et al (2022); Prin et al. (2019); Langenegger et al. (2019) and Bishop et al (2019) all argue, there is evidence, of the and the challenges in delivering critical care and the urgent need for specialisation within critical care. However, developing services and workforce with limited resources is a challenge and as this critical review of the literature has identified the workforce and resources available have been unable to keep pace with the changing and rising need for critical care services.

Availability of resources was cited as a critical limitation of service provision in many countries. Kifle et al (2022) country wide review of critical care services in Ethiopia revealed that no critical care unit had piped oxygen, and there was a critical shortage in access to mechanical ventilation (189 / 58%), non-invasive monitoring (106 / 33%), invasive monitoring (9 / 3%) and renal dialysis (4 / 8%). All these major deficiencies in critical care provision limit the management of patients and may adversely affect outcomes.

It is important to state, that critical care services require support services such as laboratories, imaging and, given the high burden of trauma, maternal haemorrhage, childhood anaemia (Crawford et al., 2020; Wise et al., 2017) access to safe blood and blood products are crucial. Crawford et al (2020) identified in LIC there are less than 5 blood donations per 1000 people compared to 30 donations in HIC, which significantly reduces the availability of emergency packed red cells and blood products for transfusion. This can result in clinicians waiting several days for packed red cells and blood products. In addition, inadequate blood storage results in waste, unsafe donation and cultural issues regarding use of donated blood. The lack of blood transfusion services and inconsistent supply of packed red cells and blood products is associated with poorer outcomes. For example, White et al (2017) identified patients with severe anaemia are associated with an increased risk of post-operative complications including critical care admission and surgical site infection when compared with non-anaemic patients. Both Crawford et al (2020) and White et al (2017) provide insight into the consequences of limited functioning blood transfusion services, arguing these can contribute to poorer outcomes. Yet currently addressing these challenges is difficult without access to increased resources, and in the light of recent reductions in USAID and reductions in finance from other international donors including the UK the situation is unlikely to change.

Many patients admitted to critical care units are immunocompromised and at increased risk of a healthcare associated infection (HCAI). However, it is a cause for concern that in critical care units in LIC, HCAIs are two to three times higher than in HIC (Dramowski et al., 2016; Bunduki et al., 2024). Kifle et al (2022) review of Ethiopian critical care services identified infection prevention and control practices were lacking in all units. Similarly, Laher et al (2020)

found poor hand hygiene compliance amongst healthcare workers in a critical care unit in South Africa. While Biccard et al (2018) 7-day prospective observational country study of post operative patient outcomes in 25 countries, identified the most common complication was infection (1156 [10.2%] of 10,970), which was attributed to 112 (9.7%) deaths.

Nurses are the largest part of the healthcare workforce and crucial for patient safety often spending the most amount of time with critically ill patients and have responsibility for observing and identifying complications. Macey et al (2022) review of critical care nursing specifically in LIC identified that nurses work within a complex system, with varying skills and teams depending on the case mix, resources and treatments available. They concluded a universal definition of critical care nursing in LIC is likely to be unhelpful, however, they did report a range of under-graduate and post-graduate education programmes although, there was limited information comparing these with short training courses.

This critical review of the literature has identified that few studies measured overall outcomes from critical care, a cause for concern, given the resourcing required for effective service delivery. As indicated several studies reported high mortality rates amongst specific patient groups admitted to critical care all of which need addressing. While Rao et al (2022) argue integrating palliative care services could enhance outcomes, their scoping review identified five themes from the literature, withholding and withdrawing treatment, professional knowledge and skills of healthcare workers, patient and family views, culture and context and costs of care. However, Wong et al (2020) study focused on a key issue linked to both overall care and palliative , pointing out that given the high burden of head injuries, it is a cause for concern that the concept of brain death has not yet been established, nor have there been development of brain death policies, both of which impact on the care provided when the patient has un-survivable injuries, and overall access to available services.

In addition, it must be noted that overall little literature relating to hospital outcomes and rehabilitation post critical care illness in LICs was found. This may in part be because, there is limited free healthcare with patients returning to their families before the stage that in many HICs would be classified as rehabilitation. In LICs, each member of the family often has a key caring role in addition to any salaried work. For women, there is a vital role in communities, families and caring for children and elderly patients. Thus, as these roles are accepted as their ‘normal’ roles, there has been little medical evidence gathered regarding the long-term impact and outcomes of critical illness (Notter et al., 2023). The lack of published research into the long-term financial implications of paying for hospital services, together with the absence of formal rehabilitation and community services adds to the subsequent impact on the families, communities and nations. This is a significant cause for concern for countries trying to significantly improve and sustain the long-term health and well-being of the constituent communities (Qin et al., 2019)

Several limitations were identified during this critical review of the literature. A key limitation was the review was conducted in English and focused on articles published in English; and it must be noted that only 27 out of the 54 African countries speak English (Oluwole, 2021). Several studies found were small scale, single centre, and even in country wide or international collaboration studies sample sizes were relatively small. This demonstrates that although in many countries critical care services are advancing, research into capacity and availability is still a critical issue (Dart et al., 2017; Prin et al., 2020; Kifle et al., 2022). In addition, several studies identified there were missing or incorrect records, preventing accurate data analysis (Banda et al., 2020). This results in the lack of standardised critical care services and records, meaning data accurate collection, analysis, interpretation, and reporting must be treated with caution (Weiser et al., 2015). As outlined in Rao et al's (2022) systematic scoping review of nine databases, the main research approaches included observational designs and qualitative approaches, with no higher-level studies such as RCTs or other evaluative or comparative studies. A challenge, because developing research capacity within the local workforce requires careful consideration, and without evidence, which is context specific, and from higher-level studies is difficult.

2.2 Critical Care Provision in Zambia

Zambia continued to offer a free healthcare system, for over forty years following independence. However, due to the rising costs and rapid population expansion, it was not possible to sustain this and in 2019, the government introduced the National Health Insurance Management Authority (NHIMA) Scheme (Osei Afriyie et al., 2023). Zambia currently only spends 5% of its gross domestic product (GDP) on healthcare, which is lower than the Abuja Declaration which advocates 15% (WHO, 2024a). However, this may in part be due to the fact that much of the MOH budget remains donor funded, an ongoing cause for concern (MOH, 2018; Osei Afriyie et al., 2023). Consequently, healthcare delivery is now at risk, as it will inevitably be affected by the rapid cessation of US Aid and the UK's decision to reduce its overseas aid budget (O'Sullivan & Puri, 2015; Carter et al., 2025). As a result, Zambia is now facing the possibility of taking a step back in many of the hard-won health gains for example, HIV / AIDS, rising malaria and cholera cases.

It is also important to point out that hospitals in Zambia are graded as either first, second or tertiary level. First level hospitals are either district or rural hospitals, able to offer few specialisms, such as, emergency care, internal medicine, general surgical, obstetrics and gynaecology and paediatrics. Second level hospitals are found at provincial level, and also termed regional, and/or general hospitals, these hospitals provide a wider range of specialisms including critical care and neurosurgery. Tertiary level hospitals also referred to as teaching or university hospitals, central or national hospitals provide highly specialised services, such

as, cardiology (Hensher et al., 2019). The need for a rapid expansion in healthcare services arose, firstly due to an increased population with its accompanying increasing and changing burden of disease. Secondly, the introduction of a government system to provide universal access to an increased range of healthcare services. While this is much needed, many hospitals and clinics throughout Zambia, still have limited access to diagnostic equipment, for example, cardiac monitors, ECG, X-Ray, ultrasound machines.

Donations from high income countries (HIC) have provided some infrastructure, and in recent years the governance and quality of donations have improved with the introduction on internationally agreed standards and guidelines (WHO, 2016; Marks et al., 2019). However, there is still a still a significant gap between provision and need. It is also a major cause for concern, that while structures are in place to donate equipment, there remains a critical shortage of biomedical engineers to maintain and safety test equipment (Daka et al., 2021). An audit conducted by THET (2019) reported an estimated 30% of electromedical equipment was not fully functioning (THET., 2019) (figure 2.1).

Figure 2.1: Example of an Equipment Graveyard

It is important to note, that Zambia has had a rapid population expansion from the estimated 3 million at independence, to over 20 million today (World Bank 2019b; WHO, 2025e). The United Nations projection is that Zambia's population will triple by 2050 as it has become one of the world's fastest-growing populations (World Health Organization, 2019b). Although their year-on-year population growth is nationally and internationally recognised, economic, and significant foreign investment has failed to improve the lives of most Zambians. It is deeply concerning that over 61% of population are still living on less than $2.15 dollars per day, compared to 41% across sub-Saharan Africa and three-quarters of the poor live in rural areas (World Bank, 2023). Although this appears to be gradually declining, the World Bank (2019b) estimated that 54.4% of Zambians were still living well below the national poverty line. Independence was gained in 1964; however, the impact of the previous European colonial rule is still evident in the organisation of health systems and education. Therefore, this section has provided an overview of the development of nursing and healthcare provision as it stands today, illustrating how it developed from pre-independence to now. The next section critically discusses the development of critical care in Zambia.

As in many other LICs in sub-Saharan Africa, critical care services are a relatively new speciality in Zambia with, the first ICU opening in 1975 (Angole, 1977). By 1984 the UTH ICU had an annual rate of 450 admissions (Mwewa and Mweemba., 2010), and this has been increasing year on year, such that there were 793 admissions reported in 2015 (Janowicz et al., 2017). However, poor record-keeping has made it difficult to accurately determine critical care admissions and individual outcomes (Janowicz et al., 2017). Nationally 109 critical care beds have been identified, with 91 beds providing 66 mechanical ventilation beds and a further 18 paediatric and neonatal beds with five mechanical ventilators (Dart et al., 2017). However, this illustrates the overall paucity of services for a population of 20 million people. Nevertheless, this does demonstrate that empirically, the availability of critical care beds exceeds demands, which indicated previously,

Zambia has most hospitals located in cities and the majority of people living in rural settings, thus today, many patients still have to travel significant distances to seek emergency healthcare, resulting in late presentations and increased complexity (Baker et al., 2025). Acutely ill patients are often nursed in acute bays of general wards; these are beds opposite the nurse's station, which allow for greater observation and often have oxygen and suction available (figure 2.2). However, the national ratio of nurses and midwives to population remains low. In 2022 there were 2.1 nurses and midwives per 1000 people, compared to the UK that has 9.2 per 1000 population (World Bank 2025).

This continually low nurse to patient ratio means providing quality nursing care can be highly challenging, with direct nursing care being provided by student nurses or ‘bed-siders’, with family members who stay at the hospital providing additional care. In addition, ward nurses do not have the critical care education and training that would enable them to use tools such as use of Early Warning Scoring (EWS) tools to identify patients at risk of deterioration (Alam et al., 2014; Nakitende et al., 2020). In consequence, recognition of the acutely ill patient is challenging, relying on individual nurses’ clinical knowledge, intuition and skills of observation.

Figure 2.2: Acute Bay in a Ward

As outlined previously, critical care demand exceeds provision and the corollary to this, is that there are many critically ill patients on the wards being managed by ward nurses and doctors, with limited critical care training or experience, a situation that urgently needs addressing (Dart

et al., 2017; Lillie et al., 2015; Baker et al., 2025). In addition, there may be significant delays while waiting for a critical care bed to become available, adding further pressure on ward staff. This impacts on mortality, particularly following surgery, as demonstrated by Lillie et al.'s (2015) retrospective cohort study of avoidable perioperative mortality. This found key factors leading to avoidable deaths included delays in surgery, lack of blood for transfusion and poor postoperative care, factors which a decade later, are still evident. Internationally, it is accepted if a patient requires admission to critical care, ideally, they should be optimised before the transfer, but all too often, particularly in LICs where resources are limited, they arrive extremely ill (Mbuthia & Kagwanja., 2024). This lack of critical care capacity and/or resources to stabilise patients urgently needs addressing if mortality from patients dying before they reach critical care is to be reduced. Over a decade ago, Jochberger et al. (2010) commented on the high hospital mortality and low annual admission rate to one critical care unit, suggesting a restrictive admission policy of the critical care and/or low referral rates may have contributed to hospital mortality. However, as few of the lower-level hospitals have critical care facilities, it may also be that they arrive at a hospital that does.

For specialist services such as critical care a multidisciplinary, inter-professional approach to service delivery is needed because of the complexity and severity of patients' conditions. In consequence, the group of healthcare professionals needed includes physicians, nurses, physiotherapists, nutritionists (dieticians) and other allied health professionals, such as, biomedical scientists, laboratory staff and radiographers. Critical care units can operate using either an open or closed approach to admissions. In open critical care units, the admitting physician remains responsible for patients throughout their stay on critical care. Whereas in a closed critical care unit the patient's care transfers to the intensivist. In Zambia, it is possible to find to find both open and closed models of admission as a result of limited available intensivists. With the exception of physician anaesthetists, who complete a module in intensive care, there is no specific medical speciality of intensive care medicine, therefore, admitting teams must take on the responsibility for ongoing care. However, it is a cause for concern that physician anaesthetist cover remains suboptimal with an estimated one physician anaesthetist for every million head of population (Kinnear et al. 2013).

Challenges with units that operate a closed model, are that during normal working hours residents in training provide critical care cover, out of hours care and emergency anaesthetic duties are very limited (Dart et al., 2017). Inevitably with such competing demands, only those with an interest in critical care continue to try to provide cover (Kinnear et al. 2013; Karydi et al., 2024)). In addition, Physician Anaesthetic training is relatively new, with previous attempts at establishing physician anaesthetist programmes failing due to lack of leadership and support from external organisations (Kinnear et al., 2013; Law et al., 2019). There is a Master of Medicine (Anaesthesia) programme, but anaesthetic services still rely on expatriate teams

and Clinical Officers Anaesthetists (Kinnear et al. 2013b; Law et al., 2019). These latter are key members of Zambian health services, who complete three years of general training and then a further two years in anaesthetics (Jochberger et al. 2010; Law et al., 2019). However, they have no specific critical care training, although they may be called upon during emergencies, for example, resuscitation or an airway emergency.

The term 'task shifting', or 'task sharing' was advocated by the extant WHO (2008) Addis Ababa Task Shifting Declaration in 2008 and encouraged the shifting of tasks to deal with the critical shortage of human resources for health. This involves allocating less specialist skills and tasks to less specialised and/or differently trained healthcare workers. While this has offered opportunities for nurses and to meet the challenges in practice, it must be considered with a full understanding of the situation (Pallangyo et al., 2020). It is a cause for concern that while this allows for a short-term response, for specialised nurses such as critical care nurses, it leads to reduced morale, lack of recognition and opportunities. Also, the term 'task shifting' turned out to be a euphemism to cover complex tasks which should have been recognised as required a higher level of competence.

In Zambia, where there is a critical shortage of physician intensivists, this necessitates nurses taking on additional roles ('task-shifting') which would traditionally be performed by doctors. Examples, of additional tasks included endotracheal intubation and clinical decision-making regarding admission to critical care. At the start of the study, registered nurses had the opportunity to complete a one-year advanced diploma in critical care nursing, which aimed to provide students with enhanced 'professional knowledge, skills and competencies', that are practice based and occupation specific (UN, 2011). Students' completed theory and practical blocks, comprising of 19 weeks (665 hours) classroom-based theory and 32 weeks (1255 hours) in practice. Placements included experience in adult, paediatric and neonatal intensive care, anaesthesia / operating theatres, renal units, cardiac catheter laboratory, radiology, special observation unit (midwifery), emergency departments and medical emergency units.

The challenge with task shifting is exemplified as follows, an advanced diploma critical care nurse will be required to have the knowledge and skills to decide when to intubate a patient and initiate mechanical ventilation. Yet a doctor will receive master's level education, increased salary, recognition and opportunities to attend workshops / continuing professional development to carry out the 'same task'. Also, there was little recognition that for nurses to take on these complex tasks there needed an increased establishment of nurses, or fundamental nursing activities would not be carried out. This results in fundamental nursing care being carried out by student nurses or patient bed-siders unsupervised (Mbuthia et al., 2023). However, at policy level, with limited understanding of specialist roles, and limited numbers of critical care nurses at strategic level, decisions continue to be made without full appreciation of how these decisions would impact on service delivery.

Critical care nurses need to have specialist skills and knowledge to work in a highly technical and demanding environment (Goldsworthy 2016). Critical care has been, and is, associated with high-burnout and compassion fatigue as a result of trying to balance the emotional burden of providing care to a critically ill patient (Gohery & Meaney 2013; Macey et al., 2022; Dubale et al., 2019). For LIC and LMIC, the challenges are compounded because lack of advancement and working in a limited resource environment has been shown to accelerate stress and burnout (Klopper et al. 2012; Bvumbwe & Mtshali, 2019). In consequence, there tends to be a high turnover of staff, with loss of experienced nursing staff resulting in poorer patient outcomes (Carter et al. 2016). Also, within many African countries, including Zambia, nursing has traditionally been deemed subservient to medicine, seen as only a technical trade (Bultemier et al. 2012; Buvmbwe & Mtshali, 2018), with little recognition or acceptance of the crucial played by the nursing workforce. Yet internationally critical care nurses have been recognised as highly competent nurses who carried the brunt of the pandemic.

Critical care needs to have a high staff to patient ratio due to the complexity and severity of patients' condition. Often patients are intubated and ventilated and require increased nursing observation to detect complications. The World Federation of Critical Care Nursing (WfCCN) recommends any ventilated patient should have a one-to-one nurse-patient ratio and patients must have immediate access to an RN who has undertaken a post-basic course in critical care nursing (WfCCN 2020). In practice, this recommendation was often not met due to the lack of qualified critical care nurses, limited availability of training places, lack of recognition and opportunities, together with a lack of remuneration for nurses who had completed the specialised course. In consequence, the cycle of nurse education accompanied by nurse migration remains an issue (Bvumbwe & Mtshali, 2018). It remains a cause for concern that for every cohort that trains in Zambia, a percentage will be enticed to leave by international and private organisations, such as the NHS (Adam et al., 2025).

2.3 Summary

This chapter has provided a critical overview of the literature regarding critical care provision in LIC. The literature search at the start of the study, illustrates the paucity in published evidence and from the information available, demonstrating the challenges facing specialist practice in a range of settings. The second literature search revealed an increased availability of published evidence, this could be partly due to the Covid-19 pandemic, which raised the profile of critical care. However, it is a cause for concern, that many of the themes regarding limited workforce and resources remain an issue and that the availability of nursing literature still remains limited.

The second part of this chapter critically discusses critical care provision in Zambia, again this revealed there was some published evidence available, however, it tended to be medical and

not nursing. Much of the research found focuses on identifying the challenges and problems, but few give any solutions or guidance on how to improve the situation. It also illustrates the challenges of developing a specialist nursing workforce within LIC, where task shifting is routinely accepted and there is limited recognition of an increasing nursing role. In consequence, the literature revealed the impact on nurse burnout and factors contributing to nurse migration. The findings from this critical review of the literature have found, there is very little published evidence on developing the critical care nursing workforce and supported the need for Zambia to develop its own context specific conceptual framework and career structure for critical care nursing.

Chapter 3: Philosophy & Theories of Learning Underpinning the Study

This chapter explores the underpinning philosophy and theories of learning for this study. Identifying approaches that were appropriate for Zambia was the first step, as this was crucial to the acceptability and sustainability of the study. It was at this point that it was evident that the design and implementation of the study, needed to be in a format that all levels from bedside to strategic management saw as appropriate. The MOH request appeared to be a logical approach to enhance critical care nursing, however, it was in fact the first step in changing the face of specialist nursing in Zambia. The responsibility engendered by this, at times appeared overwhelming as different theories were reviewed and discarded.

3.1 Identifying a Philosophical Underpinning for this study

Most of the theories such as post colonialism and neo-colonialism, were Western based (Khan & Ntakana, 2023), and while they offered valuable insights into how to design and implement research studies, they did not meet the requirements for this specific study. At the start of the study in 2017, these did not focus on building from within the African community but instead trying to remove negative aspects of the colonial era. It was, therefore, still a Western lens through which other countries were viewed. The challenge was to find a philosophy that was intrinsic and built from within, rather than changing from outside (Ébalé & Mulemi, 2023).

It is important to recognise that Africa is often referred to as a country, however, as Robinson (2023) argues it is a continent of 54 independent countries, all of which have unique cultural heritage, practices and traditions. Nursing and other healthcare professional publications are not exempt of this stereotypical approach with Africa and Africans grouped together in one allegedly one homogenous group, which totally negates the individuality of each country (Ezeonwu, 2021; Robinson, 2023; Adam et al., 2025).

As previously cited in chapter two which explores the issue of Zambia in the context of this study. However, it is important to consider some of the historical events that influenced the development of the philosophical underpinning for this study. Zambia comprises of a diverse and complex tribal structure and today consists of 73 tribes. Today, these tribes all live together respecting each other's similarities and differences, this includes the maintenance of individual tribal languages, cultures, traditions and health beliefs, with many of them having Christianity infused into them. Prior to European dominance, many of the tribes in Zambia migrated from other parts of the continent, due to population growth, land shortage, political conflicts and the need to retain trade links (Zambia National Museum, 2025). They were experienced traders and farmers, in consequence, as they joined together the oppressed became a united consortium of tribes. An example, of how Zambia's diversity in tribes and beliefs, has influenced their healthcare beliefs, is that in some tribes' sickness and illness can

still be attributed to spirits or witchcraft, which are 'treated' using dances (Mkandawire et al., 2019. Pg. 82). In consequence, Zambia has a recent Witchcraft Act (Zambia Parliament, 2023), which provides a legal framework defining acts which constitute witchcraft and outlining penalties. This clearly illustrates that the merging of different traditions and the Western influence on legislation, is current.

When reviewing possible philosophical approaches, the challenge was that multiplicity of history, traditions and practices made it difficult. Nevertheless, Bourdieu (1990) was identified as having appropriate concepts for the study. Bourdieu's theory (1990; Bourdieu & Wacquant, 1992) on symbolic violence fits with the paradigm stance that would be needed for the study (chapter four), due to Zambia's history of oppression which has been recognised for many years (Shaw, 1976; Money & Chansa, 2024). Although the impact on colonialism in Zambia has been frequently discussed (Money & Chansa, 2024), it is important to consider oppression post-independence. While today, Zambia is universally as recognised as having maintained its attitude of 'positive neutrality' with regard to other countries and conflicts (Vandome, 2023), it is important to consider the internal mechanisms that led to the continuation of oppression. For example, towards the end of British Colonial rule, in Zambia, Kenneth Kaunda was initially seen as a hero across Africa, respected for his peaceful approach to independence (Money & Chansa, 2024). Following independence, other countries within Africa who were still fighting for independence such as Zimbabwe (formerly Rhodesia) and South Africa (Apartheid rule), many freedom fighters sought refuge and were accepted into Zambia. However, many of these countries struggling for liberation including Kaunda's regime, gradually became oppressive establishing dictatorships which oppressed their own people. Simultaneously, international politics were changing. With the move away from British and American political influences. Kaunda sought aid and assistance from the USSR. In consequence, it could be argued that Zambia went from one oppressor, the British Empire to another, the USSR.

For oppression to occur, a set of norms that are determined by a dominate group against a group deemed to be inferior needs to become accepted in society (Treinen et al., 2022; Rooddehghan et al., 2015). As outlined in chapter two, in Zambia, this phenomenon has occurred on many levels with events impacting on the development of individuals, with a ripple effect on the development of the nursing profession and healthcare system. These effects cannot be ignored when considering the development of specialist practice and its acceptance, particularly because, in both the colonial era and post-independence, nurses have been educated into subservience (Kimani, 2023). Much has been written about the medical domination of nurses (Tembo, 2023), however, it to be noted, that the apprentice model of education led to senior nurses maintaining the practice of nursing students following behaviours from their mentors and not questioning, analysing or critical thinking (Rababa &

Al-Rawashdeh, 2021). Thus, nurses were subject to two forms of oppression which were supported by the authoritarian nature of hospitals, whereby patients were passive receivers of the care that they received. By moving nursing to an education setting, the aim was to improve education and training, however, as Bourdieu and Passeron (1977. 5) argue:

> 'All pedagogic action is symbolic violence insofar as it is the imposition of a cultural arbitrary by an arbitrary power.'

Bourdieu and Wanquart (1992. 170) go further to suggest that educated individuals are blind to the symbolic violence, as they have been subjected to a school system which embeds and conditions individuals more intensely than the average person, in consequence, they go on unwittingly exerting this power over others. Therefore, the oppression continues unrecognised, and as a researcher, nurse and lecturer, through this study, it was important to identify a philosophy that would not continue this approach. However, more recently Watkins (2018) challenges Bourdieu's argument of symbolic violence, suggesting that in contrast it could actually be used reduce inequalities through education. An approach accepted for this study; however, this study was more than education, therefore, this did not address all the questions regarding an appropriate philosophical underpinning.

After reviewing Bourdieu's (1990) symbolic violence, it did not address the totality of the study, therefore, alternative philosophies were sought. Trying to find a philosophy that would be accepted and had developed from within the African continent, resulted in the identification of Ubuntu. Ubuntu is an African philosophy that introduces the concept of inter-connectedness which is a key component of this study, as it involved not only the recognition and education of critical care nursing, but the wider nursing profession, other professional groups, the healthcare system, patients, culture, socio-economic status of Zambia and the wider sub-Saharan African context (Tembo, 2023). Nyandeni et al (2024) point out that ubuntu is a dominate African ontological philosophy and value system, The term means 'I am because we are', which recognises an individual becomes a person through the interconnectedness and relationships with others (Borti et al., 2024). Within the different African countries and languages different words are used to describe the similar ethical framework of ubuntu (table 3.1) (Mugumbate & Chereni, 2019).

Ubuntu encompasses the tenets of humanity, inter-connectedness, solidarity and collective wellbeing, empathy, compassion, respect and collective responsibility (Matahela & et Phil, 2025). While the term has been used for centuries it uses as a research paradigm or pedagogical approach has been limited. Therefore, it was important in this study to consider the concept of ubuntu challenges the traditional educational theories which are based on Western principles. In recent years Ubuntu has been proposed as both a philosophy and an educational theory (Mathela & et Phil, 2025; Borti et al., 2024).

Table 3.1: Different terms for Ubuntu (Mugumbate & Chereni, 2019)	
Angola	Gimuntu
Botswana	Muthu
Burkina Faso, Cote d'Ivoire, Equatorial Guinea, Guinea, Gambia, Liberia, Sierra Leone, Mali	Maaya
Burundi	Ubuntu
Cameroon	Bato
Congo	Bantu
Democratic Republic of Congo	Bomoto, bantu
Ethiopia	Medemer
Ghana	Biako ye
Keyna	Utu, munto, modo
Malawi	Umunthu
Mozambique	Vumuntu
Namibia	Omundu
Nigeria	Mutunchi, iwa, agwa
Rwanda	Ubuntu
South Africa	Ubuntu, botho
Tanzania	Utu, obuntu, bumuntu
Uganda	Obuntu
Zambia	Umunthu, ubuntu
Zimbabwe	Hunhu, unhu, botho, ubuntu

Ubuntu was chosen because, of the need to find a context specific solution that could be used to support embedding the study outcomes within the health system as a whole and through that supporting sustainability. In addition, it has to be recognised that as Spahn (2018) points out traditional Western approaches to healthcare follow the tradition of individual rather than collective responsibility. Whereas, within ubuntu great significance on the inter-connectedness of individual with the society as a whole, and emphasises the need for respect, community and shared responsibility between individuals, families and communities and the society in which they live (Tembo, 2023). However, within this philosophy, identity remains crucial because, an individual can only develop inter-connectedness when they recognise and accept that where they have come from is a key part of what they are and where they are going (Chilisa et al., 2017). This enables individuals to be proud of their culture and history and allows the individual to connect to develop self-awareness, belonginess and their responsibilities to one another and the environment (Chilisa et al., 2017).

Ubuntu recognises that caring, an essential component of nursing, cannot be viewed in isolation. In the African context, it involves, recognising all aspects of an individual's being, which includes immediate and extended family members, ancestors, the community (and village) they come from and their tribe (Nolte & Downing, 2019). Therefore, critical care nursing practice needs to be based on a conceptual framework that recognises the interconnectedness of the nurse with the patient and the world from which they come from. In consequence, it could be argued that one of the challenges for Zambia trying advance the

nursing agenda, it that the only philosophies and models that have been used for education and practice are designed for a Western setting (Mulaudzi et al., 2024). Examples, include Orem, Leininger, Rogers, Watson and Roper, Logan and Tierney, however, these take no account of the indigenous population on whom they are being imposed. At this stage it was seen as important to explore and give an overview of possible learning theories that could be used to support the development of the career structure and conceptual framework as it had an element of education.

3.2 Critical Review of Theories of Learning

Educational theory is a term which encompasses theories which relate to the application, interpretation and purpose of learning and education (Lockey et al., 2021). These are crucial as they guide and inform the education approaches, curricula and assessments used (Khalil & Elkhinder, 2016). This study had an adult education focus and therefore the study needed to recognise the key issues accompanying the education of adults, because of the opportunity for critical care nurses to access higher-level education opportunities as part of their career structure. This meant there needed to be a shift from a pedagogical approach using a current technical and task focused approach to use adult learning approaches. There were three main reasons for this, firstly, the recommendation by the WHO (2009, 2020) for nurse education to be at graduate level, secondly, graduate level education has shown to improve quality of care and reduce mortality (Aiken et al., 2018). Finally, access to higher education and in particular access to specialist education has been shown to increase the attractiveness of nursing as a career and support retention within sub-Saharan Africa (Crowley & Daniels, 2023). However, as Fresta et al (2023) argue, in many instances these factors are not coherent or interlinked strategically. Therefore, in this study, based on participatory cooperative inquiry where all decisions are shared and must be appropriate and acceptable to all partners (Vaughn & Jacquez, 2018), the themes need to be explicit and presented coherently at all levels from ‘boardroom to bedside and back to boardroom’ and back again.

When considering an appropriate educational theory, it was important to consider the concept of decolonising the curriculum, which has recently been gathering pace. Universities and education should be seen as a force for good. However, as Laakso and Adu (2024) argue that Anglophobe countries in Africa such as Zambia, have shared history with the UK and Europe, which means education programmes and evidence could be dominated by the Global North and South Africa. Therefore, a key driver for decolonising the curriculum is to allow universities to empower students and to challenge teaching and learning approaches which may intrinsically carry epistemological assumptions (Makhene, 2023; Laakso & Adu, 2024). For Zambia, who inherited nursing education programmes and structures and accepted Western specialist nurse education curricula this could include reinforcing legacies and assumptions

which may act as a barrier (English & Heilbronn, 2024). For example, as Lockey et al (2021) point out healthcare education in the late 20th century was largely based on behaviourism, which would have been the time Zambia gained independence. However, over 50 years ago Ake (1974; 1982) argued that Western methods should be abandoned in favour of African traditions in the generation of knowledge. Ngunyulu et al (2020) go further to argue that curricula need to embed 'African realism' and that the African lived experience are crucial to help prepare nurses to understand and deal with the unique challenges including the role of African traditional healers. Therefore, when considering educational theory for this study, it was crucial to consider all options and not reinforce Western theories and perspectives (Ngunyulu et al 2020).

In the early part of the 20th century, learning theories were influenced by psychologists, with influential theories including behaviourist, cognitivism and constructivism. However, from the 1960s onwards adult educators began developing their own theories of adult learning (Mukhalalati & Taylor, 2019. Knowles et al., 2012). Educational theories are based on the relationship between the learner and teacher and focuses on three key theories of pedagogical, andragogy and heutagogy (Mukhalalati & Taylor, 2019) (figure 3.1).

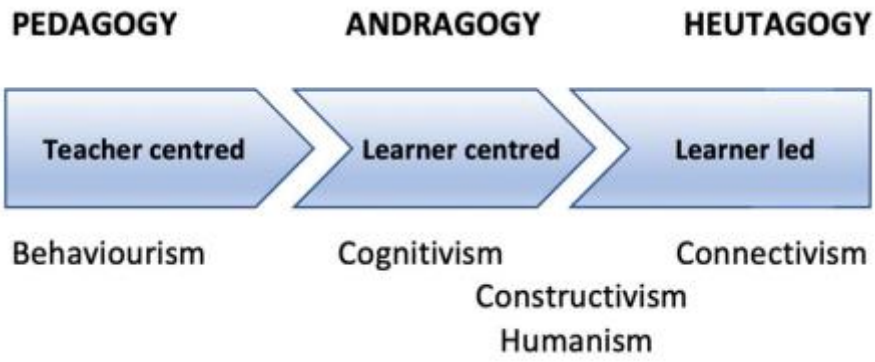


Figure 3.1: Concepts of Learning (Lockey et al., 2021)

Pedagogy focuses on the process of teacher-centred learning and is often used when teaching children (Freire, 1996). De Beer (2019) points out the challenge for many African countries including Zambia, is the education system uses a pedagogical approach which is teacher centred and driven. This situation is compounded by limited tutors and leaders in practice, with higher level qualifications and a reliance on lower-level technical training (Bvumbwe & Mtshali, 2018). Therefore, the challenge is moving towards new and innovative teaching strategies, therefore, this study needed to introduce the concept of andragogy and illustrate to tutors and strategic stakeholders how this educational approach could be employed.

Andragogy, the theory of adult learning is based on the concept that adults learn differently to children and was first described by a German teacher Alexander Kapp in the 1833 (Kapp, 1833). Knowles (2012) and Knowles et al (2014) are regarded as having further developed the theory, pointing out that adults learn differently due to previous experiences, motivation

and orientation to learning. This means that adult learners need to be actively involved in their learning and be motivated to seek opportunities to develop their knowledge, through self-directed and goal-orientated activities (Mandlelize & Sepeng, 2024). Thirdly, heutagogy, encourages students to take an autonomous approach to their learning, requiring them to mature and manage their own learning (Lockey et al., 2021). This approach is appropriate for specialist nursing education, ideally where students have access to digital resources and have learned to work independently. It was important to consider these points when developing the education and career structure for critical care nurses, as it was important to support them to transition from the approach they are used to, encouraging them to take responsibility for their own life-long learning. However, as Lockey et al (2021) point out the overlap between the theories, and adult learning is complex, and Knowles (2014) argues that it cannot be described by one single set of principles or by a single model or theory.

Underpinning learning are the traditional education theories relating to behaviourism, cognitivism and constructivism (Lockey et al., 2021). Each of these offers an explanation of how an individual constructs their knowledge, based on their previous experiences, which influence how they individually acquire, retain and recall knowledge and information (Lockey et al., 2021). One dominant theory is behaviourism, based on Skinner's theory of operant conditioning (Skinner 2019). Behaviourist theory states that knowledge exists independently, with the learner needing to be exposed to an experience in order to learn from it. Thus, new experiences result in new or changes in behaviours and are associated with stimuli and responses (Killen & O'Toole., 2023). Students are seen as 'blank canvasses' with the teacher focusing on transferring knowledge, and learning being controlled by an authority figure namely the teacher (Lockey et al., 2021). Students need to build upon knowledge and skills which becomes increasingly complex until they master the key concepts (Bloom, 1968; Tuma & Nassar, 2021). Examples of behaviourist learning theory include rote learning, skills and drills (repetition), incentives, verbal reinforcement and establishing rules (Killen & O'Toole., 2023). A limitation in this theory is that it does not prepare the individual for the independent learning needed for problem solving and creative thinking, as it is not focused on critical reflection. Also, because the learner is dependent on the teacher there is little motivation and students retain a reliance on the delivery of the planned curriculum (Lockey et al., 2021). This is in many ways a continuation of the pedagogical approaches the Zambian nurses will have undergone at school and in colleges of nursing. This will not adequately prepare them for their roles as critical nurses, where they will need to be managers, leaders and independent practitioners.

Using either the traditional or liberal / progressive pathway to developing knowledge / truth, it is accepted that there is only one 'set of knowledge/truth to be acquired' (David, 2023). The traditional approach requires truth to develop new thought. Contrastingly, liberal approaches

involve a thought which is developed into truth and then new thought (David, 2023). However, the main difference with liberal education, is that learning is facilitated by an authority figure such as the teacher, it is recognised students have prior knowledge, and the teacher works with students to support their learning, rather than controlling the learning. Another learning theory considered was constructivism (Lockey et al., 2021). Initially constructivism, developed from Piaget (1953) and Bruner (1966), this approach requires individuals to construct their own perspective of the world, based on their own experiences and knowledge. As with cognitivism, constructivism provides an andragogical approach to learning and a foundation for heutagogy (Lockey et al., 2021). The process is individualised, recognising that every learner is different, and their previous experiences will influence their perception, and through that their learning. For learning to be successful, individuals construct new ideas or concepts based on their prior knowledge or experience, as they need to build a significant knowledge base in order to interpret and create ideas. Therefore, a limitation to this approach is that where learning has not been consistent it is more difficult for learners to see how their new information can build upon what they already know (Alanzi, 2016). Examples of constructivism include case studies, problem-based learning, group work and simulation), and learning processes need to enable students to scaffold their learning from fundamental to complex topics (Malik, 2017).

A challenge with traditional theories is they tend to be classroom based, and were designed before the internet was developed or widely accessible. In consequence, since these developments, education theory has evolved and connectivism theory added. This is based upon using multiple sources, to enable students to utilise wide ranging information to gain a greater and deeper understanding (Lockey et al., 2021). A key point with this approach is that the student, needs to be fully involved and identify for themselves the sources they will review as part of their learning. Thus, this approach is learner led and an example of heutagogy. This learning theory was developed by Hase and Kenyon (2000) and later Blaschke (2012). Heutagogy is student centred and based on humanistic theory with learning activities guided by technology (Bansal et al., 2020).

Advantages of this approach is that learning is flexible and can take place when the learner wants to undertake the activity, and it is not bound by rigid formal organised teaching programmes. It enables the learner to repeat activities until they have achieved mastery, particularly in programmes which have limited time (Lockey et al., 2021). It therefore works well for professional programmes and those where competence needs developing, as the learner can re-visit each element as often as they need, only moving on when they are confident, they have achieved the wanted learning outcomes. However, it has to be remembered that exposing the learner to multiple sources of evidence can be overwhelming if access to appropriate support is not available, particularly early in the learning experience.

In addition, in an education environment where there is increasing reliance on the internet, it is important that the quality of evidence sources is checked as poor internet sources can limit learning (Ren and Zhu, 2024). In this study, it was important to consider this theory carefully as access to the internet in Zambia has been gradually increasing. However, as Na-Mee et al (2023) points out for many there remains limited access to the internet and the regular power cuts adversely impact on nurses being able to access and use internet-based resources. This is further compounded by many of the nurses having limited digital literacy, and in consequence they would struggle to use this approach (Nyashanu et al., 2023), therefore, this theory was recognised as important but rejected due to the limitations.

Transformative education approaches were then considered, these recognise that knowledge is socially constructed and connected to issues of power (Ryan et al., 2022). To achieve learning, individuals must develop new relationships within communities, which are in their turn influenced by social, cultural, and historical facts. This style of education is recognised as appropriate for some specific groups as it focuses on facilitating giving voice to the marginalised, silenced or omitted (Ryan et al., 2022). This style of learning theory, social constructivist theory, argues that individuals must critically consider and discuss from social context and interaction with peers and learning from others (Vygotsky's (1978); Thomas et al., 2014). To develop truth and meaning, it is recognised there are several paths that may be taken with questions that have no predetermined answers and learning achieved through shared activities (Lockey et al., 2021).

The challenge for this study was that in amidst the questions was the acceptance that how these adults had gained their knowledge, competence and experience would impact not only on how they were able to participate in the research process, but also how they would internalise and use the outcomes. While it is accepted, that the seminal work of Freire (1996) is classed within the transformative paradigm, both Dewey's (1963; 1966) and Freire's (1996) theories overlap on their approach to reflection and the individual in society (Bates, 2019). However, they differ on the wider ideological perspective of education, with Freire (1996) development of critical reflection on race, class and power (Bates, 2019). Freire (1996), a teacher involved in a national literacy programme in the 1950's and 1960s in Brazil, developed an education theory that involved building on the language, experience and skills of the learner rather than the more traditional approach of imposition of the culture of the teacher on the student (Bates, 2019). Freire (1966) wanted to move education away from what he referred to as a 'banking' system, whereby the lecturer deposited knowledge into what he described as the accounts of students. He argued that the main problem was that students who participated in this approach were passive recipients and not active participants in learning (Freire Institute, 2025).

Freire's (1996) seminal work 'pedagogies of the oppressed' identified the concept of 'critical consciousness', as a way of moving the student from passive learning to a process that would help them achieve liberation and work towards social change (Freire Institute, 2025). For this approach to be successful, individuals need to become aware of what he referred to as their oppression and once they have done so, education can then be used as a catalyst for actions. There are five stages involved in the process of developing critical consciousness and learning. It starts with action, this then shaped by reflection, which leads to further action (Bates, 2019). It has to be stated that critical pedagogy is not a method of learning but aa approach which recognises that students need to be given space to act independently and start to assert their knowledge and ability, to critically question their assumptions and the traditional belief that education is a 'value-neural enterprise' (Freire Institute, 2025). As educators, it is important to understand that a learner has a life outside the classroom environment, and the aim of learning is to promote long-term individual and independent learning. This can only work if the education experiences build the learner's confidence, particularly in the short term, accepting that this is an important stage in the learning process. Freire (1996) was alone in focusing on oppression and its effect on education. However, almost two decades later, Anyon (1983) also explored how student' social status, used knowledge and how different educational establishments used knowledge to develop students.

UN (2015) SDG 4 requires countries to promote opportunities for life-long learning, therefore, this study led to consideration how, education theories could be applied in practice, as to develop a career structure, the education processes involved needed to be included. Ireland and Mouthaan (2020) point out that there are varied opinions and no international consensus to curriculum design. In consequence, the curriculum needs to take account of the context of the educational and health system in which it is to be delivered. Forero et al (2020) point out that a poorly designed curriculum may impact on the quality of programme and ultimately the learning of the students. However, what was consistent in the literature and evidence for professional education, was that the student needs to be in the centre and be an active participant in their own learning (Gooding et al., 2017).

Therefore, the starting point was to critically appraise approaches to the application of education theories in curriculum design. Ireland and Mouthaan (2020) reviewed a series of approaches which included flexible, non-linear models and the spiral curriculum. They argue that non-linear models involve forming a network or web to link theory and progression, suggesting that the traditional linear approach limits integration and application of subjects. Therefore, Bruner's (1974) spiral curriculum which has its beginnings in the Constructivist learning framework (Wood, 2019), was identified as a possible design strategy. Constructivism requires individuals to develop their own perspective of the world, based on their own

experiences and knowledge. The process is individualised and influenced by students' previous experiences (Wood, 2019). The spiral curriculum encourages critical thinking as it allows the practitioner to use information and experiences to question their accuracy, identify links and gain new understanding (Von Colln-Appling & Guilian, 2017). Critical thinking is also facilitated by active learning (Tedesco-Schenck, 2013). While Fraser et al (2019) argue that using the spiral curriculum allows students to revisit knowledge and skills throughout their studies promoting strong understanding and retention of knowledge.

Bloom's (1956) taxonomy has been associated with nurse education for decades (Dabney & Eid, 2024). Dabney and Eid (2024) argue that Bloom's taxonomy is based on scaffolding which is an instructional approach to learning. However, while Bloom's taxonomy has been challenged in recent years, and it is accepted this is a Western model. (Dabney & Eid, 2024). For Zambia, Bloom's taxonomy (Tuma & Nassar, 2021), fits with the education system. In consequence, this was used a starting point, it needed to be linked to strategy that would facilitate integration and harmonisation of theoretical content and practice. Therefore, Bloom's taxonomy was used as part of curriculum design but not as the only approach.

After reviewing the three main theories of pedagogy, andragogy and heutagogy, the challenges that had arisen from identifying an underlying philosophy were evident. Therefore, the decision was made to look at the approach to education using ubuntu as a starting point. Over two decades ago, Bangura (2005) described the concept of Ubuntugogy, who argued it goes beyond pedagogy, andragogy and heutagogy, because it goes beyond the teaching experience, and learning and teaching has an ethical, emotional, social and cognitive aspects of learning (Simbi, 2025). It is important to point that alternative spelling of the term ubuntugogy can be found in the international literature, therefore, for consistency the spelling ubuntugogy has been used through the study.

For teachers it influences the delivery and the collective nature of ubuntu means the teaching environment and students become a family of community (Mugumbate et al., 2024). For students undertaking educational programmes ubuntu becomes important because students are under pressure to cope with personal and academic demands but also navigate university systems and prepare for their future role. Ngubane and Makua (2021) argues, ubuntu as an educational theory requires learners to prioritise their humanity in education and regardless of racial, education, economic, sexual orientation and linguistic background can thrive. Table 3.2 summarises the differences between the four approaches, illustrating why ubuntugogy was chosen for use in this study.

Table 3.2: Differences between Pedagogy, Andragogy, Heutagogy & Ubuntugogy (Tremble, 2023; Bansal et al., 2020; Mugumbate et al., 2024; Bangura, 2005)				
	Pedagogy	Andragogy	Heutagogy	Ubuntugogy
Learner	Students have no / limited experience	Adults with / without experience	Adults with some experience	Learner is part of a community
Objective of learning	To gain knowledge to progress to next stage	To develop knowledge and competency to solve the problem	To develop capacity based on learning on need and potential to learn	Personal and academic development. Sense of belonging and to share wisdom, values and knowledge.
Role of teacher	Teacher driven – learner's receivers of information. Limited connection to real-life or work situations	Learners are autonomous and teachers guide and facilitate learners to become self-directed. Activities linked to learners' life and/or work experience	Independent learners which limited role of teachers whose role is to foster curiosity and opportunity.	Guide or facilitator
Motivation	External motivation e.g. grades, rewards	Internal motivation: need and desire to progress	Internal inquiry driven.	Based on relational, collective, interconnectedness, respect and humility. Learning is communal.
Allows creativity	No	No	Yes	Yes
Resources for teaching	Limited	Learner controlled	Unlimited as includes internet	Material resource limited, but human, cultural and relational resources unlimited
Process of learning	Unidirectional	Bi-directional	Multi-directional	Bi and multidirectional

It is also important to note, that given Zambia's history nursing is rooted in its colonial legacy, and as identified in this study, the critical care curriculum and practice was based on Eurocentric curricula and teaching methods. In consequence, it could be argued that nurse lecturers have neglected the ubuntu philosophy. This is supported by Mulaudzi et al (2024) who argued that South African nurse educators based their practice on Western educational theories and Ubuntu had been largely underutilised, however, it has huge benefits for nursing. For example, using teamwork (collectivism) as a learning approach in which student's set-up study groups and undertake collective projects. This fits with the African culture that humans are interdependent, hence the need for communal life and family (Jecker et al., 2022). Borti et al (2024) identify that ubuntu includes the use of storytelling, listening and discussions, which fits with the wider challenge of the limited publication and evidence, as the knowledge and skill is passed down to different generations. In consequence, for critical care nurse education

ubuntugogy offers several opportunities, as it builds a community of practice, sense of identity within a minority and marginalised group and the importance of recognising it is not just above teaching but role modelling in practice. In addition, as the critical care nurse is interlinked to others which includes patients and family members, ubuntugogy has the opportunity to enhance critical care nursing practice, as often critical care can be seen as dehumanising (Tembo, 2023). Therefore, as Tembo (2023, pg. 4) states ubuntugogy could be used as an educational approach to provide the 'humanness to nursing care'.

3.3 Integrating Approaches to Learning

This critical review has aimed to extract the key concepts from both Western and African education theories. While ubuntugogy provided a theory from within Africa, the challenge for this study, was the paucity of research literature around ubuntugogy and its application in education. In addition, Western learning theories were already well established and embedded into all aspects of nurse education in Zambia. Therefore, the radical shift to a new learning theory was not possible, no matter how appropriate it seemed to be. In consequence, it was important to find a middle ground to start the debate and initiate moves for change. Therefore, as Chilisa et al (2017) argue there needs to be greater attention between what is accepted as knowledge (which is often based on Western knowledge systems) and an opportunity for harmonisation and acceptance of diversity in methodologies. Bruner's (1974) spiral curriculum, Bloom's (1956) Taxonomy and ubuntugogy were integrated and merged to present a new approach to learning that could be utilised for the study, in the absence any single theory completely addressing the aims of the study.

The links between ubuntu, the spiral curriculum and Blooms taxonomy can be summarised as follows. Bloom's (1956) taxonomy involves layering and increasing knowledge, as the knowledge deeps students are exposed to different perspectives from remembering to synthesising and creating (Webb et al., 2019). The need for discussion and debate facilitates integration and application from simple to complex concepts (Webb et al., 2019). The spiral curriculum encourages reflection on each layer, before moving on a deeper level of knowledge (Woodward, 2019). Similarly, ubuntu recognises that individuals interacting with each other and sharing learning, leads to the extension of personal knowledge and the development of shared wisdom (Tembo, 2023; Borti et al., 2024).

Ubuntugogy learning is relational and involves individual and group achievement, this links to Bloom's taxonomy and the spiral curriculum (Tuma &Nassar, 2021). As students' progress through higher-level education, they extend and enhance their expertise, through sharing their knowledge and gradually moving to the role of teacher and mentor within the community e.g. the critical care unit and/or the wider profession (Borti et al., 2023; Tuma & Nassar, 2021;

Adams, 2015). In addition, as their knowledge and skills increase, their work within the multi-disciplinary team becomes recognised and accepted, with these interconnections increasing the effectiveness of the team (community). Both ubuntugogy and the spiral curriculum recognise that each individual within the community will develop at different rates, while ultimately aiming to develop the community as a whole, this is crucial as enables to realise their full potential (Westoby & Lathouras, 2024; Tembo, 2023). This in turn has a positive impact on the community, its actions, interactions and social cohesion.

Education should be seen as a force for good, which promotes ethical practice, through integration of the various ethical dimensions inherent within the curriculum and ultimately in practice (UN, 2025; Norman, 2024). Therefore, ubuntugogy, the spiral curriculum and Bloom's taxonomy all emphasise the important of promoting ethical and social responsibilities. The theories discussed above, link ubuntugogy as they recognised the inter-connectedness of the individual with the community and how their knowledge and skills expand as a spiral through life-long learning and practical experiences (Zireva, 2020; Webb et al., 2019). Finally, education should be seen as a life-long journey, and as the spiral curriculum and Bloom's taxonomy (1968) encourage students to develop and extend their knowledge, while ubuntugogy recognises that education and learning is an evolving relationship. In consequence, ubuntu (as a philosophy and learning theory), supported the use of spiral curriculum and Bloom's taxonomy in developing the career structure as discussed in chapter 8.

3.4 Summary

This chapter has provided a rationale for the choice of philosophy to underpin the study, followed by an overview of Western and African learning theories and the rationale as to the use of ubuntugogy. It was important to present all possible philosophical and learning theories for discussion by study participants. This was seen as crucial as the methodology chosen (see chapter 4) of participatory co-operative inquiry demands participation and ownership of all aspects of the study. As outlined in the positionality section in chapter 1 and chapter 4, it was important to acknowledge that as an outsider conducting research in Zambia, it was important to not endorse or enforce Western perspectives. Therefore, it was important for the researcher to consider traditional and non-traditional philosophies and learning theories, as part of the researcher's development and to provide transparency. Finding ubuntu and ubuntugogy and studying these in the light of the MOH request, it totally changed the direction of activities within the study. Ubuntu was the first philosophy found that had grown from within Africa, and studying it clarified and explained some of the actions and interactions seen in practice. Given the limited published evidence and experience of using ubuntugogy in nurse education in Zambia, this study will help to address the paucity of evidence. To avoid repetition, the

practical application of ubuntugogy has been included in the development of the conceptual framework as it illustrates the processes involved. The next chapter will critically examine methodologies used for all research activities.

Chapter 4: Theoretical Perspectives & Methodology of the Study

This chapter sets out the theoretical perspectives used in this study for the development of a policy statement encompassing a career structure and conceptual framework for critical care nursing in Zambia. It includes the underpinning ontological and epistemological approaches and a rationale for the methodology chosen for this study. It also includes an in-depth review of researcher positionality in this study.

4.1 Research Aims & Objectives

The main aims of the research were:

To develop and implement a culturally competent, culturally safe, and sustainable conceptual framework for critical care nurse education and practice in Zambia.

To develop policy recommendations for a career structure for critical care nurses

To achieve these aims, it was essential that the methods chosen facilitated partnership participation and shared decision making. This was because, from the beginning, developments were planned with government and key stakeholders who needed to have ownership of the outcomes, for acceptance, implementation and sustainability to be achieved. Therefore, for clarity, the main aims were sub-divided into the following more specific objectives which identify key issues that needed to be addressed:

Aim 1: To develop and implement a culturally competent, culturally safe, and sustainable conceptual framework for critical care nurse education and practice in Zambia.

Specific objectives included:

1. Exploration with MOH, national nursing regulators, professional organisations / unions, experienced critical care nurses, chief nurses, and educators, of the future critical care nursing priorities in Zambia.
2. A national baseline e-survey of all current critical care nurses in Zambia on their opinions relating to critical care nursing practice and education.
3. In-depth exploration of current and future critical care provision in Zambia with experienced critical care nurses, chief nurses, and educators.
4. Examination of critical care patient case-mix of adults requiring critical care admission.
5. Review of national and international policy documentation.

Aim 2: To develop policy recommendations for a career structure for critical care nurses.

Specific objectives included:

1. Evaluation of current critical care nursing education and training (including curricula) in Zambia.
2. Exploration with key stakeholders of the current and future needs in critical care nursing in Zambia.
3. Design, development, and implementation of a conceptual framework from pre-service student to PhD critical care nursing in Zambia.
4. Review of national and international policy documentation and strategic plans relating to critical care provision and workforce in Zambia.
5. Recommendations for policies locally and nationally for the implementation of the career framework for critical care nurse education and practice.

4.2 Designing the Study

The first step needed to be an exploration of the possible research paradigms and epistemological frameworks to identify an appropriate approach for the study. However, having accepted that ubuntu would be the overarching philosophical basis for the study, the challenge arose that at the time this study commenced, there was little evidence of ubuntu being applied in research, or recognition of its role in nursing and nurse education (Tembo 2023). It is accepted that the research aims, objectives and the knowledge needed govern the design of the study and the research paradigms used (Clarke et al., 2021). These provide principles, procedures, and ethos, enabling the research topic to be explored, identifying acceptable and new knowledge, using methodologies chosen through critical reflection (Flick, 2015; Clarke et al., 2021). Therefore, the traditional approaches to research were carefully considered to identify which had the nearest alignment with the core tenets of ubuntu (Borti et al 2024).

The most frequently used paradigms are positivism and interpretivism, so were considered first. Positivism, developed from the natural sciences is epistemology-based recognising one objective truth to increase knowledge. It focuses on hypotheses testing and empirical data that can be quantified and statistically analysed, providing material to develop theoretical laws and answers to problems (Park et al., 2020; Clarke et al., 2021). In contrast, interpretivism focuses more on ontological concepts, aiming to provide an understanding regarding the how and why of social actions and interactions (Park et al., 2020), focusing on using methodologies that facilitate understanding of the subjective meaning of social action (Cresswell and Cresswell, 2022). However, neither of these paradigms used individually fitted within the underpinning philosophy of ubuntu, chosen because of its interconnectedness, inclusion and social cohesion and overall approach to critical applicability to nursing in Zambia (Borti et al 2024). As Creswell and Creswell (2022) suggest the positivist approach is too narrow, anti-democratic and non-humanist, for this type of study. Further, interpretivist approaches alone

may not address or fully include social issues, also they go on to argue that both interpretivist and positivist approaches reinforce the status quo and existing power relations in society and therefore, other options such as critical paradigms needed to be considered.

Critical theorists aim to use research to transform practice and society, by increasing understanding and analysis of the processes which keep individuals oppressed and replace these with strategies designed to empower (Freire, 1970; Brown et al., 2019). As the main aim of critical theory involves capturing the unheard voices within society and giving them a voice to seek 'human emancipation' 'to liberate human beings from the circumstances that enslave them' (Horkeimer, 1982, Pg 244; Brown et al., 2019). Paradis et al (2020) built upon Horkeimer (1982) work, arguing that to achieve this, critical theory extends to ethics, politics, philosophy and history and combines philosophy with the social sciences. To be classed as critical theory, studies must concurrently be explanatory, practical and normative and provide criticism and transformation (Paradis et al., 2020; Asghar, 2013). This allows the researcher to explore the problem and seek solutions and strategies to successfully embed the outcomes of research, its implications and changes arising from the research into society (Asghar, 2013). Similarly to ubuntu critical theory, largely overlooked and ignored by researchers (Ashgar, 2013; Paradis et al., 2020), had some relevance for this study as it recognises the use of different methods of data collection within a study providing flexibility to adopt and adapt appropriate methodologies and techniques to meet the research aims and objectives (Asghar, 2013; Creswell and Creswell, 2022). Cresswell and Cresswell (2022) suggest this approach addresses the challenge of aligning and integrating the datasets appropriately, arguing that the strengths that each one brings to the study can be optimised and limitations managed. However, use of the critical paradigm would not address all elements of the study as it remains researcher led and as positivism and interpretivism is a western approach, and in consequence does not fully fit with ubuntu (Ajiltoni 2024), and in consequence pragmatism was also considered.

Maarouf (2019) argues, that over the past two decades, pragmatism has been increasingly accepted as the third methodological approach. It was developed by those who challenged the concept of achieving perfect knowledge or truth through the positivist paradigm arguing that truth is relative and based on the context, setting and the people involved (Kelly & Cordeiro, 2020). This approach sits well with ubuntu as it recognises the interconnectedness of individuals in creating their own communities (Tembo, 2023; Ajitoni 2024).

Having recognised and accepted the links with ubuntu this governed the choice of methods for use in data collection and analysis; as all data collection needed to be participatory, with data analysis processes offering transparency for member checking therefore critical action research, participatory action research and cooperative inquiry were considered. These are frequently described as focusing on addressing social oppression (including in research) and

disempowerment issues (Best & Williams, 2024), key issues for this study (Borti et al 2024). It was important to be aware that while action research, is often described as a bottom-up approach, as the researcher works with participants to bring about change, without careful attention to implementation strategies it can become a top-down approach, with the change being imposed on others (Best and Williams, 2024). To successfully complete this study, it was therefore essential that the researcher, as the initial facilitator and following the MOH request, instigator of the study, did not remain in a position of authority as the study progressed. For this reason, although these approaches all co-operate and collaborate with participants, to achieve 'emancipation', participatory and critical action research in which the researcher leads the agenda and through that can retain authority and leadership, were not seen as truly participatory and were rejected.

Co-operative inquiry was next to be explored, and as careful study of this approach revealed it fitted well with the underlying philosophy of this study, ubuntu, as it provides improved equity, participation and ownership of the research activities (Fredericks et al., 2024). Originally proposed by Heron in 1971 (Reason, 2002; Fredericks et al., 2024), it entails participation by all involved, with participants being both co-researchers and co-subjects which aligns well with Ubuntu's approach to the development of communities through shared learning and the development of knowledge and wisdom (Tembo 2023). All participants are actively involved in decisions making and included in the project design, managing and devising conclusions from the study (Fredericks et al., 2024). However, for this study it was important to go one step further, highlighting participation to reinforce it is 'person-centred inquiry' which does not undertake research 'on' or 'about' individuals but 'with' people (Heron, 1996; Russ et al., 2024). Given the nature of this study, open recognition that participation, co-operation and agreement from all involved were essential in order for the research findings to be fully achieved and to result in a change in practice led by the participants not the researcher. Therefore, as full participation is much more than cooperation, for clarity, throughout the study, the term participatory cooperative inquiry was used. Researchers using this approach view themselves as living in a self-generating culture, reviewing their position and 'privileged' setting which is interwoven into social dynamics and seeking during the research to understand and transform to fit within the participants world (Heron, 1996; Russ et al., 2024). This approach enables all involved in the research to view and explore their current social order in the light of the research. In terms of ubuntu it is necessary to identify how they can use the actions and interactions of the research process to inter-link and integrate the concepts. This enables shared learning and the community to carry the research agenda forwards, working towards a new and changed order to ultimately improve and enhance critical care nursing and through that patient care (Russ et al., 2024; Matehela & Ngwenya 2025).

While opponents of co-operative inquiry dismiss this approach as too ‘partisan’ and lacking rigour (Bryman, 2012; pg. 297), this is, in part, because it is judged using the formats for the more traditional paradigms. As Cresswell and Cresswell (2022) argue changes in approach may take time to be accepted, but that does not mean they cannot be used, or that they lack academic rigour. Participatory cooperative inquiry met the needs of this study and the environment in which the research was conducted. The core issues of reliability, validity and rigour were addressed at each step and independently, for each of the individual methods. It was anticipated that an added benefit for all involved arising from the transparent and shared research activities would enable participants to learn about and participate in all aspects of the research activities. The long-term aim of embedding research into education programmes and practice for all health professionals including nurses.

This was a complex project, involving multiple datasets and a way had to be found to illustrate the steps in the study in a format acceptable, accessible and appropriate for all participants and organisations involved (Vaughn and Jacquez, 2020; Vangeepuram et al., 2023). Co-operative inquiry had to be a central tenet of the study supported by the rigour implicit in a structured mixed methods approach. Further study of Creswell and Creswell’s (2022) perspectives led to development of a sequential transformative mixed methods study, which facilitated all stages of the study, enabling each stage to be planned within the totality of the approach chosen.

A sequential mixed methods approach allowed for each stage of the research cycles to connect and integrate the quantitative and qualitative data collection and analysis allowing for effective triangulation of the data (Pardele, 2019). Advantages included a more balanced understanding of the research problem as both quantitative and qualitative methods have weaknesses and combining the two, counterbalances the weaknesses and draws on the strengths of each. The quantitative data provides outputs, whereas the qualitative provides explanations. Combining both approaches enhanced the research integrity of the findings and allowed for the qualitative data to provide context with the quantitative providing an element of generalisability (McKim, 2017; Schoonenboom & Johnson, 2017). Looking at the research aims and objectives, the data sets needed to be integrated, therefore, to demonstrate how the different elements were interlinked figure 4.1 was developed. For clarity research activities have been grouped into 3 cycles.

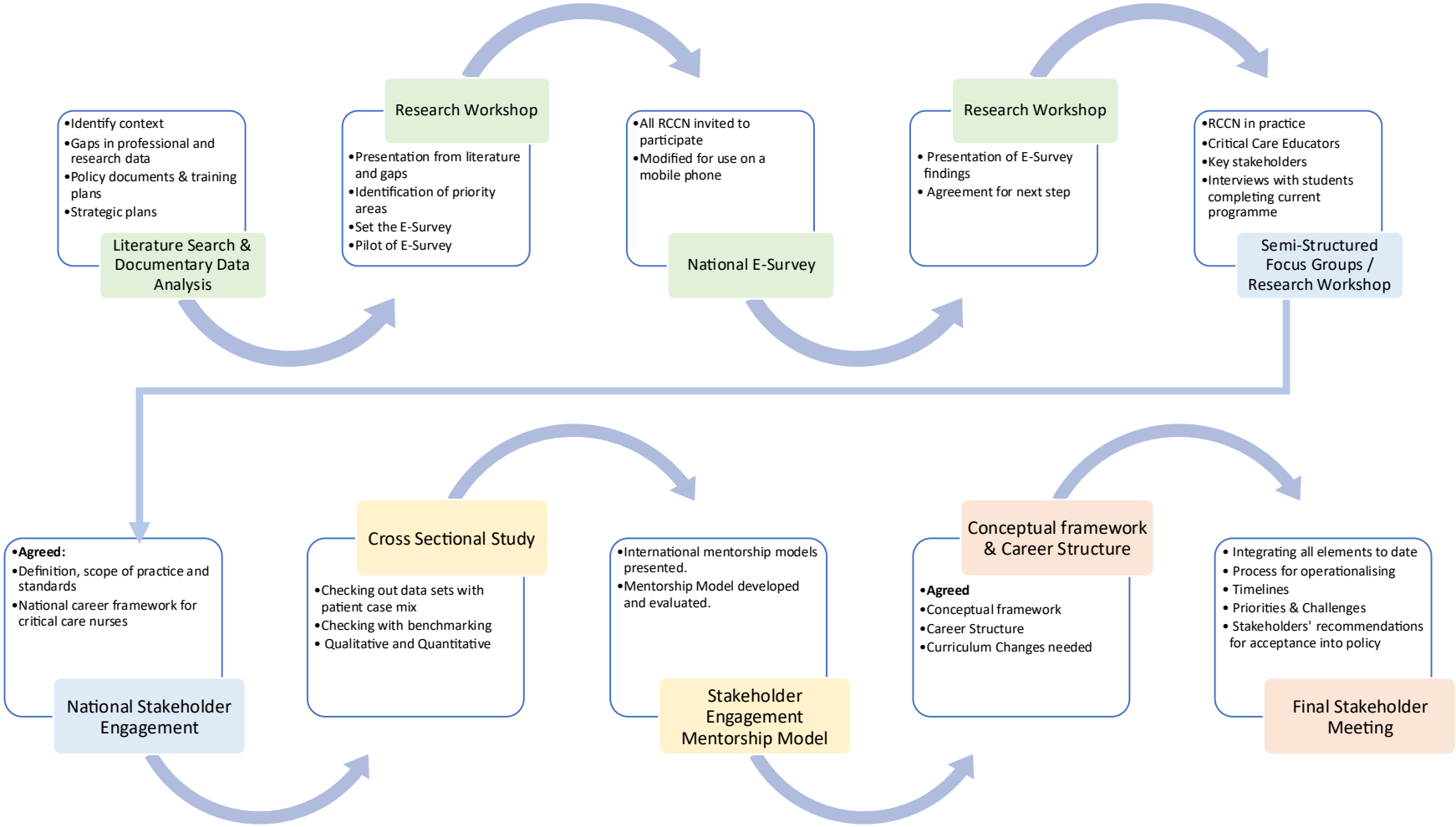


Figure 4.1 Sequential Mixed Methods

Key: Green = cycle 1, blue = cycle 2, yellow = cycle 3 peach = development of career structure and conceptual framework

As highlighted in the figure above, this sequential mixed-method study was complex and challenging (Pardede, 2015) with triangulation as a core component. Originally, Denzin's (1970) seminal work describes four methods of triangulation, data, researcher, theory and methodological triangulation. As Noble & Heale (2019) point out triangulation, in addition to supporting the integration of data sets, increases reliability and validity, and for the qualitative datasets increases trustworthiness. In this study, triangulation was part of the research process, with participants and researcher having equal status, participants also took on the role of checking and affirming the findings. This helped immerse participants in the study, enabling them to understand and own the datasets and ultimately the project (Russ et al., 2024).

Traditionally, participatory co-operative inquiry uses four phases of reflection and action. Phase I involves co-researchers agreeing the area of research and how this will be explored. Phase II involves co-researchers becoming co-subjects and engaging with the actions and activities set. In phase III co-researchers and co-subjects become immersed in the data and explore their experiences. In Phase IV the original idea and questions are re-considered and questioned after their experiences (Reason, 2002; Russ et al., 2024). In this study, there was no clear delineation between each phase, and for the participants, the processes had to be linked and support the harmonisation and integration of the findings (Ebale & Mulemi 2023). A way had to be found to maintain parity, therefore, the traditional top-down cyclical process was converted into a horizontal process with each activity interlinked and building upon the previous one.

It was accepted that the nature of this study was such, that adequate time had to be allowed for collection and analysis of the different datasets (McKim, 2017). One challenge that emerged early on, was the paucity of literature within Sub-Saharan Africa available supporting researchers using this approach (Matahela & Nigwenya 2025). Therefore, participants needed a clear pathway illustrating how the study would progress (McKim 2017; Pardede, 2015; Creswell and Creswell, 2022).

The role of the researcher's positionality was considered at the start of the study, as no planning could take place, until this had been assessed, and it was re-reviewed at intervals and on completion of the study. This commenced with a strengths, weaknesses, opportunity, and threats (SWOT) analysis being completed and used for reflections throughout the study. This was supported by a reflexive journal completed for each activity (Watt, 2007; Russ et al., 2024). This was crucial as it was essential to remember that participatory co-operative inquiry challenges the traditional research methodologies. It rejects the perspective that the researcher is deemed highly educated and motivated, with the participants being viewed as unmotivated or 'uneducated'. A viewpoint that affects how both the participant and researcher interact and collaborate (Heron, 1996). Short and Healy (2017) argue that as shared

ownership develops with joint decision making, participatory co-operative inquiry provides a flexible and adaptable methodology which allows for illuminating conversations to understand complex power situations and social interactions. This fits well with the interconnectedness inherent within ubuntu with its focus on interaction, shared learning and the development of community (Ajitoni 2023; Mataheli & Nigwenya 2025).

4.3 Positionality

At the start of the study, it was accepted that positionality needed to be carefully considered (Yip, 2023), as individual specialist knowledge and expertise can affect all aspects of any research. This could impact on how participants see the study, how they interact with the research and how they share their views and experiences (Holmes, 2020). However, an advantage of participatory collaborative inquiry is that every effort is made to work within context and in partnership so minimising the chances of an adverse effect. Also, to minimise the effect of any personal biases from professional background and academic knowledge, all stages of the research design were regularly reviewed (Yim, 2023; Bukamal, 2022). In addition, it had to be remembered the study was being carried out by a nurse researcher closely attached to the area of study, and therefore using a reflexive process helped design strategies to address any possible biases, and through that increase the reliability, validity and trustworthiness and authenticity of the study

Critical care nursing has been my chosen career, from the moment I first went into a critical care unit in 1998. Prior to joining the **Army**, as an Officer in 2008, I worked as a Critical Care Nurse, Critical Care Outreach Nurse Practitioner and Resuscitation Officer in London. My Army role included a range of clinical roles including Officer in Charge of Intensive Care at the Ministry of Defence Hospital Unit Frimley Park (now Defence Medical Group South) and Officer in Charge of a highly mobile surgical and critical care team at 16 Air Assault. During this time, I was deployed to Afghanistan, established, and led an interdisciplinary team in support of capacity building projects in the Sultanate of Oman. The training team supported major incident planning, critical care and trauma training of nurses, doctors and paramedics. I have developed and delivered specialist critical care training for UK elite troops deploying to the Middle East, as well as training for UK initiatives. I then moved into higher education at the Defence School of Healthcare Education working across both pre and post registration programmes. My teaching experiences have included the use of high-fidelity simulation exercises to prepare undergraduate defence students for their future roles, development of bespoke defence university modules on leadership, disaster relief and global health. Looking back at this I still see myself as the critical care nurse and the Army Officer. For this study, I had to consider how these two halves would contribute as a whole to the study.

Figure 4.2: Positionality at the Start of the Study

The study started in 2017, then in 2018, while continuing to work part-time in Zambia and having been asked to undertake this study I chose to take a two-year career break from the Army, working part-time as a Senior Teaching Fellow in Global Health in a London HEI. During this time, in addition to the role in Zambia (which was beginning to grow), I supported projects in Somaliland, Vietnam and Jamaica, and lectured on critical care nursing in China. I then moved to another HEI and in 2019, I was made a Visiting Professor at the Foshan Hospital of Traditional Chinese Medicine and the Sixth Affiliated Hospital of Guangzhou Medical University, China, these appointments followed a series of in-country education activities. The Covid-19 pandemic, then precipitated more change, as I was rapidly seconded and appointed as the second Matron for Critical Care in a London Hospital during the first wave. It was after this that I decided I needed to focus on completing this study and returned to Zambia.

During my nursing career, I saw the stark reality of life and that access to high quality education was one of the only ways out of poverty. Operational deployments as a **critical care** nurse in the British **Army** provided several ethical and professional challenges, for example while working in Afghanistan, we were providing world class trauma care in a low resource setting. With critical care being a highly technological, lifesaving intervention, the ethical decision making around providing care for the few fortunate Afghanistan locals was a cause for concern, that I struggled with, that ultimately led to me answering the invitation to support critical care in Zambia, where I found a fledgling service with one critical care nurse educator for 18 million people, with no medical or nursing leadership. I could not walk away from this and chose to change my career journey to respond to what I had found. This resulted in a 'journey or many roads', all of which led to the development of this policy statement and sustainable conceptual model for critical care nursing.

The mixed method research approach for this study meant that each of the methods had to be carefully interlinked, recognising specific issues in terms of assessment of reliability and validity (quantitative data) and trustworthiness and authenticity (qualitative data). It was essential to consider carefully the time needed to implement each method of data collection, to analyse and interpret the findings. Also, to recognise that the way in which participants related to the research and researcher could affect both data collection and through that, data analysis. This meant that when planning activities, it had to be accepted that additional time might be needed, with each or all activities taking longer had been expected. Although the possible need for additional time had been recognised, in reality the time taken in each stage of the study was far in excess of the initial plans. This was partly due to the fact that participatory collaborative inquiry is an iterative approach, with repeated reflection used to check for how researcher/participant interactions affect (positively or negatively) data collection. Further, it was important to give all participants and stakeholders adequate time to prepare for participation, and to respond to actions, activities and outcomes from participation (Vangeepuram et al., 2023). At the start of the study, reflection was used to identify personal perceptions of the study aims and objectives and how this fitted with the study. However, as the study developed it became increasingly difficult to separate out the roles critical care nurse, researcher, and (ex) army officer. All of these repeatedly surfaced, and each time had to be reviewed, and their impact on the study considered and accepted.

As the study progressed it was clear that the decision to use participatory cooperative inquiry had been appropriate with definite advantages. As a critical care nurse, there was a similar cultural background to the participants, and their experience, but this meant that there was a risk that participants would assume shared knowledge. This could affect discussions with participants believing that the researcher knew what they were alluding to, and therefore there was no need to fully detail their perceptions, individual concerns, and/or thoughts.

As Clark et al (2021) argues all research can be affected by bias, and it is essential that researchers in an insider role accept that even with careful checks their interpretation of data can be unconsciously biased. Accepting this, the decision was made to review all research actions and interactions, the reflective process was used to review all steps of data usage to check that personal experiences had not negatively (or positively) impacted on interpretation of data and hence the study. However, it had to be recognised that the insider knowledge/role was key in this study, as the nature of the study meant that the specialist professional role under consideration needed matching specialist researchers (Cresswell & Cresswell, 2022). Cresswell & Cresswell (2022) argue that such knowledge and awareness of specific areas arising from being an insider improves the application of results and findings in clinical practice, helping to develop context specific outcomes. However, it also had to be recognised that for this study, which focused on developing a new career structure and conceptual

framework, there also needed to be an element of distance between researcher and participants. Therefore, for this study, the researcher had to have the research knowledge and expertise to continually change roles, moving from insider to outsider (emic to etic) to succeed in addressing the study aims and objectives. A challenge that continued through the lifetime of this study and beyond.

Traditionally, in qualitative research, researchers are deemed to be positioned either as 'inside' or 'outside' the social group (Yip, 2022; Bonner & Tolhurst, 2002). However, it could be argued that there is a blurring of these two positions within my own positionality. As outlined in chapter one, prior to commencing my PhD studies, I already had an understanding and links with my collaborating critical care and nursing stakeholders in Zambia. Therefore, in research terms, it could be argued that I was a 'native' or an 'insider' before the study begun (Bonner & Tolhurst., 2002). Yet, I had been asked to carry out this work because of my 'outsider' expertise, and the use of co-operative inquiry as a research methodology seemed to be the only way to enable the research to be 'about' individuals, 'with' people (Heron 1996; Russ et al., 2024). I have been accepted for my knowledge skills and expertise, however, I had to remember there is a colonial history in Zambia, I am white, British, therefore, special care had to be taken with every step checked and re-checked to make sure it was truly participatory, to take account of the cultural cues and/or local dialects used. Table 4.1 below, gives a summary of the internal and external conflicts faced throughout the study.

Table 4.1: Internal and external conflicting perspectives

Critical Care Nurse wanted to 'roll my sleeves up and get involved' to reduce the suffering and save life immediately. Wanted to work every hour for the patients.
Educator wanted to problem solve, share knowledge, and improve the level of knowledge skills and competence.
Army Officer understood the hierarchical, authoritarian, bureaucracy and cultures observed. However, understood the realities of working in a resource limited environment and the challenges of working in a hierarchical system with a subtle bullying culture and a top-down structure.
Researcher wanted to develop sustainability, carry out the research and make the changes immediately, however, recognised that I needed to work with peers before, during and after the study.

In consequence, in this thesis, my reflections consider the four perspectives, my experience as a **critical care nurse** and **educator**, a **researcher** and as an **Army Officer**.

4.4 Selecting Methods for Data Collection

Throughout the study all methods used needed to include expert stakeholder input. In summary, the sequentially specific methods used were documentary data analysis, survey methods using which a national e-survey questionnaire, followed by focus groups, research workshops, and a cross-sectional study. Prior to conducting the study all activities were submitted for ethics approval in Zambia and the UK. Data was collected and stored in accordance with both Zambian and UK requirements, including all data stored using university password protected computers and access only shared with the Zambian / UK research team. Data protection meant all paper and audio records were stored in the researcher's office, in a fireproof, locked cabinet only accessible to the researcher. Any electronic data generated, for example, survey results was encrypted, and password protected, with only the researcher having access.

4.4.1 Documentary Data Analysis

Documentary data analysis is a structured approach to analyse documents related to the research aims and objectives, to gain new perspectives and understanding in a new area of practice. Care needed to be taken that the data analysis process, recognised the importance of the African perspective in how the date extracted was utilised (Matehela and Ngwenya 2025) However, it is a cause for concern that in social sciences research documentary data analysis has been neglected for other research methods, particularly those with spoken words e.g., interviews and focus groups (Dalglish et al., 2020). Further, it needs to be recognised that within the African culture, spoken word and the use of storytelling is a precious part of Africa's tradition, society and culture (Awoniyi, 2015). Therefore, in this study documentary data analysis was identified as a crucial stage, providing an opportunity to review, examine and interpret the data available (Frey, 2018). This research method can either be used as a stand-alone research method or, as in this study, part of overall data collection. As Moilanen et al (2022) pointed out documentary data analysis should be repeated, at agreed points during the study to check to updates and changes in key policy documents. Therefore, documentary data analysis was an iterative process undertaken at key stages and helped to increase understanding and insight into the other datasets. Also, in this study, every effort needed to be made to see how it could be linked to the underpinning philosophy and how this impacted on the career structure and conceptual framework (Borti et al 2024).

However, as Danglish et al (2018) and Moilanen et al (2022) identified, there are several limitations with documentary data analysis including limited validity, reliability, and authenticity. These can be reduced or avoided by using a standardised structured approach to identifying, reviewing and analysing documents, which enhances the rigour. In this study, triangulation was used, which included checking documents and findings with strategic stakeholders and

confirming themes with focus groups and with the participants attending research workshops, making sure that key issues such as interconnectedness inherent in ubuntu were not lost (Tembo 2023). To provide a systematic and structured approach to the documentary data analysis process, the READ approach was followed (Danglish et al., 2018). The READ model involves four stages, firstly, to ready the materials for the review, then to extract the data, followed by the analysis and finally to distil the findings and integrate them into the career structure and conceptual framework.

To identify the type of documents needed and prepare the materials for the documentary data analysis, table 4.2 provides examples of the types of documents analysed. Documents used in this study included historical documents from within the National Archives as these increased understanding of the healthcare system before and after independence. This aspect of the study entailed a comprehensive review of international documents, literature and the Zambian government and nurse regulator policy documents. In addition, non-policy documents were used e.g., newspaper articles to provide real-world perspectives particularly relevant in a study based within the African context, as these give insight into social equity and responsibility. Social cohesions, actions and interactions (Metz 2019; Metalehua and Ngwenya 2025).

Table 4.2: Documents analysed (adapted from Danglish et al., 2018 & Moilanen et al., 2022)

Category	Examples
Official documents (Government, Regulatory Bodies & Professional Membership Organisations	• Government Strategic Health Plans • Ministry of Health Policies or directives • Professional statements. • National and international professional membership position statements
Implementation documents	• Roadmaps to implementation • Grant application • Project documentation • Final project reports and evaluations • Operational plans
Laws	• Nurses and Midwives Acts
Regulations	• Nursing & Midwifery Council documents • Memorandums of understanding • Co-operation agreements
Working documents	• Meeting record of decisions or minutes. • Memoranda • Committee reports • Letters • PowerPoint Presentations • Emails • Reports
Scholarly work	• Scientific or peer-reviewed publications • Textbooks and other course materials e.g. procedures and evaluations manuals. • Curricula.
Media and communications	• Newspaper, magazine and social media (professional and general public) • Newsletters and bulletins from professional organisations.

Data extraction involved two processes, firstly, using the data to create a timeline of activities and secondly a framework analysis to identify themes. Step 3 of the READ model requires the researcher to analyse the data, as Creswell and Creswell (2022) identified data analysis is an iterative process, with themes emerging during the data extraction. However, as Danglish et al. (2018) point out it is only once all the data has been extracted from the various themes that the overarching themes and categories can be identified. The final stage is to review and refine the findings.

4.4.2 Expert Stakeholder Input / Research Workshops

Qualitative research workshops were used to engage strategic stakeholders. However, it is important to define the term workshop as this has different meanings in different contexts. It is a cause for concern that the term workshop is poorly defined, yet it is an increasingly accepted research method (Ødegaard, Oen and Birkeland, 2023). Shamsuddin et al, (2020) identifies three main purposes of a workshop, firstly, to achieve a goal, for example the development of a guideline or protocol. Secondly, to achieve an outcome, for example, teaching and introducing a new concept and thirdly, as a research method to generate data. This complex study required all three aspects to be used, in addition, the workshops provided an opportunity to observe and join in with participants interactions. A misconception is that workshops are the same as focus groups, it is important to point out that workshops are interactive and participatory (Omgreen & Levisen, 2017), thus more appropriate for a study based on interconnectedness. The main difference between the two, is the nature of workshops allows participants at all levels to participate and may, through the shared activities empower participants who have less confidence to gain the trust and confidence to have their voice heard (Estacio & Karic, 2016). Whereas focus groups, by definition have an emphasis on exploring and discussing a specific factor and not enabling participants to work through and develop their own solutions (Caretta & Vacchelli, 2015; Doria et al., 2018).

Strategic stakeholder meetings involved representation from nurses at the bedside to Directors and representation from the Governments Permanent Secretary. The workshops were critical as they enabled practitioners at all levels to have their voices heard in a safe environment. From the start of the study, emphasis was placed on recognising the equal importance of all perspectives from all participants and checking that hierarchical traditions of status did not reinforce power structures (Kimani 2023). In addition, they provided an opportunity to for all participants to work together to develop shared agendas and ultimately shared knowledge that could be used to address the research aims and objectives (Tembo 2023). The activities and review and discuss how different stakeholders and practitioners responded to discussions of the differing perspectives. This was seen as important given the overarching methodology of participatory co-operative inquiry, and the mutuality and

communal responsibility linked to participation from all members (Ajitoni 2024). Throughout this study a series of strategic stakeholder events were held and representation continued from all levels, confirming and endorsing the commitment of participants to the aims of the study. The range of participants included members from the MoH, Nursing and Midwifery Council of Zambia (previously termed General Nursing Council of Zambia), Zambia Union of Nursing and Midwives Organisation (ZUNMO), Colleges of Nursing (Lusaka College of Nursing and Ndola College of Nursing) and key educational providers including the University of Zambia, Levy Mwanawasa Medical University. Also, strategic critical care leaders from Zambia's national tertiary hospital provided management and clinical expertise

4.4.3 National E-Survey Questionnaire

A national e-survey questionnaire was used to assess the situation and gather data regarding interventions needed. A self-completed e-survey generated quantitative data with some qualitative information from open text-based questions (appendix one). A strength of using this approach was that it allowed for maximum participation by respondents. Fredericks et al (2024), identified that using a survey approach in participatory co-operative inquiry research has low researcher involvement but high participant involvement, allowing participants to engage in the activity fully. In this study, given the geographical distribution of critical care nurses throughout Zambia and a non-existent postal service, using an e-survey was the only feasible way to reach critical care nurses throughout the country and enable their voices to be heard. In addition, due to limited access to laptops and computers, the survey needed to be conducted via mobile phones. This had an impact on questionnaire design, as all questions had to fit within a mobile phone screen, and open-ended questions were designed for short clarifications, much as messages sent via WhatsApp have limited content. Closed ended questions included dichotomous questions, Likert scales or multiple choice. The research generated in this way provided real-work perspectives and observations (Clarke et al., 2021). The survey included questions relating to employment, critical care service provision and educational areas including suggested topics/areas missed in specialist training. Qualified critical care nurses working in critical care were invited to participate in this initial survey as they were in practice and could describe how services were being provided, giving their perception of what was needed to develop a career structure and conceptual framework. Key insights from this survey guided the following research activities.

It was accepted that a limitation in using an e-survey was access to the internet, with connections being intermittent or non-existent in parts of SSA (UN, 2025). This did require the survey to be concise to maximise completion and the number of questions was carefully prioritised and kept to a minimum (Clarke et al, 2021). In addition, Clarke et al (2021) recognises that using a survey can have specific challenges in achieving a high response rate

and that responses can lack depth and detail if too many topics are covered. However, in Zambia there was no alternative to this approach. The nurses were keen to participate, particularly as the study had MOH support, and this was their opportunity to be heard, which helped to increase the response rate. At the time of the survey an estimate by stakeholders suggested the number of critical care nurses in Zambia, was in the region of 110 to 140 nurses and although it was thought that over 100 were still practicing this could not be confirmed. Reasons cited by stakeholders for the low numbers, included acceptance that critical care nurses were not separately recognised in the MOH establishment, being recorded only as Registered Nurses. Inclusion criteria for the study, were that respondents should be critical care nurses, nurse educators, senior nurses and stakeholders involved in critical care nurse policy, education and practice. Exclusion criteria included nurses not working in critical care and other healthcare workers.

Data was collected using an approved online questionnaire package, online.survey.ac.uk (formerly Bristol online). In this study, all questions were checked by Zambian stakeholders and nurses in practice, for appropriately phrasing and core themes to be agreed. this was seen as important as the questions needed to be recognised in the Zambian context. However, it was deemed by participants not to be necessary to translate the questionnaire into local dialects, as Zambia's official language is English, in addition, given participants were qualified nurses they were all were literate in English, and accustomed to professional education in English. To guarantee anonymity, a unique URL was sent to all potential participants. The questionnaire was piloted and checked for accuracy with a core team before being piloted with strategic stakeholders including critical care nurses (n=18). The pilot resulted in minor modifications to questions due to typographical errors and consistency in terminology used. This was completed at a stakeholder's meeting, which included representatives of nurses in practice, in May 2018. Stakeholders were concerned that given the small number of critical care nurses nationally it could be possible to identify participant's responses from demographic data. Therefore, it was decided, to protect anonymity, the questionnaire would not collect any demographic information. The e-survey was distributed during a 3-month period (May to July 2018) and to achieve maximum participation the survey was re-circulated to participants twice.

Quantitative data from the e-survey questionnaire was uploaded to IBM Statistical Package for Social Sciences (SPSS) software (version 26), any missing data was coded as such in SPSS and has been included with each table of results. Descriptive statistics were used to analyse and to summarise data sets collected (Cooksey, 2020). This approach increased insight and understanding of the key themes facing critical care nurses' employment, types of services they provided and their educational background including suggested topics/areas missed in specialist training. Pearson Chi Square was used to identify if there was any

relationship between the number of critical care nurses on day and night duty and the number of critical care beds. P values of below 0.05 were deemed statistically significant. Somers-Delta was used to analyse ordinal data, a non-parametric measure of association, between the predictor and dependent variables. Closed questions were used to gather data that could indicate consensus; however, the addition of open-ended questions allowed the participating nurses to use their own words and views for areas of critical care nursing practice and education. The open-ended questions, comments were identified using framework analysis (Klingberg et al 2023).

For the survey, in view of the limited numbers of critical care nurses, a total population sample was seen as appropriate to facilitate maximum participation in the project. While it is acknowledged this type of sampling is infrequently used, it did provide an opportunity for all nurses with experience of critical care to share their experiences and views. In addition, it is recognised that total population sampling is appropriate when there is a small sample population (Clarke et al., 2021). Therefore, inviting all nurses to participate in an e-survey was realistic and provided an opportunity for participation from the whole community of critical care nurses (Mulenga, 2015; Tembo 2023). Participants were identified from the education college's Alumni database; however, an added protection for the respondent's anonymity was that the researcher had no access to the database, with the unique URL being circulated by the database holders. Inviting all alumni provided an opportunity for nurses employed in different settings, such as private hospitals and clinics to participate, thereby enabling voices from across the spectrum of practice to be included. Those who completed the e-survey and returned it gave implied consent for inclusion, an accepted practice particularly when using surveys or questionnaires. As the action of completing the survey is seen as agreement to participate in the study, in addition, information explaining participants implied consent was provided prior to commencing the survey (Clarke et al, 2021). An introductory paragraph explained implied consent and provided information on the study team and research ethics approval details (see appendix one).

4.4.4 Focus Groups

Semi-structured focus groups involving critical care nurses, educators and critical care students were used to explore critical care nursing in Zambia. An advantage of using focus groups was it allowed participants to interact with each other, discuss, listen and reach a consensus or to agree to disagree (Bell & Waters, 2018). Focus group inclusion criteria were Registered Critical Care Nurses and students studying on the Advanced Diploma in Critical Care Course. Exclusion criteria were other healthcare professional groups working in critical care and nurse not working on critical care units.

A disadvantage to using focus groups includes a risk of a confidentiality breach by participants or strong characters dominating the discussions. To manage these risks, all participants were required to sign a consent form (appendix two), and during the initial introductions discussion of the approach to be used in the focus group were held, reiterating the importance of confidentially and enabling each individual to have an opportunity to share their views, an important aspect of the communal mutuality of ubuntu (Tembo 2023). The focus groups were recorded using two Dictaphones in-case one failed. These were then downloaded and transcribed. Framework analysis was be used to identify key themes.

It has to be noted that for this study, random sampling for the focus groups was not appropriate (Clarke et al., 2021) as those involved needed to have the clinical expertise and experience relevant to the field of nursing. Therefore, purposive sampling was used to identify recognised experts, including the small number of nurses with national recognition in this field, again all those identified were included, a second total population sample (Clarke et al., 2021). The focus groups with registered and student critical care nurses in two leading hospitals (one in the capital and the other in the Copperbelt) were undertaken in July 2018. The numbers were also small, therefore again all identified, possible nurses and educators were invited to participate in the focus groups. Also, to facilitate in-depth discussions the focus groups needed to consist of relatively small numbers (6-12) participants as with larger numbers interaction may be affected (Clarke et al., 2021), but, where too many students volunteered, as having offered participation, it was important that no-one was excluded, a second focus group was arranged. All volunteer participants were given information in advance (appendix two) and gave written consent before the focus group. No payment was made for volunteers participating in the focus groups.

4.4.5 Semi Structured Interviews

Convergent interviewing was used during the semi-structured interviews as it allowed the participants to drive the conversation and the data they provided (Thynne and Rodwell, 2019). Using this approach, it is possible for the researcher to start to interpret the data while the interview is in progress. Findings were further challenged and information affirmed in the subsequent interviews by adjusting and adapting questions (Thynne and Rodwell, 2019).

4.4.6 Cross Sectional Study follow up to E-Survey

This retrospective, quantitative cross-sectional study comprised an analysis of nursing and medical records of adult patients who were being treated in a critical care unit in Zambia at the time of data collection. A cross-sectional study is a form of observational research that gathers data from a specific population at a single point in time, therefore, participants were not followed up (Wang & Cheng 2020). The advantage is, that it is possible to gather data that can be numerically coded and statistically analysed as a one-point intervention (Clarke et al.,

2021). The cross sectional-study was chosen due the nature of available data that has been consistently recorded in all critical care units. Advantages to using a cross-sectional study include they are inexpensive, easy to conduct and provide baseline evidence in planning for future studies (Wang and Cheng, 2020). However, it has to be accepted that this type of study is susceptible to sampling bias as the sample needs to be selected from a large and heterogeneous study population and records were not designed with research in mind (Wang & Cheung, 2020). Nevertheless, this approach was deemed to be appropriate as there was no standardised recorded or protocol for measuring critical care admission, discharge, and outcomes, and this study would, therefore, provide an initial data set. It is accepted that using this approach may not yield a representative sample as it is dependent on the inpatient population at the time of data collection, and may include seasonal variations, or such events as the impact of outbreaks of infectious diseases. However, as a first study the risk of bias was seen as acceptable as without any previous recorded or published data, it was not possible to assess for representativeness. Nevertheless, could be used to generate an initial baseline measure, with plans in place to replicate this study and assess for generalisability (Clarke et al., 2021. Creswell and Creswell, 2022).

Inclusion criteria for this dataset were any adult patient (over the age of 18 years old) admitted to the critical care unit and all available records were accessed. With the data collection tool devised (appendix three), it was evident that much of the data would be nominal or ordinal, and therefore, non-parametric descriptive statistics were deemed as the most appropriate for analysis purposes. In addition, as it was likely that small numbers would be generated it was accepted that tests for significant difference were unlikely to be possible, instead the focus would be on patterns, trends, and tentative correlations (Clarke et al., 2021). At the time there was no nationally and internationally validated critical care injury or disease severity scoring tool, therefore, it was decided that it would be appropriate to use the Zambian colour coded observation chart (already in use is some emergency departments, wards and critical care settings) (Figure 3.1) to identify patients with recorded abnormal physiological variables (yellow ‘at risk’ and red ‘at high risk’). A sample chart can be found in appendix four.

To determine the severity of the patient’s status, the last set of ward physiological vital signs were collected. This data was then plotted on the Zambian MOH Early Warning Score (EWS) chart and the score calculated, to indicate the status of adult patients admitted to critical care. Examining the correlation between vital signs and EWS of adult patients admitted to critical care, it had to be accepted that there was potential influence from confounding variables. Vital signs are an essential element of EWS which are used to predict deterioration. However, various factors such as age, underlying health conditions, medication and lifestyle could act as confounding variables, potentially affecting the association between vital signs and EWS.

These variables including age, sex and reason for admission were collected, however, as they could have affected the ability to infer causality, and results have been interpreted with caution. Nineteen public hospitals (16 public and 3 mission) were identified by the MOH for participation in this activity. Hospitals were identified in each Province which had a critical care unit. Prior to the visit, the MOH informed the Senior Medical Superintendent and Chief Nurses in each hospital, explaining the purpose of the study and requesting permission to visit. On arrival, the research team met with senior staff before going to the clinical areas. To maintain confidentiality no personal information (name, file / hospital numbers etc.), other than demographic information, was obtained. Data was collected during a 12-day period, when two Zambian nurses and one UK nurse specifically collected anonymised critical care patient data in each hospital. Data was collected in hard copy, the forms for which were shared with each hospital prior to arrival. During the site visit in conjunction with the research team outlined above, critical care nurses completed the data collection forms. Information was obtained from patient records and admission registers to ascertain the reason for admission to critical care.

4.4.7 Quantitative Data Analysis

All data was uploaded to IBM Statistical Package for Social Sciences (SPSS) software (version 26). All missing data was coded as such and included with each table of results. Descriptive statistics were again used to analyse and summarise the data sets collected and allow for a presentation of themes and patterns that emerge (Cooksey, 2020). Chi-Square was used in order to test for a relationship between two categorical variable and was used to identify the source and time of admission. P values of below 0.05 were deemed statistically significant.

It is acknowledged that bias can occur at any stage of the research process (LoBiondo-Wood & Haber, 2017) and is a potential risk when using a cross-sectional survey design. The data collection tool was developed and checked for accuracy prior to use following the pilot. Data for this activity was collected by a Zambian and UK researcher. A research workshop was then conducted in October 2020, which allowed for the data sets to be reviewed and EWS scores checked, followed by a discussion on the findings. It is important to note, that the data collection took place immediately prior to the Covid-19 pandemic and the research workshops were conducted during the pandemic, using MOH approved Covid-19 rules.

4.4.8 Data Analysis of qualitative data sets: Framework Analysis

Framework analysis is an approach specifically designed for analysis of the rich and detailed textual data collected using interpretivist approaches such as focus groups, individual interviews and open text questions. However, unlike other qualitative approaches such as grounded theory, framework analysis focuses on data exploration and the study of individual and collective data to address specific questions rather than the development of theory (Arifin

et al., 2019). It can be argued that its processes do in part appear similar to those used when carrying out thematic analysis, however additional processes increase the transparency of data usage and interpretation. In this approach, starting with familiarisation of the data. This includes listening repeatedly to the audiotapes, and comparing the tapes with the transcripts, and checking for accuracy. For open text boxes, checks need to be made to make sure responses have been carefully checked. Only then can initial thoughts/perceptions lead to the development of codes, which are then carefully reviewed again for any categorisation takes places, with checks made to search for any context links/and/or associations. Using framework analysis fitted with participatory co-operative inquiry as the as the two-stage process facilitates context checking by all participants thereby, minimising research bias in the process of analysis. This was seen as important both methodological and in terms of ubuntu as it strengthens the interconnectedness and ownership of the research by participants. Therefore, framework analysis goes one step further than thematic analysis in sharing not only the development of themes but the context checking so crucial for a study involving an international researcher. For stakeholders with the majority being non critical care nurses it allowed them to immerse themselves in the data and understand the realities of critical care nurses 'on the ground'.

Only following these steps is the analysis stage from which themes emerge carried out (Arifin et al., 2019). It can be used for all types of qualitative data sets with processes of coding, categorisation and data refinement thereby providing structured analysis. It is increasingly being used in healthcare research, although it was originally developed for use by social policy analysts, who saw it as a pragmatic and practical method that fitted well within 'real-world' research (Arifin et al 208). Thus, it is applicable for healthcare research studies such as this one (Gale et al., 2013; Klingberg et al., 2023). It is important to note that in contrast to most other qualitative research analysis methods, it does not sit within a specific epistemological paradigm, which means that the analysis processes of coding and categorisation of data can address questions arising from each specific study's aims (Klingberg et al., 2023). In consequence it was seen as an appropriate choice for this study, because as Cresswell & Cresswell (2022) point out it provides a consistent approach for addressing research questions where there is more than one data set of different origin (Gale et al 2013), supporting cross-sectional descriptive analysis and interpretation of data. (Arifin et al., 2019).

The same process is used for field notes taken during activities as these can be treated as transcripts. Part of this first stage entails reviewing memos regarding key points looking for identification of repetition and noting where there are any possible emerging themes. Tabulation is then used detailing how the first phase of framework analysis developed (Gale et al 2013; Klingberg et al., 2023). This first process aims to explore and generate as many

new ideas from the data as possible, always remembering that these initial codes are provisional, as they emerge from within the data. Thematic analysis is then carried out and at each stage of analysis checks of the initial thoughts and indicators are used to review the possible themes making sure they reflect the original data set (Davda, 2018). During this process, researchers need to remain open to seeing what they can find from coding while acknowledging their own background and how these impacts on the study. When coding in-depth interview data sets, the researcher must also consider what participants struggled to say and/or what they could not say (Roberts et al., 2019). Accepting this process, the chart was then interpreted creating the first round of possible themes. Following these initial steps, a more in-depth review of the codes is undertaken looking for the most frequently recorded codes, and the considering which codes were most likely become significant as analysis progressed and comparing these to the overall datasets.

The second phase of analysis included reviewing the initial charts to check whether there was any need to re-assess the initial codes given to quotes, following this by looking at each emerging theme in depth and ascertaining that they have been used withing the context in which they were given (Parkinson 2016; Roberts et al., 2019). This is an iterative process which facilitates the development of interconnected steps between and within stages, working bi-directionally through the data sets until no more possible themes were identified (Arifin et al 2019). This process extends the overall depth of data analysis and interpretation (Parkinson et al., 2016), with every effort made to use “theoretical sensitivity”, a reflective process through which awareness of individual positionality within the research was retained. Using this facilitated a systematic approach to coding, which also acknowledges that individual skills, experiences and professional background are an integral element of data analysis and interpretation (Arifin 2019; Parkinson 2015).

To enhance the processes of data analysis, in this study an additional stage was added whereby an additional experienced researcher (in this study a research supervisor), read all anonymised transcriptions and then coded and identified what they perceived to be emerging themes. Their results of this second analysis were then compared with that of the researcher, with checks made on coding and emerging themes already identified, similarities and differences were recorded and following discussion any changes/ modifications seen as necessary were made to the identified original themes. The initial and second round charts were then reviewed and reassessed, and following a repeat context check, which included review of each of the emerging category to ascertain how the individual items linked together (Arifin 2019). The final charts were created and used as the basis for discussion and member checks by participants following which they were used in the development of the conceptual framework.

4.5 Reliability, Validity, Rigour, Ethics & Reflexivity

Assessing the research integrity of this study was complex and needed to be considered from a mixed methods perspective. Creswell and Creswell (2022) identified the application of traditional scientific principles for rigour cannot be fully applied due to the 'mix' of research paradigms used in mixed methods studies. Also, that the different approaches should be individually assessed and reviewed (Bryman, 2016) Peer-review is an important process to maintain scientific rigour and maintain quality. To maintain research, rigour, peer-review was used to provide transparency and research quality (Prager et al., 2019). Peer-review of this research study has been conducted in several phases including ethical review and approval to conduct this study from both the University of Zambia Biomedical Ethics Committee and Birmingham City University Faculty of Health, Education and Life Sciences (HELS) ethics committee. In addition, by the very nature of using co-operative inquiry, at each stage, Zambian peers were involved in the review of the research study and findings. Copies of the letters of approvals can be found in appendix five.

The quantitative elements of the study were assessed using the concepts of reliability and validity. Clarke et al (2021) argues that reliability only demonstrates whether a specific instrument for data collection (or technique) would lead to similar results if used repeatedly by the same researcher, or by different researchers, on one occasion. This gives an idea the extent to which there is consistency in the extent of repeatability of the data collection instruments (Bryman, 2016). However, it is important to point out that this gives no indication of the accuracy of the data collected or the analysis itself (Clarke et al., 2021). In addition, reliability gives no indication of the extent of freedom from measurement errors. In this study, to improve reliability, questions were checked by specialist peers so that during administration there was no variation in processes and procedures (Clarke et al., 2021).

Validity only measures whether the data collection techniques have measured what the research design set out to measure. To assess validity, concepts need to be clearly defined, with clear indication of demonstrable links between the information needed and data collection instrument, or whether there are gaps between them (Silverman, 2020). As with reliability, validity does not give any indication of whether the data collected is accurate or correct (Clarke et al., 2021). There are different components of validity, and in this study content validity was carefully considered to support the development of the new conceptual framework and policy model. At various points during the study literature searches were carried out with identified research used as a foundation for data analysis and for the development of the conceptual framework. Face validity was reviewed with the help of key stakeholders and critical care nurses, but this was initial data, which changed as the study progressed and the conceptual framework was developed. Criterion validity was considered, but as the aims of the study were to develop a career structure and conceptual framework, this was difficult to assess. However,

throughout the research cycles, every effort was made to check for issues that could affect validity and share activity results with key stakeholders.

For the qualitative data sets, historically, reliability and validity were used to assess the quality of studies, however, these concepts cannot be easily applied to qualitative research. Interpretivist researchers argue that while they do have relevance, the focus on textual and in-depth data, limited their relevance (Denzin & Lincoln, 2017). In consequence, leading constructivist researchers developed alternatives based on two main concepts 'Trustworthiness' and 'Authenticity', each of which is further sub-divided (Chafe, 2023; Denzin and Lincoln, 2017). Trustworthiness focuses on the quality of the research design and has four criteria; credibility, transferability, dependability, and confirmability, all of which can be assessed as the study progresses

Credibility helps to assess that the research is relevant to the participants (Clarke et al., 2021; Cresswell & Cresswell, 2020). In this study the aims and objectives were openly acknowledged by participants and stakeholders to be key to their personal and professional practice, and the data collection processes were accepted as appropriate. Credibility requires that the interpretation of data, has not been biased or inappropriately influenced by personal opinions or views, with 'thick' description (Denzin & Lincoln, 2017). In this study the processes used were described so that there was transparency in how the emergent categories and themes were derived and was an integral element of the audit trail.

For transferability, qualitative research aims to generate findings that can be considered applicable into other similar groups and settings (Creswell & Cresswell, 2020). The concept of 'Transferability' is important in all studies and for this study, which was at a strategic level, it was essential for the study to be accepted and utilised at a national level. Specialist nurses and key stakeholders were used to provide an element of peer review and to affirm the appropriateness of the study findings (Cresswell & Cresswell, 2020).

Denzin & Lincoln (2017) argue that while dependability is often linked with reliability, there are other key factors that need to be considered. The research context needs to be clearly stated with the research stages and developments fully described. In this study, all processes were recorded as part of the audit trail (Ahmed, 2024). Also, detailed records of all decisions were made throughout the study with clear descriptions of all research processes included in the reflective journal.

Confirmability relates to impartiality, always challenging in qualitative research. Every effort was made throughout this study to make sure that the findings of the research clearly addressed the study objectives. Detailed descriptions of all stages of the research were included explaining data collection and analysis (Denzin & Lincoln, 2017). The audit trail also supports assessment of confirmability, while context/member checking was used to make sure

that the data reflected participant perceptions and views and accurately, reflected the context of the study.

Authenticity contains five key concepts, which are criteria of fairness, ontological, educative, catalytic, and tactical authenticity, but can only be assessed on completion of the study (Amin et al, 2020). The criteria of fairness is about the extent to which the participants' perceptions and experiences are represented within the research. In this study this included the critical care nurses and key stakeholders in Zambia. Ontological authenticity concerns whether as a result of the study, the researcher, research participants and all those reading the research have increased their insight into and understanding of the research aims and Educative authenticity relates to the extent to which the research increases the general understanding of the research subject. Catalytic authenticity is about whether research participants have been empowered to want to act, utilising the findings of the research to make personal and professional changes the final concept. Tactical authenticity can be said to have some similarity with catalytic authenticity, but it goes further, looking at the extent to which the research has inspired the research participants. It reviews whether they are able are to bring about change, individually and across the group to which they belong.

Korstjens and Moser (2018) point out reflexivity is crucial in research as it enhances trustworthiness, credibility, dependability, transferability and confirmability. Therefore, self-reflexivity was used throughout this study, using a reflective journal, documenting reflective and critical discussions with supervisors and colleagues. As this was a complex study, the reflexive journal was used to record how the project evolved and the decisions that were made. In addition, photographs were taken as it allowed for thoughts to be captured on the go and then used as a prompt for reflection later. The journal was seen as a key part of data collection and analysis, providing a record, which could be reviewed during coding and categorisation of qualitative data sets. It supported immersion of the data, facilitating the process of moving from description to conceptualisation, thereby increasing transparency and academic coding and categorization of data (Clarke et al., 2021). Memos need to be contemporaneously written as feats of memory are not accurate and could distort the data analysis, both on content and context. The researcher can use them to guide the reflective process which includes context checks of all data collection and analysis processes, supporting interpretation and guiding the final stages of coding, categorisation and theme development.

However, there is limited published evidence on combining the reflexive journal with photographs, and it is over a decade since Shulze (2007) argued that photographs enable reflexive diaries to become living documents and in consequence should be an accepted approach for reflexive activities. Despite the limited evidence, Garde et al (2022) argument was seen as appropriate for this study, and therefore, throughout the research journey photographs were used. A methodological review, later in the study did find 'Photovoice',

described as a relatively new social science methodology (Budig et al., 2018), although it originated over two decades ago (Wang and Buriss, 1997). For this study, Budig et al's (2018) approach was seen as appropriate because if was based upon participatory co-operative inquiry. Therefore, photographs were used as part of the researcher's reflexive diary. It is important to point out, that prior to all photographs being take consent was obtained from participants and no pictures of patients were taken or used.

4.6 Summary

In summary, this study was complex, therefore, this chapter has outlined the various ontological and epistemological approaches and research methodology used. It has provided justification for each of the methods used for qualitative and quantitative data collection and analysis. in the order in which the various data sets were collected, however, it is important to note that some methods were repeated for example the research workshops and that for consistency all qualitative data has been analysed using the same approach.

As indicated above, co-operative inquiry is cyclic and, in this study, and for clarify the actual steps in each cycle are given below.

Cycle 1:

- Documentary data analysis.

Cycle 2:

- Stakeholder workshop / pilot of questionnaire
- National E-Survey
- Stakeholder workshop feedback cycle 1 and preparation for cycle 2

Cycle 3:

- Focus groups with RCCNs, Nurse Tutors and student Critical Care nurses.
- Stakeholder research workshop feedback and overall reflections.
- National stakeholder engagement workshop – definition, scope of practice, mentorship and career structure and preparation for cycle 3

Cycle 4:

- Research workshop
- National Cross-Sectional Survey
- Stakeholder engagement workshop feedback from 1, 2 and 3 and pulling it all together. Development of career structure and conceptual framework.
- Formal presentation of career structure and conceptual framework to stakeholders.

Each chapter of analysis covers one cycle, it addresses the results of the individual methods and discuss the implications for the study as a whole.

Chapter 5 Cycle 1: Documentary Data Analysis

This chapter presents the first cycle of the participatory co-operative inquiry. It has two sections, firstly, the historical documentation regarding nurse education and practice in Zambia, secondly, the discussion of the current documentation. Documentary data analysis was used to contextualise the national and international documentation that could impact upon the development of the conceptual framework and career structure (Dalglish et al., 2020). Areas considered were the context of documentation which included authorship, nature of documentation and reason for production (Na-Mee et al., 2023). Documentation was retrieved and reviewed from the National Archives and from repeated literature searches to address gaps in information.

5.1 Historical Documentation regarding development of Healthcare Services and Critical Care within Zambia

This section reviews the context specific development of healthcare and critical care nursing and services in Zambia, setting the scene for the development of the new conceptual framework and career structure. Looking back to the pre-colonial era, tribal groups in Zambia can trace their origins to the Luba-Lunda migration and Mfecane (Zulu meaning 'The Crushing') (National Archives Lusaka, 2025). A series of tribal wars involving the Zulu and Nguni caused a significant migration into the land in the centre of Africa (Tshumba, 2024). The rise of the Zulu Sakara Kingdom occurred during a period of drought and social unrest, causing increased competition for trade in South Africa. This resulted in tribe against tribe conflict over an ever-increasing radius, forcing tribes to flee into the centre of Africa.

As mentioned previously, of the many tribes that fled into what is now Zambia, the Tonga speaking people of Zambia are the oldest Bantu tribe settling there over 2,000 years ago (African History, 2025). The Bantu people had a mixed economy, with huge numbers of cattle, and had been forced northwards due to the Mfecane war and in search of new grazing lands (African History, 2025). The second migration of Bantu occurred between 1500 – 1900AD, when they moved from Congo to the Northern, Eastern and Western parts of Zambia. The Bantu tribe were pastoralists, cultivators and understood iron working. The reasons for this migration included population growth, land shortage, political conflicts, and the need to retain control of trading links (Zambia National Museum, 2025). In consequence, the move to Zambia and the settling of multiple tribes is often described as forced migration as the individual tribes sought to avoid persecution and conflict. They were experienced traders and farmers, therefore, the oppressed became united. It is a testament to their determination to avoid inter-tribe conflict, and their tolerance, that since independence they have managed to live peacefully together, accepting differences in language and cultural practice (Mkandawire et al., 2019). The above supports the country's motto 'one Zambia, one nation, but speaking

different languages including Bemba, Lozi and Nyanja, however, the official language remains English.

In 1960, the UK Government, announced a new foreign policy launched by the British Prime Minister Harold Macmillan's 'Wind of change' speech, which recognised that for the first time the government would not stop British Colonies seeking independence (Robertson, 1993: xii). Following this Zambia finally gained independence from Britain on 4th October 1964, however, at independence, the newly established MOH inherited the still existing colonial healthcare system, which, only planned for the minority White European population as it was based on urban facilities. Whereas the majority of the indigenous population lived in rural settings. Thus, colonial policies continued to influence how services were administered (Kaunda, 1962: 70).

During colonial times it was accepted that indigenous healthcare workers needed to work under the supervision of European nurses (Babikian, 2021; Scott, 1955). Indeed, as the records indicate, Africans were often only offered the possibility to train as medical assistants with very few opportunities, even for men to train as nurses. If they did go overseas to train, they were not accepted on their return as qualified healthcare professionals (UK Parliament 2019).

In consequence, during the colonial era, it has to be recognised that nurses tended to be British and were recruited by the Colonial Office through the Colonial Medical Service, the Queen Elizabeth Overseas Nursing Service or from religious organisations who sent nursing missionaries (Roberston, 1993). While the topic of colonial nursing is not the main focus of this thesis, the system that it left behind, still impacts on the health system and nursing today and in consequence, needs to be outlined to provide context for this study.

Many British nurses working overseas reported a sense of duty and/or adventure, together with a belief they were helping the indigenous population, and they saw themselves as being apolitical (Robertson 1993; Sweet & Hawkins 2013). However, it has to be pointed out that in official communications, colonial nursing and medicine were described as 'agents of empire' (Sweet & Hawkins, 2013: 6), imposing religion, language, education and a hierarchical power structure and culture on others (Sweet & Hawkins, 2013). Culturally during this period, Africans were seen as unclean and uneducated, and the role of the nurse was to impose Western values of cleanliness, order, and sanitation (Sweet & Hawkins, 2013; Carey et al., 2020). This reflected on how the indigenous population were cared for and those who worked in clinical roles, healthcare was rudimentary, provided predominately by hospitals and clinics for the minority white Europeans, with some limited healthcare services for Africans (Gear, 1960). Little changed with regard to access to health care in the first quarter of the twentieth century (HM Government, 1926).

As independence approached, the political future of Northern Rhodesia and the Federation were increasingly uncertain, which in turn affected the recruitment and retention of British

healthcare professionals. The establishment of a Federal Ministry of Health in 1954, provided an opportunity for nurses and doctors to transfer to the new organisation or consider retirement with compensation. The attractive retirement package offered, resulted in the loss of 122 staff, including 53 nursing officers, 48 professional officers, 11 technical officers and 10 clerical officers (Gear, 1960). The loss of these critical staff members meant the delivery and development of healthcare staff was impeded and severely impacted by independence.

Therefore, with independence Zambians needed to gradually replace the White European nurses, within the hospital systems, however, it was evident that there was an ongoing critical shortage of Zambian nurses, resulting in a reliance on expatriates to remain in-country (Watters et al., 1991). This was because under colonial rule, no African secondary schools accepted girls, which meant no girls had been able to attend Colleges and/or Universities (Kaunda, 1962: pg. 70). In consequence, they were not able to enter nurse education and training or other healthcare professions. Before final independence Kaunda had recognised the magnitude of this problem and that without women being educated within the country, Northern Rhodesia (as Zambia then was) would be reliant on nurses and trainees from Southern Rhodesia which would be outside the new Zambia (Kaunda, 1962: 70). This was also known to the fledgling independent MOH as is evident from the extract below from General Nursing Council (GNC) in Zambia to the GNC in the UK:

> *'One of the greatest difficulties the country has to face up to is the present lack of adequate general education for the Africans; there are only 100 university graduates in the whole country, and very few candidates are educationally fitted to enter training for any profession'.*
> Letter from Mrs Banda, Registrar GNCZ to GNC for England and Wales. Dated: 15th January 1976.

When Zambia obtained independence from Britain, there appeared to be a sense of opportunity and friendship between the UK and the newly formed Republic of Zambia.

During the final period leading up to independence, memoirs of British nurses working in Africa demonstrate that they at least had recognised there was an urgent need to educate indigenous nurses to take over responsibility for hospitals and clinics. This resulted in the establishment of nursing schools and preparation of leaders to take over the leadership and administration of hospitals, wards, and departments (Robertson, 1993). Although the exact number is not known, several British nurses remained in Zambia working in the new MOH. Posts were now multi-racial, and it appears senior leadership roles had both Zambian and British representation. Miss Rafferty, the Matron-In-Chief for both Northern Rhodesia and then Zambia, worked there for over 20 years, until her retirement and return to the UK in 1968 (GNC for England and Wales 1968a). Mrs Sikota was working at UTH when Zambia gained independence and was promoted to Sister-in-Charge. She then moved to the MOH as

Assistant Matron in Chief in 1966, and Chief Nursing Officer in 1971 (Levy Mwanawasa Medical University, 2025).

Nursing at that time had to set its priorities, these included the passing of a Nurses Act and establishment of a nursing regulatory body, establishment of nurse training schools throughout the country and programmes for nurses to complete post-basic courses. The establishment of a Nurses Act and regularly body appears to have been on the agenda before independence. The Northern Rhodesia Nurses Association (NRNA) in 1956 contacted the GNC for England and Wales, as they were in the process of preparing a constitution for the government to consider, stating:

> *'We feel very strongly that nursing matters should be controlled by trained nursing personnel, and for this purpose, we are trying to urge the formation of a separate Nursing Council rather than an affiliation to a Medical, Dental and Allied Professional Board.'*
> Mrs EY Knowlman, Honorary Secretary, NRNA to GNC for England and Wales. Letter dated: 11th November 1956.

There was no resolution to this, and correspondence continued over the next five years, with the rapidly changing political landscape in central Africa and the end of colonial rule with the breakup of the Federation of Rhodesia on the horizon. This increased pressure to develop a Nurses Act and Nursing Council which gained increasing urgency. This is highlighted by the NRNA President (the precursor to the Zambian Union of Nursing Organisations) letter to the GNC for England and Wales expressing their concerns and requesting urgent information and a follow up letter from the Matron-in-Chief at the MoH:

> *'Since the Central African Federation is to be broken up, the Nurses' Association is very anxious to see that Nursing Legislation and a Nursing Council is introduced as soon as possible.'*
> Mrs ME Berry, President of Northern Rhodesia Nurses Association, letter to GNC England and Wales. Letter dated 9th December 1963.

> *'I would be grateful if you would forward to me by Air Mail the Nursing Charter for England and Wales... as I require this <u>urgently</u>…'*
> Miss R Rafferty, Matron-in-Chief, Ministry of Health. Letter to GNC for England and Wales. Letter dated: 15th January 1964 (MoH 1964).

In this fledgling country, in view of these delays and with strength from the international recognition of the British nursing system, Zambian officials chose to try to follow the British system. This was in contrast to other policies, which resulted in the Africanisation of industries and practices. Nursing however, languished, and although schools of nursing were planned and started opening across Zambia, with the first government school of nursing in 1965 at Kitwe, little external support was offered to help address this national problem.

Nevertheless, the GNC for England and Wales continued to send staff to support examinations, review training institutions and provide advice on curriculum development

(GNC, 1964c). They argued that given the political instability in Africa, they felt compelled to support fellow nurses. However, this did not extend to helping them develop their own context specific national nursing system.

> *'In view of the position of this School and the condition at present prevailing in Africa, the Committee agreed that they should approve a visit by one of the Council's officers for the purpose of examining the student nurses in the Spring of 1967 if official request was received from Zambia'.*
> GNC for England and Wales, Statement. 1966

The new Zambian government were ardent in their pursuit of recognition for their newly opened training institutions and continued to petition the GNC for England and Wales to recognise the training provided at Kitwe. During what became increasingly bitter correspondence between the Matron-in-Chief and the Registrar regarding recognition for the nurses at Kitwe, who wrote that she was disappointed with the Council's decision, requesting the Registrar visit Zambia and re-inspect the School of Nursing. The Registrar refused citing concerns raised in the inspection relating to overcrowding on the wards, insufficient numbers of nurses to supervise students and limited numbers of tutors (GNC for England and Wales, 1968b). The MoH was requested to send a progress report in 12 months' time, and the decision would then be reviewed (GNC for England and Wales, 1968b). The Registrar sent a personal note to the Matron-in-Chief:

> *'I am terribly sorry at your disappointment, and much as I would love to visit Kitwe again, I think you will see that (a) I would not be the person for a visit and (b) that no good purpose would be served by a visit by anyone.*
> *I do hope that you will find the present decision acts as a spur and not a hindrance, and I would assure you that it is never the Council's practice to grant full recognition in one move.'*
> Letter from the GNC for England and Wales to the Matron-in-Chief of Zambia. Dated: 15th July 1968 (GNC, 1968b).

This delay and lack of understanding of the needs of the country, impacted on the health service as a whole, and today, nurse education is still following UK trends from the 1960's. It has to be noted, that during this period, the WHO was a relatively young organisation, only established in 1948. In consequence at that time, there were no internationally agreed standards for nurse education and practice, and they could not guide or assist any changes in the system. Had the Matron-in-Chief's request for recognition of Zambian nurse education and support to develop local programmes been given, today, Zambia would have been in a very different position to meet the changing burden of disease. The GNC for England and Wales curriculum and syllabus were designed for a different population, therefore, instead of benchmarking practice as a way forward, they held it back. The situation had been exacerbated when in 1957, the GNC for England and Wales legislation was changed, resulting in there being no remit for formal reciprocal registration with any other countries, except Scotland and Northern Ireland (GNC England and Wales, 1976b), leaving Zambia to find its

own way without any technical support and guidance from an established and well-functioning regulator.

Throughout the 1960s and 1970's Zambia's healthcare infrastructure gradually increased, with the expansion of existing hospitals and the opening of new healthcare facilities. The Lusaka Central Hospital became the nation's national tertiary referral hospital, was renamed The University Teaching Hospital (UTH), and was officially opened on 24th August 1974. Services continued to develop including the opening of a Casualty Unit (now known as Emergency Department) in 1978 and expanding maternity services (Monde et al., 2017). Within the Copper belt region Ndola Central Hospital (now called Ndola Teaching Hospital) was built in 1968 and officially opened in 1972 with 26 wards, 851 beds and 97 cots. At many hospitals throughout the country Schools of Nursing were established to provide nurse and midwifery education.

Zambia, continued to request recognition for their training programmes with the GNC for England and Wales (Salvation Army Hospital 1959; GNC 1964; Opare and Mill 2000). This was for several purposes, including opportunities to work in Britain, but also to enable nurses from overseas to access post-basic courses not offered in their country. These courses were deemed essential in the development of healthcare systems, as the MOH identified to the GNC for England and Wales:

> *'I am anxious to hear your verdict as a number of Nurses who completed their training in March are anxious to do Midwifery training in Britain.'*
> Letter from the Matron-in-Chief to GNC for England and Wales. Dated: 1st June 1968 (GNCa)

> *'Our main concern and that of the Ministry of Health in Zambia is to seek ways of making it easier for our graduates who come to your Country for post-basic training. As you are aware, Britain is the traditional place that we seek opportunities to train our nurses in several specialised disciplines, intensive care nursing, ophthalmology, administration, nursing education, paediatrics, and public health nursing, to mention only a few.'*
> Letter from the Acting Registrar, GNCZ to GNC for England and Wales. Dated: 5th April 1976.

The response from the Registrar of the GNC for England and Wales was clear, they belatedly recognised the inappropriateness of one country training for another, but rather than offering sustained support, merely pointed out that Zambian nurses would need to do additional training. Also, they did not offer a way to address the gaps and lack of specialist provision.

By the 1970s, it was evident Zambia was facing challenges in the delivery of healthcare. This was reflected in the ongoing overcrowding of wards, lack of maintenance of essential equipment and a shortage of trained nurses for the supervision of students. For Zambia, this was to be further influenced by the considerable burden of disease and significant health-related challenges, arising from HIV/AIDS, and including malaria and tuberculosis. The

situation was compounded by political and historical complications which have continued to affect the development of healthcare services and the professional development and careers of nurses (Mutea & Cullen, 2012).

Concurrently with the developments outlined above, the first president of Zambia, Dr Kenneth Kaunda, successfully led the country's transition to independence and was initially, seen as a hero across Africa (Banda et al., 2019). However, within eight years of independence, Kaunda had created a one-party state, with a conscious move away from British and American political influences, Kaunda sought aid and assistance from the USSR. In consequence, it could be argued that Zambia went from one oppressor (the British Empire) to another (the USSR) (Maekawa, 2022). Today, the emergence of China as a dominant global power, is also a cause for concern, as it is now asserting its influence in Zambia, which could be seen as yet another form of oppression and control (Germain et al., 2021).

Throughout Zambia's six decades of independence, the country has managed to avoid war and the upheaval of post-colonial independence. Since, the first republic Zambia has openly had a policy of non-aggression and is a member of several regional and international organisations including the African Union, Southern African Development Community (SADC), United Nations, World Health Organization, World Trade Organization, and the Commonwealth (Commonwealth 2025). However, a legacy from colonial times was that healthcare was free and focused on a curative approach, which reflected the burden of disease. This led to a reduction in malaria and smallpox cases due to improved environments, sanitation, health promotion and diet. Post-independence and the rapid urbanisation, resulted in a significant increase in pulmonary tuberculosis (Gear 1960; Chitonge, 2016), a condition still endemic today (Bwembya et al., 2024).

5.2 Summary of Historical Documentation

Understanding the historical context, was seen as a crucial first step in documentary data analysis for this research study as it sets the scene for the challenges facing Zambia today, following the rapid transition from colonial to independent rule, which was less than 5 years. Many of the themes identified in historical documentation were impacted by the short timescale in which change could be planned. A key finding was that nursing, internationally a predominately female profession, was left unprepared for independence, due to the limited education opportunities had been offered to females. This meant that none were in the position to step up and lead nursing in their country. Another finding was that in the absence of local nurses, expatriate nurses did fight for their Zambian colleagues to have international recognition and support. Finally, the limited numbers of specialist nurses meant that there was request and reliance to complete higher-level education overseas.

5.3 Documentation in use at the Start of the Study

Documentation identified and retrieved included education, judicial, policy documents and practice-based evidence and research. A key contributor to this analysis was the WHO and the WFCCN, as for the last two decades they have led the production of reports which identify and advance specialist practice in Critical Care Nursing worldwide. By utilising documentary data analysis, it supported analysis of national and international guidelines to ascertain whether they could directly apply to Zambia or if translation into a LIC setting was needed. The documents analysed are given in table 5.1 and 5.2.

Table 5.1 International Documents analysed

Organisation	Year	Report	Document Type
WHO	2003	Surgical care at the district hospital (WHO, 2003)	Clinical Guidelines
	2008	Task shifting rational redistribution of tasks among health workforce teams: global recommendations and guidelines (WHO, 2008)	Recommendations and Guidelines
	2009	Global standards for the initial education of professional nurses and midwives (WHO, 2009)	Education recommendation
	2010	Monitoring the Building Blocks of Health Systems: A Handbook of Indicators and their Measurement Strategies (WHO, 2010)	Governance & Recommendations
	2012	Guidelines for essential trauma care (WHO, 2012)	Clinical Guidelines
	2017	70th World Health Assembly adopted Resolution WHA70.7 on improving the prevention, diagnosis and clinical management of sepsis (WHA, 2017)	International Policy / Judicial
	2023	76th World Health Assembly Agenda item 13.1 Integrated emergency, critical and operative care for universal health coverage and protection from health emergencies (WHA, 2023)	International Policy / Judicial
	Each year	Zambia: Health data overview for the Republic of Zambia (WHO, 2025a)	Statistical returns
United Nations	2025	Sustainable Development Goals (UN, 2025)	International / Non legally binding
International Council of Nurses	2019	Ethical recruitment process to address critical shortage of nurses (ICN, 2019)	Professional Guidance / Ethics
	2020	Guidelines for advanced practice (ICN, 2020)	Professional Guidance
	2020	State of the World's Nursing (WHO, 2020)	Professional
	Revised 2021	The ICN Code of Ethics for Nurses (ICN, 2021)	Professional Guidance / Ethics
	2025	State of the World's Nursing (WHO, 2025c)	Professional
WFSICCM	2017	International working definition for critical care (Marshall et al., 2017)	Professional Guidance
WFCCN	2019	Rights of the Critically Ill Patient (initial 2007) (WfCCN, 2019a)	Position Statements
	2019	Provision of Critical Care Nursing Workforce (initial 2005) (WfCCN, 2019b)	Position Statements
	2020	Provision of Critical Care Nurse Education (initial 2005) (WfCCN, 2020)	Position Statements

Table 5.2: Zambian Documents Analysed			
Government of the Republic of Zambia (GRZ)	2020	Code of Ethics for the Public Service and the Local Government (Issued by Secretary to the Cabinet) (GRZ, 2020).	Employment
	2021	Terms and conditions of Service (Issued by the Secretary to the Cabinet). (GRZ, 2021)	Employment
MOH, Zambia	2017 - 2021	National Health Strategic Plan (2017-2021) (MOH, 2017a)	Policy
	2017 - 2021	The Ministry of Health National Surgical, Obstetric and Anaesthesia Strategic Plan 2017-2021 (MOH, 2017b)	Policy
	2022-2026	National Health Strategic Plan (MOH, 2022)	Policy
GNC / NMCZ, Zambia	1997	Nurses and Midwives Act (GRZ, 2002)	Legal / Regulatory
	2012	Advanced Diploma Critical Care Nursing Curriculum (GNC, 2012	Curriculum
	2012	Advanced Diploma Critical Care Nursing Curriculum, Procedures & Evaluation Manual (GNC, 2012)	Curriculum / Clinical
	2019	Nurses and Midwives Act (GRZ, 2019)	Legal / Regulatory

Analysis of the above documents using a preset grid (Dalglish et al., 2020) revealed the following key themes: leadership and management, education, critical care, policy, regulation and ethics. The data extracted has been presented as a discussion rather than a descriptive fact list. This is in part because none of these documents had been produced with research in mind. In consequence, extracting the appropriate information led to lengthy extracts from different sections of each document, which read alone did not offer the much-needed insights. To address this, a cross-documentary data analysis matrix was used to check for themes emerging from each document (Arifin 2019). As the analysis continued it was evident that there was considerable overlap of themes in the documents, therefore a summary listing the six main themes and the documents in which they were found are given in table 5.3 below.

There were six main themes that emerged, as table 4.3 shows, several documents contained the same themes. Each of these needed to be discussed in the research workshops and with stakeholders. Therefore, once all extracts from each document had been reviewed and coded to give the themes as illustrated above, the next step as part of the research approach chosen was to take the information to key stakeholders (Baxter et al., 2023). It is important to point out that the documents identified were in some instances almost a decade old, however, many remain current and where they have been superseded, the new documentation has been added.

Table 5.3: Documentary Data Analysis Matrix			
Theme	**Document**		
Health System strengthening	Monitoring the Building Blocks of Health Systems (2010)	UN Sustainable Development Goals (2025)	Code of Ethics for the Public Service (2021)
	Terms and conditions of Service (2021).	National Health Strategic Plan (2017-2021 & 2022-2026)	National Surgical, Obstetric and Anaesthesia Strategic Plan 2017-2021
	Nurses and Midwives Act (1997 & 2019)	Ad Dip Critical Care Nursing Curriculum (2012 & 2018)	Ad Dip Critical Care Nursing Curriculum (2012 & 2018)
Health care statistics	Zambia: Health data overview for the Republic of Zambia (2025)	National Health Strategic Plan (2017-2021) & (2022-2026)	MOH National Surgical, Obstetric and Anaesthesia Strategic Plan 2017-2021
General Nurse Education & Practice	Global standards for initial education of professional nurses and midwives (2009)	Guidelines for advanced practice (2020)	Rights of the Critically Ill Patient (initial 2007)
	Provision of Critical Care Nurse Education (initial 2005)	Provision of Critical Care Nursing Workforce (initial 2005)	Terms and conditions of Service (2021)
	National Health Strategic Plan (2017-2021 & 2022-2026)	MOH National Surgical, Obstetric and Anaesthesia Strategic Plan 2017-2021	Nurses and Midwives Act (1997 & 2019)
	Ad Dip Critical Care Nursing Curriculum (2012 & 2018)	Ad Dip Critical Care Nursing Curriculum (2012 & 2018)	
Need for critical care & critical care nurse education	Surgical care at district hospital (2003)	Guidelines for essential trauma care (2012)	70th World Health Assembly Resolution WHA 70.7 (2017)
	76th World Health Assembly Agenda item 13.1 (2023)	International working definition for critical care (2017)	Rights of the Critically Ill Patient (initial 2007)
	Provision of Critical Care Nursing Workforce (initial 2005)	National Health Strategic Plan (2017-2021 & 2022 – 2026)	MOH National Surgical, Obstetric and Anaesthesia Strategic Plan 2017-2021
	Ad Dip Critical Care Nursing Curriculum (2012 & 2018)	Ad Dip Critical Care Nursing Procedures & Evaluation Manual (2012 & 2018)	Terms and conditions of Service (2021)
	Nurses and Midwives Act (1997 & 2019)	Provision of Critical Care Nurse Education (initial 2005)	
Task Shifting	Task shifting global recommendations and guidelines (2008)	The ICN Code of Ethics for Nurses (2021)	Ad Dip Critical Care Nursing Curriculum (2012-2018)
	Ad Dip Critical Care Nursing Procedures & Evaluation Manual (2012-2018)		
Career opportunities	Ethical recruitment process to address critical shortage of nurses (2023)	State of the World's Nursing (2020 & 2025)	Provision of Critical Care Nurse Education (initial 2005)
	Provision of Critical Care Nursing Workforce (initial 2005)	Terms and conditions of Service (2020).	National Health Strategic Plan (2017-2021 & 2022 - 2026)
	MOH National Surgical, Obstetric and Anaesthesia Strategic Plan 2017-2021	Nurses and Midwives Act (1997 & 2019)	Ad Dip Critical Care Nursing Curriculum (2012 & 2018)
	Ad Dip Critical Care Nursing Procedures & Evaluation Manual (2012 & 2018)		

5.4 Health System Strengthening

As this study involved developing a career structure and conceptual framework, the first core theme involved the overall healthcare system. The WHO (2010) identified the core building blocks for health care system strengthening, included service delivery, health workforce,

health information systems, access to essential medicines, financing, and leadership/governance. This was seen as an important starting point as while this study focused on critical care nursing it was essential to consider how critical care nursing would 'fit' into the overall health system for Zambia. Similarly, the UN Sustainable Development Goals (2025) may focus on SDG 3 'Good Health', on closer examination, this study needed to align itself to a wider agenda, which included increasing access to reducing poverty (SDG 1), quality education (SDG 4), gender equity (SDG 5), reducing inequalities through access to healthcare (SDG 10), peace, justice and strong institutions (SDG 16) and partnership working (SDG 17). Therefore, the development and implementation of any new role had to be carefully considered as it would have a ripple effect across all of the WHO (2010) building blocks and UN SDGs (2025). It is important to note, when introducing or expanding services and roles in resource limited settings, it is important to consider the consequences of these changes, which may have both positive and negative impacts on the overall infrastructure.

At the start of the study Zambia was classified by the World Bank as LMIC and it is important to note that while emergency and critical care services are essential to meet the demands of international and local priorities (UN SDG 2025; MOH 2017 & 2022; WHO, 2010). These services had to compete within an already overstretched healthcare system with and limited resources (included finances and workforce) and staff numbers (Bvumbwe & Mtshali, 2018). This is supported by Sacks et al (2019) who argued that for successful implementation of any new component there needs to be a strong and well-functioning health system infrastructure. They go on to point out that in many LMIC, the focus on health care strengthening is on hospitals and internationally recognised public health issues, such as malaria prevention, reducing maternal and child mortality, HIV / AIDS and TB.

It has to be recognised that nurses in Zambia are employed as Civil Servants, in consequence, they are bound by both professional codes such as the Nurses and Midwives Act (Government of Zambia, 1997 & 2019) and Civil Service Codes of Ethics (GRZ, 2020). This could be seen as a contradiction in terms, as the professional codes differ considerably leaving nurses trying to address their 'dual loyalty' (Hertzberg et al., 2024; BMA, 2016). They may find themselves with competing demands when considering the care of individual patients and their own careers. This is recognised in SDG 16 which focuses on just, legal and ethical decision making (UN SDG, 2025). However, no evidence was found in documents reviewed or the Advanced Diploma curriculum and supporting documents (NMCZ, 2012).

Also, as nurses (and other healthcare professionals) are employed as Civil Servants they sit within the national establishment of civil servants, not just health service employees. This can impact the labour market (recruitment, promotion and retention) and healthcare system

development and deployment (Hutchinson et al., 2024). Another core theme identified that emerged related to employment and leave entitlement. In Zambia MOH nurses are employed as Civil Servants, and in consequence are bound by the Civil Service Code (GRZ, 2020). As Civil Servants, nurses are classed as either Division I, Division II or Division III, with differentiation related to qualification grades. As most nurses are educated to Diploma Level at the time they are classed as Division II Officers and those with BSc, MSc or confirmed leadership positions classed as Division I Officers. There is also an ongoing leave entitlement, in addition, to the local leave entitlements of 29 days, every two years Civil Servants are entitled to additional leave 'bonuses' (table 5.4) (GRZ, 2021). This results in gaps permanently arising within an already limited workforce, as all health care professional including for example Consultant Anaesthetists and Tutors take these long leave periods.

Table 5.4 Vacation Leave allowances for both Division I and II Officers (which includes nurses, doctors and ancillary staff within the MOH).
99. A Responsible Officer shall ensure that employees serving under him or her take leave regularly to avoid accumulating excess leave days and to enable the employee to rest 100. (a) No officer may be granted leave for a continuous period longer than is specified below: For officers in Division, I 120 days. For officers in Division II 110 days; and For officers in Division III 100 days. (b) If an officer is granted only part of the total leave which he or she has earned, he or she may be granted the balance later together with any further leave which he or she may then have earned. Balance of earned leave being carried over 101. (a) Local Government Service officers may accumulate leave up to the prescribed maximum limits specified under as follows: Officers in Division I 230 days Officers in Division II 205 days Officers in Division III 160 days

The Ministry of Health develops national plans for health care delivery, including a plan for surgical, obstetric and anaesthesia (which is where critical care sits) (MOH, 2017a; 2017b; 2022) The National Surgical, Obstetric and Anaesthesia Strategic Plan 2017 – 2021 (MOH, 2017) recognised the need to develop intensivists which are different from physicians, anaesthetists and to have an establishment of 1928 critical care nurses across the country. However, they give no indication as to how this would be achieved. There was a recognised need to train an additional 250 critical care nurses over 5 years, however, even with appropriate resourcing this modest output was unlikely to be achieved as at the time there was one critical care nurse education provider for the country. With one intake a year, this limited the numbers of students could not meet the recognised establishment need. This is not an unusual finding for specialist nursing in Sub-Saharan Africa, for example, Ruthe and North (2020) reported that the introduction of specialist paediatric nursing in Ghana, had been successful, but had not trained the critical mass needed to meet the scale of need. Overall, it

was evident that Zambia did not differ from the continent in facing challenges for scaling up specialist education and practice within the current infrastructure.

5.5 Health Care Statistics

Looking at the health care statistics for Zambia, at the start of the study, it appeared life expectancy was increasing; however, it now appears to be dipping (WHO, 2025). Also, as in many African countries, Zambia is a facing a double burden of disease as they continue to address communicable diseases as well as the rising non-communicable diseases (NCDs) (Bigna & Noubiap, 2019). This is exacerbated by the adverse economic impact due to lost working days and increasing costs of medications to support chronic disease management (GRG, 2019b). Zambia continues to have a high burden associated with HIV/AIDS, where the prevalence has not changed over the past decade., Further, while life expectancy through access to antiretroviral treatment (ART) has improved quality of life and longevity, it remains a cause for concern that Zambia continues to have high mortality during and especially following hospitalisation (Bwalya et al., 2025).

While there have been some successes in preventing the spread of TB and HIV, with infected individuals living longer, many conditions such as HIV are now deemed to be chronic diseases. In addition, the long-term impact of treatment, for example, the use of Highly Effective Anti-Retroviral Treatment (HART) has resulted individuals developing other conditions including insulin-resistant diabetes and dyslipidaemias, which has then increased the burden of non-communicable diseases. However, this situation is now at risk, due to the rapid cessation of US Aid and the UK's decision to reduce its overseas aid budget (O'Sullivan and Puri, 2025). As a result, Zambia is facing the possibility of a return to pre-ART days at the same time as it is trying to cope with other tropical diseases such as malaria and cholera.

In the light of this it is a cause for concern that in the National Health Strategic Plan for 2017 – 2021 (MOH, 2017) and 2022 – 2026 (MOH, 2022) nursing and midwifery only comprised two pages out of 116 pages and 136-page documents respectively. With nursing and midwifery being the largest component of the registered healthcare workforce, this lack of recognition is a missed opportunity to release the potential, and through that, work towards universal health. As the International Council of Nurses (Cipriani, 2023) argue nurses are crucial in achieving the target of universal health access to all by 2030 will be met.

5.6 General Nurse Education & Practice

As outlined in previous themes, although nurse education did emerge in the documentation, throughout the analysis it was evident it was inextricably linked to and integrated with the other themes. Nevertheless, as outlined in the health systems strengthening theme it is important to consider critical care nursing in the wider context of nursing in Zambia. In 2009, the WHO

recommended that nurse education programmes should move towards graduate level, arguing that where graduate nurses are employed on a critical mass, mortality rates are reduced and complications diminished (Aitken, et al., 2014; 2018). At the time, Zambia had both enrolled and registered nurses (RNs) with the majority of RNs educated and trained to diploma level, which was seen internationally as a technical level (Bvimbwe & Mtshali, 2018). Therefore, it was a cause for concern, that when reviewing the specialist critical care nursing curriculum, the level was at diploma level, and it was unclear exactly what an Advanced Diploma actually meant in terms of specialist education, knowledge, skills and attitudes. Recently, the Higher Education Authority (HEA) in Zambia has reclassified the Advanced Diploma as a Diploma, arguing there are no Advanced Bachelors or Advanced Master of Science degrees. However, it was recognised that the specialist courses were post-basic and did lead to extended knowledge and enhanced competence in practice.

When reviewing the critical care nursing curriculum, terms such as advanced practice were used but not explained. However, this differed from the ICN definitions and standards for specialist and advanced practice standards (ICN, 2020). Therefore, it was essential to make this point during the stakeholder workshops, to ensure the term was defined, understood and implemented in current and future programmes. This was seen as crucial, as at the time, with only an Advanced Diploma programme running, there needed to be clarity over the differences between diploma, BSc and MSc level critical care nurses, as there would be an expectation that each level would have clearly defined levels of knowledge and skills, with MSc critical care nurses having the highest competency levels d practicing at ‘advanced level’. This was a key component of the development of the new career structure, to enable policy makers and employers to see and accept the value and difference in investing in the nursing workforce over the duration of their careers.

5.7 Need for Critical Care & Critical Care Nurse Education

Over two decades ago, the WHO (2003) recommended that in any hospitals which provide general anaesthesia, critical care services should be available. Several documents recognised the importance of critical care (WHO, 2017), however, they were all written in isolation and as stated previously – see Chapter 2 page, documents written prior to the Covid-19 pandemic had far less emphasis on the implementation strategies to increase and enhance critical care. Also, it was only in 2023, when the WHO (2023) recognised the importance of critical care as part of the patient pathway encompassing emergency and peri-operative care. However, it did not go to recognise the post critical illness/rehabilitation, which was a missed opportunity, given that critical care is resources intensive. Therefore, it is a tragedy for individuals (adults and children) to survive critical illness and then die on the ward from a preventable / iatrogenic cause such as a pressure ulcer, hospital acquired pneumonia or sepsis (Baker et al., 2025;

Dart et al., 2017). It is also a cause for concern that the Advanced Diploma curriculum and supporting documents (GNC, 2018) had limited focus on early rehabilitation and follow up from critical care, instead had an emphasis on emergency situations such as resuscitation.

The documentary data analysis revealed there were internationally agreed standards for critical care nurses from the WfCCN (2019a, 2019b, 2020) which included education, definitions and rights of the critically ill patient. However, what was not clear was the extent to which any organisations and experts from LIC / Sub-Saharan Africa had been involved in the development / review of standards for practice. It was a cause for concern, that when reviewing the initial Advanced Diploma for Critical Care Nursing curriculum and supporting documents (GNC, 2018; 2012), they had been based on a UK model and therefore, on HIC equipment, technology and nursing practices. Macey et al (2022) argues that LIC and LMIC need to develop their own standards and definitions that fit within their context of practice rather than trying to adapt a universal definition developed for different healthcare systems. They recognise the lack of research from LIC and LMIC in Sub-Saharan Africa, limits developments in critical care nursing. In consequence, this is another reason why this study was urgently needed for Zambia, to develop context specific critical care nurse education and standards for practice.

The review of the Nurses and Midwifery Act (GRZ, 1997) revealed only an outline of a general nurse's scope of practice. This included prescribing drugs in accordance with the nurse and midwifery formulary and undertaking therapeutic interventions which may include insertion and removal of devices, intubation, resuscitation and infusions. However, this scope of practice was broad and did not specifically relate to critical care nursing. In consequence, documentation was supplemented by the nurse's procedures manual which outlined the level of practice at which they are expected to perform in practice. Yet another issue emerged at this point, the curricula and supporting documentation were not matched, resulting in a theory practice divide. For example, students were taught and assessed on a range of topics such as prevention of ventilator associated pneumonia (VAP), and sepsis care. However, the underpinning curricula were either outdated due to changes in international evidence or were not routinely applied in practice. In addition, the use of procedures manuals designed around a step-by-step approach resulted in nurses focusing on tasks and routines, rather than the individualised care that a more holistic approach offers (Sharp et al., 2018). In addition, it was a cause for concern that on completion of specialist training there was no formal requirement for a preceptorship or internship period, with newly qualified specialist nurses taking on new and ever-changing roles without role models or guidance. There were limited requirements within the Act for nurses to undertake continuous professional development (CPD), in addition, the absence of easily accessible national CPD programmes meant that many of the possible

activities were low level instruction at technician level, making the requirement theoretical rather than practical (Baloyi and Jarvis, 2020; Bvimbwe & Mtshali, 2018).

At the time of the study there was another challenge for Zambia, in that was there was, and still is, a critical shortage of faculty prepared at MSc and PhD level to advance the critical care nurse education agenda. In addition, education faculty were often trained overseas and as a result exposed to different healthcare systems, educational and competency standards, which may not reflect the standard in Zambia. As a result, the few (and at the time one educator at MSc level), meant that while theoretical changes could be made, they did not reach practice. In addition, relying on the few faculty creates a vicious cycle whereby the few faculty are in the position of being expected to have the capacity to change nursing single handedly. They are expected to be role models, have the expertise to conduct research to inform the ever-changing practice needs, the ability to develop curricula and skills, and assume leadership roles in academic and health care sectors (WHO, 2020), as well as developing practice, a somewhat daunting list for a small and stretched cadre.

5.8 Task Shifting

It was perhaps not surprising to find when reviewing the Advanced Diploma Curriculum (GNC, 2012, 2018) and the Nurse Act (Government of Zambia, 2007 and 2019), that on completion of specialist critical care nursing, they would be expected to undertake an extended and expanding role, This was because of ‘task shifting’, or ‘task sharing’ which was advocated by the extant WHO Addis Ababa Task Shifting Declaration (2008b). This encouraged the shifting of tasks to deal with the critical shortage of human resources for health. This involves allocating less specialist skills and tasks to less specialised and/or differently trained healthcare workers. The Advanced Diploma procedures and evaluation manuals (NMCZ, 2012; 2018) had ‘tasks’ such as intubation, central venous access and resuscitation activities such as defibrillation.

While this has offered opportunities for nurses and to meet the challenges of critical care nursing in practice, it must be considered with a full understanding of the situation (Pallangyo et al., 2020) and links to previous themes. It is a cause for concern that while this allows for a short-term response, for specialised nurses such as critical care nurses, it leads to reduced morale, lack of recognition and opportunities (Pallangyo et al., 2020). Also, the term ‘task shifting’ turned out to be a euphemism to cover complex tasks which should have been recognised as requiring a higher level of competence. For example, an advanced diploma critical care nurse will be required to have the knowledge and skills to decide when to intubate a patient and initiate mechanical ventilation. Yet a doctor will receive master’s level education, increased salary, recognition and opportunities to attend workshops / continuing professional

development to carry out the ‘same task’. Also, there was little recognition that for nurses to take on these complex tasks there needed to be an increased establishment of nurses, or fundamental nursing activities would not be carried out. This results in fundamental nursing care being carried out by student nurses or patient bed-siders unsupervised. However, at policy level, with limited understanding of specialist roles, and limited numbers of critical care nurses at strategic level, decisions continue to be made without full appreciation of how these decisions would impact on service delivery.

5.9 Career opportunities

The documentary data analysis revealed that even in documents listed as describing national policies, there were no dedicated policies, strategic plans or national structures relating to nursing career development. For example, whilst in many public hospitals, nursing leadership and education positions required the post holder to hold either a BSc or MSc qualification in the field of practice, the limited number of BSc and MSc programmes available had made this unachievable. Also, no guidance was given as to how to solve this dilemma. As a result, currently, post holders were found to hold general nursing, midwifery or public health qualifications, which although meeting the education level, does not provide the postholders with the requisite knowledge and expertise for specific fields of specialist practice (GNC, 2012; Carter et al., 2020). It is possible for promotion to be gained through experiential experience, but again there are limited opportunities for this, and an additional challenge is that for the group in this study, critical care nursing, management often sits within another speciality such as, operating theatres, emergency departments, surgical units where in some instances the leads of departments were found to be midwives. Therefore, mechanisms needed to be developed to ensure that the speciality was fully and accurately represented at all levels, as only then could appropriate care be delivered and services developed to reduce morbidity and mortality. Increasing access to appropriate higher-level education, training and qualifications would start to re-dress the imbalance, by enabling critical care nurses to gain the academic and practice competence to rise through the health system to have a strategic voice, and lead specialist critical care forward. However, this was not an instant solution, it was too expensive to send staff overseas to train, also, this resulted in a gap for 2-3 years while they were overseas and entailed the risk they might not return (Abdoola et al., 2025). In addition, it has to be noted that as healthcare systems vary between countries, on their return they may not practice and consolidate their knowledge and skills. This is because there is a tendency for higher qualified staff to be put into administrative roles (Bvimbwe & Mtshali, 2018). This supports the need for this study designed to enable Zambia to grow and develop their own Faculty and nursing services.

Globally there remains a critical shortage of nurses (WHO, 2022), which has described by the ICN (2023) as a global health emergency. Therefore, within healthcare systems there are competing challenges with nurses wanting to develop their careers, which is seen as recruitment and retention issue. In Zambia, at the start of the study, nurses who wanted to complete a post registration course in critical care nursing were from two groups. Those at diploma level who had had to accept there was only another diploma and no career progression. While the second group, although few were graduate nurses who had had to take a step back and complete a diploma, again not offering any career progression.

The situation is compounded by many HIC recruiting overseas nurses as a quick fix to their systemic workforce and healthcare challenges (Bortolussi-Courval et al., 2023). The WHO Workforce Support and Safeguard List (2023) has identified countries who have a Universal Health Coverage Index of less than 50 healthcare professionals (doctors, nurses, and midwives) per 10,000 population. Zambia is part of this group of countries. While it is accepted there are ethical recruitment standards set by the WHO (2010), the ICN (2019) and countries including the UK (2023), it remains a cause for concern that the UK government significantly adjusted its approach to overseas recruitment and moved from their own extended list to the smaller WHO Workforce Support and Safeguard List (NHS Employers, 2025; NMC, 2023a). Therefore, while the UK government recognises no active recruitment from red list countries is allowed, the UK Nursing and Midwifery Council (2023b) recently reported a 'significant proportional rise in joiners from … Zambia'.

Nurse migration is a complex issue, Li et al (2014) describe nurse migration as having push and pull factors. While evidence is variable about the impact and experiences diaspora healthcare workers make to organisations such as the NHS, it is important to point out that there are advantages and limitations for both the losing and receiving countries (Li et al., 2014; Shaffer et al., 2022; Bayuo et al., 2023). A key advantage identified is the opportunity for nurses to provide financial support for families in their home countries (in this case Zambia) (Adam et al., 2025; Squires & Amico, 2014). Other push factors cited include low wages, limited career opportunities, limited education opportunities, lack of resources, unstable or dangerous working conditions, lack of social benefits including retirement packages, unstable political and economic situations (Li et al., 2014. Adam et al., 2025).

The ongoing impact on services in LIC cannot be underestimated, as workloads which are already stretched become overwhelmed and deteriorate, contributing to increased occupational stress and burnout (Li et al., 2014; Adam et al., 2025). Therefore, this study was deemed crucial by the MOH as it provided an opportunity to provide career and education opportunities, which in turn will lead to higher salaries as MOH salary scale is linked to

educational qualifications and improved retention. In the longer term it would provide strategic leaders who will be able to lobby for resources and potentially, be Principal Investigators for research grants and capacity building projects which will improve the healthcare system and patient outcomes.

5.10 Summary of Documentary Data Analysis

The documentary data findings were used to provide contextual information for all activities; therefore, it was essential that they were adapted or were from the Zambian setting. Themes from the historical and current documentation revealed that some situations have not changed, for example, at the start of the study there was still a critical shortage of specialist nurses and a reliance on overseas education and training. The findings from both sets of analysis were taken to a stakeholder workshop (Baxter et al., 2023). Prior to the discussions with stakeholders, checks were made by the core team that the data extracted, and the interpretation had been appropriate, maintaining the context in which documents had been presented.

Chapter 6: Cycle 1: Research / Stakeholder Workshops & National E-Survey

This chapter presents the findings from the first research / stakeholder workshops and the national e-survey. This builds upon and utilises the documentary data analysis. The outcomes from these workshops were summarised with key points on power point slides which were then discussed and agreed.

6.1 Research / Stakeholder Workshop

This was the first participatory research activity which was designed to include ubuntu. In consequence, it was important to fully discuss with all participants the design and implementation of the study including the participatory nature of the study and the importance of working together sharing ideas, supporting each other and achieving consensus (Mulaudzi et al., 2022). This stakeholder workshop comprised of 18 participants (table 6.1), five of whom were male, two were medical doctors, two nurses had a PhD, seven nurses had MSc (ranging from Critical Care, General Nursing and Public Health. Further delineation of demographics would have led to identification of individual participants. The workshop lasted five days and participants were identified through a process of negotiation with statutory bodies, to identify the expertise needed across the group. It was accepted that as a starting point, the researcher had to be led by the nursing regulator who organised the workshop. However, even at this point, it was made clear that all those participating would be regarded as having equal status. This was important as a number of critical care nurses were joining the group and in view of the hierarchical nature of the health system in Zambia, could have found it difficult to share their views. This workshop was completed at the start of the study and included the review of the Advanced Diploma in Critical Care Nursing which had been validated in 2012. At this time, there was only education institution providing critical care nurse education and one level of specialised critical care nursing education.

Table 6.1 Breakdown of Participants Attending Strategic Workshop 1

Stakeholder	Number of participants
MOH (Director of Human Resources)	X1
MOH (Nursing Directorate)	X 3
NMCZ	X 4
ZUNO	X 1
UNZA	X 1
Tertiary Referral Hospitals	X 3
One College of Nursing	X 5

As this workshop included a review of the advanced diploma, the key themes identified for inclusion in the stakeholder meeting included the need for change in terms of the curriculum, assessment of competence, mentorship of students, a move away for traditional pedagogical approaches to learning and teaching and the need for higher-level programmes. Data presented here was extracted from PowerPoint presentations created, delivered and debated

during the five days, field notes and entries in the researcher's reflexive diary. A wealth of data was collected but due to the volume of data gathered over the five days only the daily summaries have been included. The PowerPoint presentations were completed every day to summarise key points and acted a starting point for the next day. This may not be a traditional research approach to data gathering and presentation, however, in participatory co-operative inquiry the emphasis is on partnership and shared developments (Vaughn & Jacquez, 2020). This approach was proposed by the participants as an appropriate way to record discussions and annotate the progress towards development of a career structure and conceptual framework. The advantage of this approach was it enabled discussion to flourish, and participants created the records together, including the PowerPoints for discussion, and the final, accepted slides. This gave ownership to participants who used their own words and context statements to gradually take the lead in activities, particularly as the week progressed (Creswell & Creswell, 2022; Muhammad-Lawal et al., 2022; Borti et al., 2024).

For this approach to be used successfully, the researcher has to have the self-awareness and self-acceptance to recognise that their role which traditionally would be leadership, project management and negotiation skills is different in participatory co-operative inquiry when applying the ubuntu philosophy. This involves the researcher initiating activities, then gradually handing over the leadership and direction of activities to participants while at the same time having the research skills to focus participants so that the research study aims and objectives are addressed and goals achieved (Fareed et al., 2023; Borti et al., 2024). This is the key difference between this approach and other traditional research methods in which the researcher role is clearly defined by the methodological strategies and constraints inherent within the paradigm in which the study is set (Russ et al., 2024).

6.1 Theme 1: Need for Change

The first theme related to the purpose of the workshop, participants initially, thought (and stated) that the Advanced Diploma in Critical Care was a '*successful'* post-registration programme and '*fit for purpose'.* However, after a presentation of the documentary data analysis the whole group discussed the findings and then applied their discussion to the programme which led to an agreement that there was a need to make some changes to enable the programme to meet advances in intensive care. It is important to point out that at the time, although a range of Advanced Diploma programmes had been developed for different aspects of specialised practice, none had ever been reviewed for content or applicability. This included the Advanced Diploma in Operating Theatre Nursing programme which had not been revised since its introduction in the late 1970s. This in itself caused considerable surprise and debate, and led to the realisation that this meant it was the first time many of the participants had been

involved in a curriculum review. It was, therefore, not a surprise that this became an ongoing focus of discussions across the five days.

The feedback from stakeholder discussions indicated that they had all recognised that the Advanced Diploma was the first of its kind in the country and was still seen as delivering training that led to increased knowledge and skill. However, they now acknowledged the curriculum had been developed by a UK Health Partnership, based on a UK programme designed for a high-income country, using a Western philosophy which had been delivered unchanged since its inception. When, following this revelation, they reviewed the content, they universally decided that it needed to be radically revised to be more context specific and to take account of the disease burden in Zambia. The PowerPoint slides (figure 6.1) they confirmed stated:

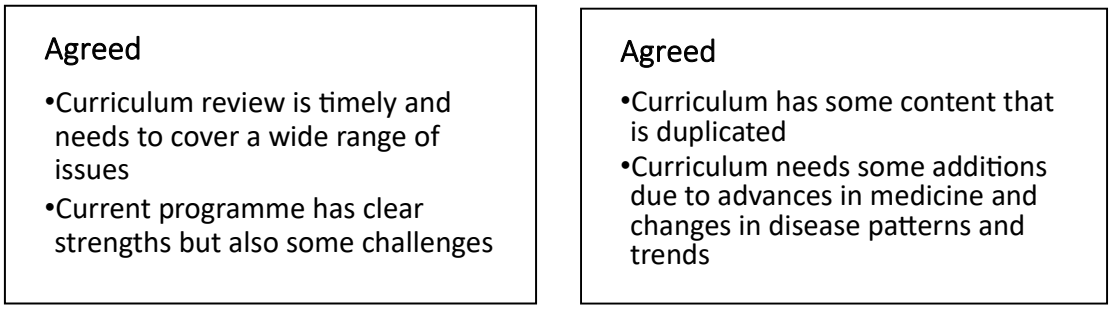


Figure 6.1: PowerPoint Slides: Review of Curriculum

Using these PowerPoints as a basis from which to work, as a group they then looked in detail at the curriculum documentation and then moved on to review the theory and practice balance. At the time, it was a GNC requirement that programmes had a balance of theory 1/3 and practice 2/3, and it was agreed that this should remain as it gave adequate time for the development of the higher-level clinical competences needed for critical care nursing (NMCZ, 2024). Therefore, for validation purposes they agreed the revised one-year Advanced Diploma programme needed to comprise of 19 weeks (665 hours) of theory and 32 weeks (1255 hours) in practice. Delivery of the programmes was such that the programme assessments were in stages, with students completing introductory blocks examinations, hospital examinations and then completing their course with national finals. However, there was concern (as figure 6.2 below indicates) that the national examinations were gradually creeping forward thereby reducing the practice and teaching blocks. The participants were adamant that this needed to be taken back to the main GNC committee for review, as it was essential that hours approved by the regulator were followed to prevent disadvantaging students by reducing their academic education and clinical practice.

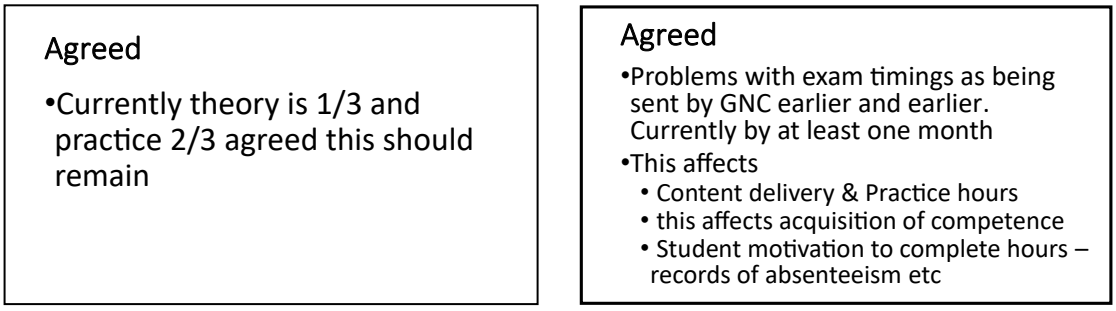


Figure 6.2 PowerPoint Slides: Theory / Practice & Examinations

It is important to recognise, that this programme requires nurses to be competent in all areas of critical care nursing practice including adult, paediatric and neonatal critical care. therefore, as part of the review process all existing competencies were assessed, revised and then peer reviewed. The stakeholders accepted 53 critical care nursing procedures as appropriate but identified a need for 11 new competencies. However, looking at the current and planned new programme, both stakeholders and practitioners acknowledged that in 1 year it was not possible to adequately cover all the specialist areas in sufficient depth, particularly neonatal and paediatric components which were short components of the course. This triggered further debate, and it was decided that when higher education programmes were developed, there could then be dedicated programmes for adult, neonatal and paediatric critical care. It was agreed that questions regarding this would be included in the national e-survey and focus groups with responses considered when developing the new career structure.

6.1.2 Theme 2: Assessment of Competence

Prior to the blanket introduction of objective structured clinical examinations (OSCEs) by the nursing regulator, the method of assessment that had been used was Direct Observation of Procedural Skills (DOPS) (Katowa-Mukwato et al., 2013). OSCEs were relatively new at this time and although they were being used, stakeholders were adamant that the move to use OSCEs was appropriate as this approach to testing clinical practice was deemed to have reliability and validity without involving live patients, removing risks to patient safety (figure 6.3).

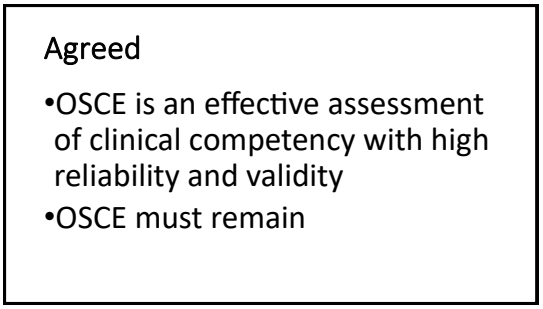


Figure 6.3: PowerPoint Slides: OSCEs

However, their comments were somewhat contradictory as when asked about the use of manikins and simulation as part of education and assessment, they felt they were not adequate tools, although they did agree that they provided useful checks for students (figures 6.4 and 6.5).

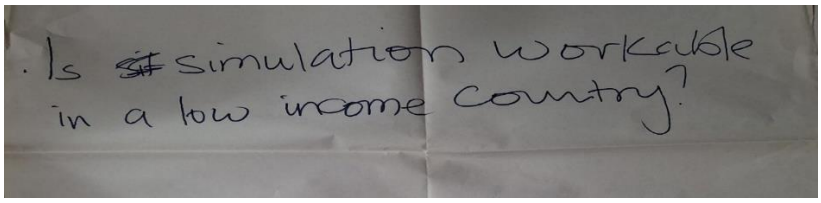


Figure 6.4 Participant Quote on simulation

Agreed

- Manikins do not provide an adequate assessment strategy, but is useful to check prior to practice that processes and procedures are safely followed

Figure 6.5 PowerPoint Slide: Simulation as an Assessment Strategy

The question regarding the use of simulation and their views regarding use of manikins were surprising as OSCEs can be based on using simulation techniques. In addition, OSCEs are expensive and resource intensive which in a setting where there are few faculty tutors, and limited resources has to be a consideration. (Katowa-Mukwato et al., 2013; Dewan et al., 2024). They were keen to discuss their views regarding simulation, and it was evident during discussions that one of the challenges is that they had had little education or training regarding the use of simulation in formal assessment (Robinson et al., 2024; Malya et al., 2025). As Karlsaune et al (2023) argue, to be effective it is crucial that those planning and leading simulation have a good understanding of education theory including education of adults and the differences in the use of simulation between pedagogy, andragogy and ubuntugogy. Their differing perspectives and somewhat contradictory views may in part have been due to the way in which OSCEs were being used in nursing and midwifery education. At the time, the system used involved limited faculty preparation for the OSCEs, something that would need to be reconsidered and expanded with the implementation of the revised programme with its increased number of procedures and competences (Malya et al., 2025).

They did accept that it was unrealistic to expect tutors to use OSCEs as the main means of assessment without additional training and guidance. This was important as the nursing

regulator was adamant that OSCEs were the way forward, and as nurse education programmes needed to be consistent, they wanted all programmes to include them. It was interesting to note, that the debate was inclusive. However, as OSCEs were new and their education model is based on a Western approach, it was evident that they had accepted OSCEs as the new way forward. But in reality, many wanted to keep the traditional assessment strategies. Two years later, some of the ongoing challenges of OSCE based assessment had been recognised and Mbewe et al (2020) pointed out that the most effective approach was to use a blended learning approach. This combines both DOPS and OSCEs, but nevertheless it has to be pointed out that simulation still remains a somewhat divisive subject (figure 6.6).

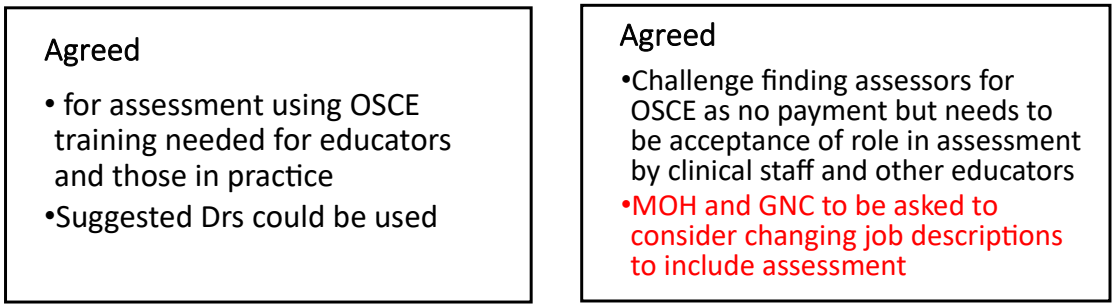


Figure 6.6: PowerPoint Slides: Challenges with OSCEs

As indicated previously, OSCEs are human resource intensive (Dewan et a., 2024), and as a result concerns were raised by education providers about resourcing the examinations. They did suggest that to help with assessments doctors could be included, however, while this could work for some clinical procedures nursing is not medicine and therefore for most nursing competencies, they would need to be teamed with a critical car expert, raising not reducing, resource implications. Another point raised was that traditionally assessments were not regarded as part of nurses' roles, on discussing this the MOH and regulators it was identified that they would consider changing job descriptions to include assessments, as they saw them as integral element of nursing practice and believed that all nurses should be involved in assessing peers and students. They saw this as essential, as without assessment and supervision being included, students could be left unsupervised in practice.

6.1.3 Theme 3: Mentorship of Students

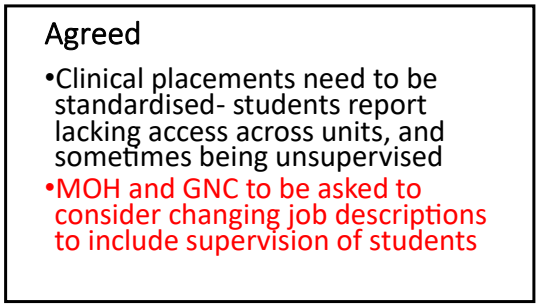


Figure 6.7: PowerPoint Slide: Clinical Placements & Student Supervision

Mentorship and peer support are core tenets of ubuntu and have been widely debated in the international nursing literature (Bain et al., 2023; Carter et al., 2021; WHO, 2020). Therefore, it was not surprising that this theme emerged. As previously noted, students were allocated more time in practice than in theory, however, the challenge was that there were more educator tutors than clinical instructors (figure 6.7). Also, in view of the limited numbers of RCCNs, the current availability and standard of mentorship and supervision was seen as questionable. The following comment was made by a RCCN participant:

'… we are a practical profession… so nurses need to have support in practice…'

However, this participant went on to report that with limited numbers of RCCNs:

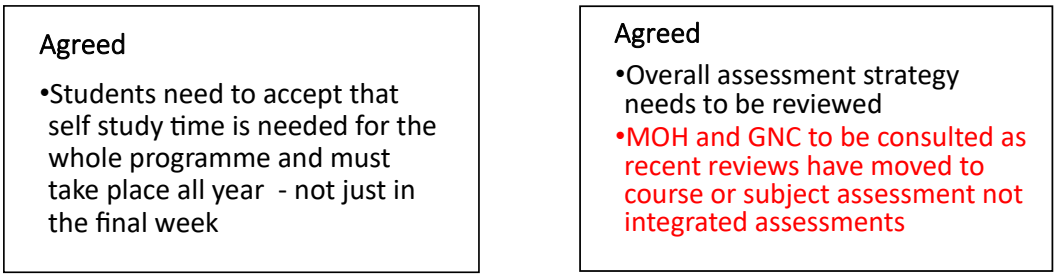
'…sometimes students are left unsupervised…'

A situation that urgently needed addressing (Carter et al., 2021). While another point raised by a Senior Nurse, was the need for a period of consolidation or internship when critical care nurses qualify (Li et al., 2023). This would allow them to embed into their new role, however, as this was outside the scope of the curriculum review and students would have left the training establishment. The participants were all agreed this was an important point. Therefore, this was a question taken forward to the e-survey to try and identify if there was consensus regarding this from RCCNs as well as these participants.

6.1.4 Theme 4: Move away from Traditional Pedagogical Approaches

This was an important concept, as traditionally, nurse education in Zambia, has consisted of full-time study, with students spending 7.5 hours per day in the classroom, during which time education was totally didactic, using lectures for all sessions including clinical skills. The challenge with this approach was that it does not follow the principles of adult learning (Knowles et al., 2005; 2012), and as a result it does not support the development of critical thinking a key component for specialist practice, nor does it fit with ubuntugogy (Bvumbwe & Mtshali, 2018). Also, with recognition for the need for higher level programmes in critical care, the need for the revised programme to instil in students, the principles of life-long learning

were discussed. It was recognised this was essential if learners were to take responsibility for their own learning (Knowles et al., 2005; NMCZ, 2024). Only this way could students be prepared for the responsibility that accompanies specialist practice with higher level education and practice requirements (figure 6.8).



Feedback 6.8: PowerPoint Slides: Views of Self-Directed Study & Assessment Strategy

The move from didactic lectures to more interactive and group-based peer learning, developed by the constructivists approach to theories of learning, which fit well with the ubuntugogy principles (Epp et al., 2021; Matahela et al., 2025). This would enable learners to build upon previous learning experiences and knowledge, and thereby become independent, self-directed learners (Bvumbwe and Mtshali., 2018). This was seen as crucial as integral to ubuntu is the need to recognise the individual responsibility in developing the communal good, with the group overall seen as more important than individual, however, this does not negate individual integrity (Mulaudzi & Gundo, 2024). Although early on in the study, this meeting started to the debate the most appropriate learning theories and how these could contribute to a career structure, which would develop the individual and in turn then develop the community.

It was accepted by all participants that today students have to recognise that they must take responsibility for their own learning and outcomes and that in contrast to the methods they were used to, they needed to accept that self-directed study time exceeded classroom time. Accompanying this approach multi-modal approaches to assessment are needed, with each different type of assessment assessing different elements of knowledge and competence (Bvumbwe and Mtshali., 2018). For participants, initially there was another contradiction in concepts, as while they accepted that they need to move from integrated assessments to assessments that are subject based, in addition to their views on OSCEs, they remained committed to final examinations. The debate on these issues continued over several workshops.

6.1.5 Theme 5: Prepare for Higher Level Programmes

On reviewing all the evidence, stakeholders agreed with the international view that prior to specialist education and training there needed to be a period of consolidation of initial nurse

education and training (figure 6.9). However, there were mixed views as to whether this prior experience needed to be in critical care, therefore, this was a question that was posed to RCCNs as part of the national e-survey.

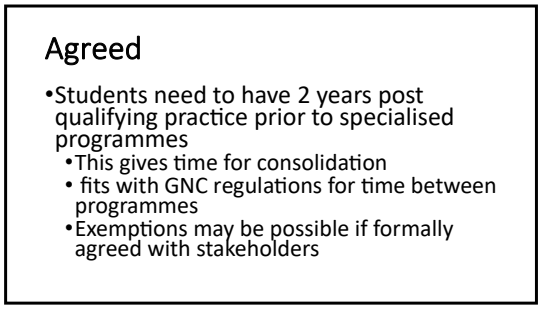


Figure 6.9: PowerPoint Slide: Experience Before Specialist Programmes and Period of Consolidation Post Specialist Course

Interestingly, on presentation of the findings of the documentary data analysis the discussions led to unanimous agreement that the current approach based on an Advanced Diploma was not adequate, with one senior MOH representative stating that nurses could not achieve career progression with only an Advanced Diploma, as this left them in a situation whereby for these nurses:

'it's not a glass ceiling but a concrete ceiling that you can't break'.

In other words, there was no career progression possible with an Advanced Diploma. In terms of ubuntu this was deemed unacceptable as it disadvantaged a community, and therefore, they needed to be given access to higher level training programmes. This supports the WHO (2009) view of the need for nurse education to move towards graduate level. However, yet again mixed views were presented, they recognised the need for a higher-level training in the form of the BSc in Critical Care Nursing. However, the current system based on the Advanced Diploma was deemed a tried and tested, 'safe' education pathway and, as a result, they wanted it to continue and for the group to suggest a route through which the advanced diploma would not lose its importance. Also, it is important to note, that at the start of the study, BSc and MSc programmes were relatively new, so had not produced large numbers of graduates. Those who did study to these levels were seen as likely to become senior administrators, as nurses with leadership and management skills were urgently needed to lead service provision (Mbombi & Mothiba, 2020) which meant as one educator reported:

'… they will be promoted to the office… and not improve practice…'

Thereby limiting positive outputs from education and training. Linked to this, was the problem that PhD's had only been introduced in 2016 (Katowa-Mukwato et al., 2023) and how an individual could progress from Advanced Diploma to PhD without losing their core speciality

and clinical competence was unknown. There was a long debate in which the research team were asked what happens in other countries, with stakeholders and participants very interested in the concept that there could be 'advanced nurses' who would stay in clinical practice, something they had never even considered as possible.

6.1.6 Summary

This workshop demonstrated some of the challenges facing Zambian stakeholders. While they all recognised the need to advance nursing, they were finding it hard to let go of known and accepted practice (Mthiyane & Habedi., 2018). They were open to suggestions and different perspectives from stakeholders and others and were keen to explore possibilities, which could help them move the critical care nursing agenda forward. The discussions helped to shape the national e-survey; however, it has to be noted that many of the points raised in this first workshop were revisited again and again over the lifetime of the study as participants gained the confidence to take ownership, consider change and debate possible strategies to implement change.

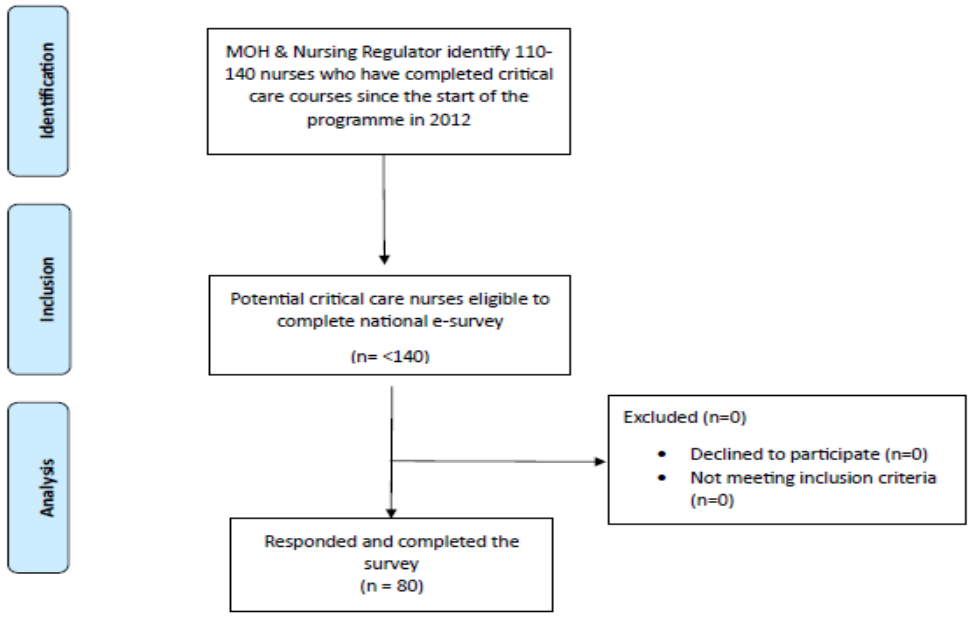
6.2 National E-Survey

It was evident from the first stakeholders' workshop that participants needed more information from the critical care nurses themselves and were keen to support the proposed national e-survey. The advantage of this survey was increased engagement and participation from critical care nurses about the future direction of their speciality. The specific aims were:

- To survey all current critical care nurses in Zambian on their opinion of critical care nursing practice and education.
- To assist experienced critical care nurses, chief nurses and educators in the identification of future critical care nursing priorities in Zambia.

As stated in previously, stakeholders suggested the number of critical care nurses in Zambia, was in the region of 110 to 140 nurses with over 100 still practicing, however, this could not be confirmed. The e-survey was distributed during a 3-month period (May to July 2018). To achieve maximum participation the survey was re-circulated to participants twice. The study flowchart using the STROBE criteria was adapted from von Elm et al (2007) is outlined in Figure 6.10.

Figure 6.10: Study Enrolment Flowchart using STROBE criteria



As the flowchart indicates 80 registered critical care nurses completed the survey, this would suggest a response rate of between 57-72.7%, this was deemed by stakeholders as a good return, particularly as the number of practising nurses was unknown and could have been lower than initially estimated. In research terms, it was an excellent response rate, as it is recognised that survey response rates can be as low as 25% (Clarke et al., 2021). Analysis of the data revealed three core themes, each of which has been presented separately below.

The data gathered was mainly nominal and ordinal which limited the nature of the statistical tests that could be completed. However, as the focus of the e-survey was to explore and describe participants perceptions (Luke & Goodrich, 2019), this was not seen as a problem, particularly because as an initial survey there was no intention of making inferences from the data. Instead, the aim was to explore and describe the views of critical care nurses giving them the chance to voice their perceptions and contribute to the national debate (Garde & Greinke, 2022). In consequence, the data has been presented in tabular format, demonstrating the responses for each category and Somers' D has been used to give an indication if there is a link between variables and if so whether this is positive or negative (Cooksey, 2020). the decision was made to analyse the majority of questions using years qualified as a critical care nurse, as it was important to ascertain those who had been qualified longer had the same perceptions as those with less time in practice.

6.2.1 Theme 1: Critical Care Units & Staffing

This theme reviewed the number of critical care beds in a unit as against the number of RCCNs working on the day and night shifts (table 6.2 and 6.3).

Table 6.2: The number of critical care beds compared with the number of RCCNs on day duty (0730-1800) as reported in the national e-survey.

		Number of Critical Care Beds					
		1-2 beds	**3-5 beds**	**6-10 beds**	**>10 beds**	**Total**	**P Value (Pearson's)**
Number of Critical Care Nurses on Day Duty	**None**	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	**0 (0.0%)**	0.033
	1 RCCN	2 (2.9%)	8 (11.6%)	19 (27.5%)	1 (5.6%)	**30 (43.5%)**	
	2-3 RCCN	1 (1.4%)	5 (7.2%)	11 (15.9%)	10 (14.5%)	**27 (39.1%)**	
	4-5 RCCN	0 (0.0%)	1 (1.4%)	3 (4.3%)	6 (8.7%)	**10 (14.5%)**	
	>6 RCCN	0 (0.0%)	1 (1.4%)	0 (0.0%)	1 (1.4%)	**2 (2.9%)**	
	Total	**3 (4.3%)**	**15 (21.7%)**	**33 (47.8%)**	**18 (26.1%)**	**69 (100%)**	

Total of 7 (8.8%) missing data. Six relating to number of critical care beds and 1 regarding number of critical care nurses on day duty. In addition, 3 respondents did not know how many critical cares staff were on duty.

Table 6.3: The number of critical care beds compared with the number of RCCNs on night duty (1800 – 0730) as reported in the national e-survey.

		Number of Critical Care Beds					
		1-2 beds	**3-5 beds**	**6-10 beds**	**>10 beds**	**Total**	**P Value (Pearson's)**
Number of RCCNs on Night Duty	**None**	0 (0.0%)	1 (1.4%)	1 (1.4%)	0 (0.0%)	**2 (2.9%)**	0.467
	1 RCCN	3 (4.3%)	12 (17.1%)	22 (31.4%)	9 (12.9%)	**46 (65.7%**	
	2-3 RCCN	0 (0.0%)	2 (2.9%)	10 (14.3%)	6 (33.3%)	**18 (25.7%**	
	4-5 RCCN	0 (0.0%)	1 (1.4%)	0 (0.0%)	2 (2.9%)	**3 (4.3%)**	
	>6 RCCN	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.4%)	**1 (1.4%)**	
	Total	**3 (4.3%)**	**16 (22.9%)**	**33 (47.1%)**	**18 (25.7%)**	**70 (100%)**	

Total of 7 (8.8%) missing data. Six relating to number of critical care beds and 1 regarding number of critical care nurses on night duty. In addition, 3 respondents did not know how many RCCNs were on night duty.

As table 6.2 demonstrates all participants reported having at least one critical care nurse on duty on the day shift. The results suggest there was a relationship between the number of RCCNs and number of critical care beds that were in use p-value = 0.033. However, the challenge was that at night, there was less critical care nursing cover, with fewer nurses reported on duty regardless of the size of the unit. While most respondents (n= 78) reported the majority of units had at least 1 RCCN on night shift (Table 6.3), statistical analysis did not

support this with p value = 0.467 (not statistically significant). This could in part be because the decision on whether to use a critical care bed is based on total availability and not staffing on individual shifts.

6.2.2 Theme 2: Experience

Table 6.4 Do RCCNs who have been qualified longer believe students need critical care experience before starting a CCN course?

		RCCN views regarding students needing critical care experience before starting a CCN course					
		Strongly agree	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly Disagree**	**Total**
Number of years as a RCCN	**1-2 years**	11 (19.3%)	7 (12.3%)	0 (0.0%)	6 (10%)	2 (3.5%)	26 (45.6%)
	3-5 years	7 (12.3%)	4 (7%)	2 (3.5%)	3 (5.3%)	0 (0.0%)	16 (28.1%)
	6-10 years	5 (8.8%)	2 (3.5%)	0 (0.0%)	2 (3.5%)	0 (0.0%)	9 (15.8%)
	11-15 years	2 (3.5%)	1 (1.8%)	1 (1.8%)	0 (0.0%)	0 (0.0%)	4 (7%)
	>15 years	2 (3.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (3.5%)
	Total	27 (47.4%)	14 (24.6%)	2 (5.3%)	11 (19.3%)	2 (3.5%)	57 (100%)
Missing values 23							

Most respondents who answered this question, had been qualified as RCCN for less than 5 years (58 = 72.6%), with few nurses being qualified over 6 years (6-10 years (10 = 12.5%) and >10 years (2 = 2.5%)) (table 6.4). and overall, 6 respondents did not answer this question. This was an expected result as critical care training only commenced in 2012, and the first cohort qualified in 2013. Therefore, at the time of the survey only 6 cohorts had completed education and training Nevertheless, it was important to note that overall, the majority of respondents (n= 41 = 72%) felt nurses should have had experience of working in critical care before starting specialist critical care education and training. Respondents who saw no need for prior experience had been qualified for less than 5 years (n = 11 = 18.8%) and may not have had the time or experience to have seen the difference in care prior to the introduction of critical care.

6.2.3 Theme 3: Academic Course Structure

The final theme considered RCCNs perspective of the length and level of the academic course, time in clinical practice, the use of simulation, e-learning and protected supervision post course. During the key stakeholders' meetings and the research workshops, the MOH accepted that they needed a system which would lead to recognition of this new specialist group, if they were to be encouraged to stay and enhance and extend practice. As a result, this study was deemed crucial by the MOH as it provided an opportunity to develop and

implement career and education opportunities, which in turn could be used to work towards higher salaries because as civil servants the MOH salary scale is linked to educational qualifications, with BSc level needed for nurses to be recognised for promotion. In the longer term the additional skills that come from higher education providing strategic leadership which means these nurses will be able to lobby for resources and potentially, be Principal Investigators for research grants and capacity building projects which will further improve the healthcare system.

Table 6.5: Does the length of timed qualified as a RCCN determine the length and level of academic course they would like to attend, the amount of time in clinical practice and the use of simulation, e-learning during CCNs course and the need for protected supervision post course?									
		Number of years as a RCCN							
		1-2 years	**3-5 years**	**6-10 years**	**11-15 years**	**>15 years**	**Total**	**Missing values**	**Somers'd**
Level of CCN Course	Diploma	6 (8.3%)	2 (2.8%)	1 (1.4%)	0 (0.0%)	1 (1.4%)	10 (13.9%)	8	0.048
	BSc	22 (30.6%)	10 (13.9%)	6 (8.3%)	3 (4.2%)	0 (0.0%)	41 (56.9%)		
	MSc	10 (13.9%)	7 (9.7%)	2 (2.8%)	1 (1.4%)	1 (1.4%)	21 (29.2%)		
Length of time spent in clinical practice	25%	0 (0.0%)	0 (0.0%)	1 (1.4%)	0 (0.0%)	0 (0.0%)	1 (1.4%)	9	0.124
	50%	19 (26.8%)	5 (7%)	3 (4.2%)	1 (1.4%)	0 (0.0%)	28 (19.8%)		
	75%	20 (28.2%)	13 (18.3%)	4 (5.6%)	3 (4.2%)	2 (2.8%)	42 (59.2%)		
Use of E-learning	Yes	19 (27.1%)	6 (8.6%)	7 (10%)	3 (4.3%)	2 (2.9%)	37 (52.9%)	10	-0.103
	No	15 (21.4%)	6 (8.4%)	1 (1.4%)	0 (0.0%)	0 (0.0%)	22 (31.4%)		
	Not sure	5 (7.1%)	4 (5.7%)	1 (1.4%)	1 (1.4%)	0 (0.0%)	11 (15.7%)		
Simulation	Yes	19 (27.1%)	13 (18.6%)	9 (12.9%)	3 (4.3%)	2 (2.9%)	46 (65.7%)	10	-0.292
	No	9 (12.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	9 (12.9%)		
	Not sure	10 (14.3%)	5 (7.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	15 (21.4%)		
Protected time post course	Yes	22 (31%)	15 (21.1%)	8 (11.3%)	3 (4.2%)	2 (2.8%)	50 (70.4%)	9	-0.193
	No	8 (11.3%)	3 (4.2%)	1 (1.4%)	1 (1.4%)	0 (0.0%)	13 (18.3%)		
	Not sure	7 (9.9%)	0 (0.0%)	1 (1.4%)	0 (0.0%)	0 (0.0%)	8 (11.3%)		
Length of protected time post course	1-3 months	14 (28%)	10 (20%)	3 (6%)	1 (2%)	0 (0.0%)	29 (56%)	30*	-0.193
	4-6 months	7 (14%)	4 (8%)	5 (10%)	2 (4%)	2 (4%)	20 (40%)		
	>6 months	0 (0.0%)	1 (2%)	1 (2%)	0 (0.0%)	0 (0.0%)	2 (4%)		
	*if respondent answered 'no' then there would be no response. Missing value 16								

6.2.4 Qualitative Comments

This final section contained open ended questions, However, as these were written comments in many cases not much detail was given which limits qualitative analysis, nevertheless every comment was considered. With comments tabulated. However, due to the nature of the comments there was very little difference between the first round and the second round of framework and therefore, only the second framework analysis, with the context check has been presented with the relevant quantitative results.

6.2.4 Level of Education

Table 6.6: Views on Level of Education

Quote	Thoughts, perspectives and context check	Review and Refinement of Code	Category / Theme
To advance and be more knowledgeable and skilful	Needing to improve l Knowledge and skill to advance self and practice	Education and knowledge	Level of education
For advancement of the career	Wanting to use education to advance self as nurse	Education and career progress	
Its important to have a speciality in order to widen the knowledge in some areas.	Recognition of need for specialist practice and added knowledge	Knowledge and skills education	
So as to acquire more skills for caring for critically ill patients.	Need more skills to have the confidence to deliver care	Knowledge and skills education	
Nurses will be more equipped and knowledgeable	Preparedness for nurses should include higher level knowledge	Preparedness education	
To become a speciality	Want to use education recognition to become a speciality	Specialist ? education	
To promote professional progression	Nurses want to use education opportunities to promote nursing	Career progression education	
To increase healthcare provision and increase the numbers.	Changing disease burden needs increasing services	Service provision education	

It was important to find that the majority of respondents reported critical care courses should be at either BSc (n= 41 / 56.9%) or MSc (n = 21 / 29.2%) level, with only 10 (13.9%) reporting courses should remain at the current Diploma level (table 5.9). Again, the Somers'd test was used to determine if there was an association between the level of course and the number of years as a RCCN. A poor, positive correlation between the two variables, suggested that there could be a limited relationship between the two (d= 0.048).

The overwhelming support for a higher-level programme was seen as positive and confirmed the acceptance of the need for change and for this study. While it is accepted that nurse

retention is a complex issue (Pressley & Garside, 2023), international evidence has shown that nurses who have the opportunity to grow professionally are more likely to have improved retention (Lyu et al, 2022; Yarbrough et al., 2017; Pressley & Garside, 2023). Further, Weninger (2020) and Lyu et al (2022) point out that nurses may become demotivated and leave if there is a perceived effort-reward imbalance, and they see no way to progress. Therefore, opportunities for them to be part of a career structure offering further development, may contribute to the retention of experienced nurses. This was reflected in respondents' comments regarding progression and promotion which included. For *'advancement of the career'* and '*To promote professional progression'* while for some the most important aspect was *'To increase healthcare provision and increase the numbers.*

For others, there was a perception that accessing a higher-level programme, would allow for critical care nursing to be a speciality, something that that they had been seeking:

> *'It's important to have a speciality in order to widen the knowledge in some areas'.*
>
> *'To become a speciality'.*

While there is an internationally accepted definition for Advanced Practice (ICN, 2020), currently there is no consensus for the definition of specialist practice (Tiliander et al., 2023; WHO, 2020). This continues to be the case due to the variations in pre-registration educational levels, terminology and length of time to complete specialist programmes (Tiliander et al., 2023). However, specialist nurses are seen as the bridge between nursing and medicine, as it identifies those who had have undertaken additional education and have an expanded scope of practice (Lowe, 2017; WHO, 2020; Tiliander et al., 2023). Consensus is unlikely to be achieved because although supporting specialist practice the WHO (2020) identifies that specialist nurses can be at BSc or MSc level, and they are different to advanced practice nurses. This makes it difficult for nurses in countries such as Zambia where they are still trying to gain recognition to see exactly where they fit in academic terms. However, several respondents did recognise that having access to higher-level qualifications would allow them *'to advance and be more knowledgeable and skilful'*, a view supported by comments such as *'to acquire more skills for caring for critically ill patients'.* Arguing that this would enable these nurses to become '*more equipped and knowledgeable'.*

It is important to note, that respondents in the e-survey were all RCCNs who had completed the Advanced Diploma programme and were working in practice. Some had recognised their own limitations and had also seen the limitations in their students. Their view is supported by Sakuramoto et al (2023) who argue that as critical care nursing practice evolves and the disease burden changes, educational programmes need to change. This was confirmed by Rababa & Al-Rawashedeh (2021) who found that critical care nurses who had lower-level

education and less clinical experience demonstrated lower levels of critical thinking and decision-making skills when compared to those with higher level education level. Their research supports the findings from the critical review of the literature (Chapter two) and documentary data (Chapter 3). As Zambia's healthcare system has evolved, and the disease burden has changed there is a clear and urgent need for new and higher-level programmes to enable RCCNs to respond to these changes.

As outlined previously, the MOH were adamant that they needed to keep the Advanced Diploma programme, however, they did accept that as respondents argued there was a need to move critical care nursing towards BSc level. It is important here to acknowledge regional contextual factors, at the start of this study, out of 459 nurse education programmes in East, Southern and Central Africa, 65% were at diploma level, with 11% at BSc, 15% at MSc and 9% at certificate (enrolled) nursing level (ICN, 2021b). Therefore, there was an additional challenge for RCCNs and stakeholders as there was very little regional experience in the delivery of large-scale BSc or MSc programmes. Therefore, respondents had no role models to call upon and while the development of a BSc was the logical first step, they had few sources of information or guidance in the region. it did not help that as the ICN (2021b) identified, in many countries in the region, diploma and BSc nurses were assigned the same roles and at times deployed to fill roles of other health care professionals. Therefore, they had no comparable research or documentation, and this supported the need for the study to develop a clearly defined career structure, which differentiated the differing levels of education and scope of practice.

6.2.5 Length of Time in Clinical Practice

There was overwhelming recognition that students needed to spend over 50% of their academic programmes in practice (n = 70 / 79%). Somers'd test revealed a slight positive correlation between the two variables (d=0.124). however, no respondents gave any additional information regarding tis in the open-ended questions, perhaps because there was little comparable information to access of use. Also, it has to be that the optimal time for students to spend in clinical practice is still an ongoing international debate (NMC, 2022). The NMC (2022) also point out that countries with less practice hours, have incorporated simulated learning into their programmes, to help them gain expertise. However, it is important to note here, that Zambia, with a critical shortage of nurses, has had to use students to supplement and augment the care delivered in practice. In consequence, any reduction in practice hours, could have a major impact on patient care, particularly out of hours care, for example, on night duty. However, the UK NMC (2022) also point out that students in practice need to have sufficient time allocated to achieve proficiency and there needs to be recognition of the importance of quality over quantity in terms of hours.

At the time of the national e-survey, to undertake and complete the Advanced Diploma, students did not need to have any prior critical care experience, therefore, they could join the programme with limited-to-no experience. In consequence, it could be argued that for these students, a longer clinical time is needed to allow them to gain the requisite knowledge, skills and competence. While this may be appropriate, this is a cause for concern, because, within the region, the rapid expansion of pre-registration programmes including in private institutions, has led to overcrowded programmes and competition for clinical placements, which in turn has resulted in concerns with the quality of available clinical placements (ICN, 2021b; Bvumbwe & Mtshali, 2018). In Zambia, as across the region, the rapid growth in pre-service programmes has resulted in challenges in practice, compounded by critical care units tending to be small, resulting in a challenge in allocating both pre and post registration students. Ankers et al (2017) argue that professional socialisation of new nurses is an important aspect of critical care culture, as it allows for nurses to learn, understand and settle into their new role, with senior colleagues sharing their experiences with them (Stewart, 2021). Denying critical care students this important opportunity could result in them acquiring the skills, but not the wider role of the RCCN. Therefore, it was important to consider whether other opportunities for practice hours needed to be considered to compensate for current challenges with clinical practice, a point taken forward to the next strategic stakeholder engagement meeting.

6.2.6 E-learning

Table 6.7: Views on E-learning

Quote	Thoughts, perspectives and context check	Review and Refinement of Code	Category / Theme
I don't know anything about e-learning	No knowledge or awareness	e-learning not known	e-learning
Not really, because it need to explained well where you are not clear you can ask questions	Preference for face-to-face learning as improves chances to learn	e-learning to negative	
It requires a hands-on lecture / practical experience	Preferences for actual skills experience with tutor	Skills need hands on e-learning to negative	
Somethings are better done in a practical way	Preference for classroom teaching	Prefer face to face Negative to e-learning	
Critical care is more practical than theory	Limited acceptance as see cc as practice based	Skills need hands on e-learning to negative	
Yes, to get more knowledge of how to care and manage life threatening conditions	Liked chance to find additional information improved knowledge	Yes, to e-learning Flexible Increased access	
Because there are certain learning materials that can be	Liked chance to find additional information improved knowledge	Positive benefits to e-learning Knowledge addition	

accessed via the internet			
Yes, because it gives more opportunity for research	Not clear if this means access to research or access to do it	Positive benefits to e-learning research	
Yes, for easy access of information, and it is cheaper than buying books	Access to information. Removes Reliance on textbooks Suggests has Digital literacy	Positive benefits to e-learning Cost effective Reduces reliance on hard copies	
Yes, it would give time for studying unlike being in class from 08:00 – 16:00hrs. There is little time to study as get tired being in class all day Monday to Friday	Promotes self-directed study as gives time that can be used as chosen by student Didactic teaching tiring	self-directed study Positive to e-learning	
Easy access and convenient	Easy access to information, saves travel etc time chosen by student	Easy access Positive to e-learning	

De Caro et al (2016) point that out e-learning is a generic term which includes devices, and electronic devices that can be used to support learning, for example digital or mobile devices, which require internet access. The use of e-learning has increased among healthcare professionals (Vaona et al., 2018), with potential opportunities for the use of e-learning in Africa identified as a cost-effective way to increase access to education (Cambaza, 2023). E-learning has huge opportunities given the rapid access to 5G internet and uptake of smartphone phone use in Sub-Saharan Africa, and more research into this is urgently needed (World Bank, 2024).

It is important to point out that the national e-survey took place prior to the Covid-19 pandemic, which resulted in the rapid transition of education programmes online (Iheduru-Anderson & Foley, 2021). Therefore, at the time, the use of e-learning was limited in nurse education programmes in Zambia, therefore, it was interesting to note, that just over half of respondents had recognised the need to find strategies to access e-learning, seeing it as being of benefit as part of educational programmes. Somers'd test showed there was a slight negative correlation between the two variables (d= -0.103). When asked to comment on why they were interested in accessing e-learning, responses included comments such as: '*To get more knowledge of how to care and manage life threatening conditions?* '

For nurses working across the provinces with great distances to travel for CPD workshops, which were also limited in number, it was a practical way to update their knowledge and skills. For others there was recognition of the immense range of resources they could easily and freely access.

'Because there are certain learning materials that can be accessed via the internet'

For some as they had gained in knowledge and expertise, and increasingly taken control of their own learning, they had moved away from wanting the traditional didactic approach. They had found the flexibility more appropriate, recognising that when the whole day was spent in lectures it left them little time to for independent study, through which they could extend their knowledge in areas they found to be of key importance *'…It gives more opportunity for research…*' and had proved to be '….*easy access and convenient'.*

Eleven respondents (n = 15.7%) were unsure on the role of e-learning to support their studies to become a critical care nurse, partly because this was an area of which they had had little experience *'I don't know anything about e-learning'*

Some did not support the use of e-learning, providing additional comments, with some concern regarding being able to ask questions if they did not understand or just needed clarity or more information as the following quote indicates.

> '*Not really, because it needs to explained well where you are not clear you can ask questions'.*

For this group it may be that opportunities to try out e-learning would help the understand how it can be effectively used. However, Barker et al's (2013) study with nursing students in Kenya found that e-learning should be used to support face-to-face teaching. This blended learning approach is supported by as Chiew-Jiat et al (2022) who argue, that shared learning is important as it allows for professional socialisation, however there is a potential barrier arising with e-learning namely, the isolation felt by students. This is an issue that needs to be carefully considered when planning education programmes, particularly, as Vaona et al's (2018) Cochrane Systematic review concluded that compared to traditional education methods, e-learning made limited or no difference in patient outcomes or to healthcare professionals' knowledge and skills. In consequence, while e-learning has huge potential, in a country such as Zambia where students may come from across the provinces and between teaching blocks could benefit from opportunities arising from e-learning. However, overall, to the respondents it seemed that blended learning or interactive e-learning could have some benefits If carefully planned and used to supplement not replace face-to-face learning. This was supported by several respondents who disagreed with the use of e-learning arguing that critical care nursing is practice based, suggesting learning from practice (experiential learning) was more important, as one respondent reported *'Critical care is more practical than theory'.*

Therefore, care needs to be exercised when considering e-learning, but it could support learning as with the current curriculum, students spend more time in clinical practice and could help make links between theory and practice, helping to move the academic level from

focusing only on ‘doing’. However, it has to be noted that as identified during the development of the mentorship model (Chapter 7), the quality of the clinical environment was an issue. Respondents wanted to focus on this rather than issues of approaches to learning and for some, this was a theme that arose during the simulation question (see below). Interestingly not one respondent highlighted the challenges with access to computers or internet, which has been identified in other studies relating to e-learning (Chiew-Jiat et al., 2022; Cambaza, 2023).

A key assumption for adult learning is the need for motivation, so that learners accept that they need the new knowledge and skills, to build on their prior experience (Knowles, 2005; Spies & Botma, 2020). It has to be acknowledged that one challenge is that many students in Zambia may not have had the opportunity to use e-learning and therefore, have limited prior experience to build upon. It is also important to take account of the age of students as more mature students may not engage with newer innovative technologies as easily as their younger peers (Spies & Botma, 2020). Spies and Botma (2020) identified mature learners as anyone over the age of 24 years, a young age in terms of post-registration nursing. This further supports the need for tutors to have appropriate experience in developing e-learning materials as it does require a different pedagogical approach. At the time of this study, there was no regulatory guidance on the e-learning and in consequence in 2025 the NMCZ launched an e-learning framework for nursing and midwifery education (NMCZ, 2025). The framework recommends the use of a blended learning approach and will be used to reach nurses in rural areas. This fits with Kim and Park’s (2019) systematic review and meta-analysis which identified that the use of smart phone-based learning may be an alternative and better method for nurse education, if used correctly, with materials specifically designed for use on smart phones.

6.2.7 Simulation

Table 6.8: Views on Simulation

Quote	Thoughts, perspectives and context check	Review and Refinement of Code	Category / Theme
Due to inadequate practical areas	Currently not enough clinical skills labs simulation useful	Simulation Useful addition for skills	Simulation
It improves care in the practical area	Simulation Improves practice	Simulation Improved clinical practice	
It improves skills as students have time to practice	Simulation Improves practice	Simulation Improved clinical practice	
Practice makes perfect!	Simulation Improves practice	Simulation Improved clinical practice	

As indicated previously the use of simulation was seen as challenging, with a clearly expressed preference by strategic stakeholders for students spending time in clinical practice and use of OSCEs. Therefore, it was seen as important to include a question on the use of simulation in the national e-survey to ascertain RCCNs views towards this education strategy. In addition, with the introduction of higher-level education programmes, it is crucial that a wider range of education strategies are developed to expand learning strategies and move away from task-based activities to integrated activities with increased complexity. This would help in the development of cross-cutting skills which include patient and team communication, teamwork, decision-making and leadership (WHO, 2018).

In education terms, simulation has been defined as a pedagogical strategy which entails using one or more educational methods, different technologies and equipment which allow for development, validation and assessment through experiential learning. It is an approach that provides repetition, feedback, evaluation and reflection (NMC, 2023; WHO, 2018). International evidence increasingly indicates that using simulation helps to bridge what learners acquire in the classroom and the clinical areas (Bereton et al., 2025; WHO, 201. The WHO (2018) published specific guidance for nurses and midwives and the current NMCZ (2024; pg. 14) education standards point out that clinical assessment needs to be '*facilitated and evidenced'* directly observed practical examinations. In this they include OSCEs, as well as clinical drills and what they refer to as '*other appropriate methods'*. However, interestingly they give no indication or guidance as to what these *'other appropriate methods'* are.

Similarly, the WHO (2018) identifies the importance of simulation in nurse education programmes, but again practical measures were not given, and it is important to note, that internationally the use of simulation to replace clinical hours remains controversial (NMC, 2022). Nevertheless, Zambia, with an already, packed relatively short theoretical programme, simulation provides an opportunity to enhance the clinical experience. In addition, with high numbers of students in the clinical areas and few critical care units, simulation does offer appropriate opportunities for students develop it was unsurprising that one respondent noted that simulation would be good *'Due to inadequate practical areas'.*

Interestingly in contrast to the stakeholders, most respondents who had been qualified for more than 2 years and had had more experience of critical care nursing reported simulation would be an appropriate way to gain clinical skills and that it should be counted towards clinical hours. However, those who had been qualified 1-2 years (9 /12.9%) were less likely to feel it should be used, with a further 10 (14.3%) of this group who had not experienced simulation not sure of its effectiveness. Somers'd tests a slight negative correlation between the two

variables (d= -0.292). Interestingly, only those who were positive towards the use of simulation provided detailed information in the open-ended questions.

Critical care nurses need to be dynamic and flexible, when delivering individualised nursing care, therefore, students need to be able to replicate and prepare for the ever-changing and evolving clinical environment , over a decade ago, Cato (20130 argued that in education terms simulation fits with Vygotsky's (1978) social constructivist theory, allowing learners to interact with real-world scenarios and with reflection start to integrate their knowledge into practice (Lockey et al., 2020). Thus, simulation provides an opportunity for students to prepare for practice and to see situations that may not occur routinely in practice. Comments on why simulation would be beneficial included recognition that *'It improves care in the practical area.'* with the rationale that *'…It improves skills as students have time to practice…* and the statement that '*Practice makes perfect!'*

However, even with respondents supporting the use of simulation, it has to be accepted that in LIC, the delivery of high-fidelity simulation is likely to be an ongoing challenge. In consequence there needs to be recognition that there are varying approaches, and that the use of low-fidelity simulation can also be effective in improving knowledge and skills (Barnes & Paterson-Brown, 2015; Bryne-Davis et al., 2015). One of the limitations with simulation that needs to be addressed is that students often have limited exposure to the simulation scenario, with learning assessed after the intervention (Brereton et al., 2025). In Zambia, this makes it difficult to assess the benefits, and in addition to have maximum effectiveness it needs to be carried out using adult learning principles of scaffolding to help prepare the learner for practice (Spies & Botma, 2020). This poses an additional challenge, as educators in countries such as Zambia where they are still developing simulation, educators may focus on the technology and equipment rather than how students learn, and will themselves need additional education and training in the design and use of simulation (Spies & Botma, 2020). The tutors will need to be able to develop and deliver the scenario, a potential challenge where there remains a heavy reliance on didactic teaching, if they are to enable students to gain the advantages of simulation, peer learning and the opportunity for deeper understanding (Brereton et al., 2025). This could greatly enhance learning, given students in Zambia spend more time in practice and use peer-learning to support their development.

It is important to note, that while the main focus of stakeholders and respondents was on the use of manikins and skills laboratories, in Zambia, an element of the programme which uses simulation very effectively is the trauma workshop. As a result of this study, the trauma workshop was revised with its relevance to, and importance for practice accepted. In consequence, it is now delivered by Critical Care Nurses through the Critical Care Nurses

Association of Zambia (CCNAZ), something that prior to this study would not have been considered. This six-day workshop delivers both theory and practice components, incorporating a range of techniques. The use of part task trainers such as CPR manikins, intubation airways, animals and role play enables students to practice trauma procedures such as chest drain insertion and venous cut downs, essential skills in critical nursing in a country with very limited numbers of intensivists (figure 6.11). The workshop culminates in a major incident exercise which involves multi-stakeholder engagement including the Police, Fire Brigade, Road Traffic and Safety Agency, Traffic Police and hospitals. The exercise includes a pre-hospital emergency and the activation of the local hospital emergency department. Using their limited resources, the faculty have successfully developed and delivered this workshop since 2022.

Figure 6.11: Examples of Simulation used to support Trauma Workshop

6.2.8 Protected Time Post Course

Table 6.9: Views on Protected Time Post Course

Quote	Thoughts, perspectives and context check	Review and Refinement of Code	Category / Theme
To gain enough proficiency	Recognised the role of protected time to increased expertise	Protected time to embed in new ole	Internship / Protected time post qualification

The majority of respondents 50 (70.4%) believed newly qualified RCCNs should have a period of protected time in practice post course. The majority of these respondents felt this should be between 1-3 months (29 / 56%), followed by 4-6 months (20 /40%) and only 2 (4%) respondents felt it should be over 6 months. Somers'd score of 0.193 suggested there was a slight negative correlation between the two variables. However, it was interesting to note that 13 (18.3%) the majority of whom had been qualified for less than five years (11 = 15.5%) saw no need for a supervised period post course. This group gave no detailed comments regarding their responses therefore it is difficult to draw inferences from their responses. Although it could be because they had had no experience of mentorship and protected time post qualifying so did realise its possible benefits.

Nevertheless, given the limited number of RCCNs in practice this is the development of specialist practice in a relatively new specialty, it was important to consider the role of a period of consolidation in practice on completion of academic studies. In addition, at the time, there was only one education provider nationally, therefore, critical care students were away from their stations for one year or they worked in the hospital linked to the College as a student. The rationale for proposing this additional period of supported practice was to allow newly qualified RCCNs to integrate back into their hospitals and to support them in their transition to their new role. Also, education programmes particularly at Advanced Diploma level were focused on preparing nurses to provide direct care, and not on supporting the nurses in their new role. Yet as Mtsoeni et al (2023) point out, newly qualified RCCNs in South Africa, are expected to shift lead immediately while providing direct patient care, thus taking on both management and leaderships tasks, with limited educational preparation support. A similar situation exists for RCCNs in Zambia, as when newly qualified they are expected to be leaders in their field, However, as Baumann et al (2018) identified leadership skills are developed with higher level education and experience, and there was in consequence, an urgent need to develop the higher education programmes that could add these essential skills to the overall education of RCCNs in Zambia, and across the region. As one respondent pointed out RCCNs need programmes that would enable them *'to gain enough proficiency'* in areas not currently covered in depth in the current Advanced Diploma, and that includes both leadership and management.

In consequence, it could be argued that the current a one-year programme, covering multiple sub-specialities, such as neonatology, emergency departments, cardiology etc, at diploma level, results in huge amount of responsibility being placed on newly qualified RCCNs with limited professional help or guidance. However, the challenge for educators and those planning service provision is that there is some evidence of the need to support the transition of newly qualified registered nurses into critical care showing it to be crucial in reducing anxiety and stress when working in demanding and stressful environments (Lima & Alzyood, 2024). However, there remains a paucity of evidence relating to the support and guidance needs of newly qualified RCCNs as they transition into their roles as lead critical care nurses Although this was recognised, consideration of a period of consolidation was deemed beyond the scope of this study by strategic stakeholders as it was not within their remit to enforce it. Also, they were concerns about hospitals with only a few RCCNs, where a period of consolidation would impact on service delivery. What the workshop did provide was an insight into the need to consider how best to develop and support the workforce in practice and beyond their specialist course, a debate that continues today.

6.3 Stakeholders Workshop (number 2)

At the first stakeholders workshop it was agreed, that for this study to be effective, stakeholder participants needed to be more closely linked to critical care practice. In consequence, the second research workshop was also held over five days, but this time consisted of 12 nominated participants (table 6.10). Four males one of whom was a medical doctor, one nurse had a PhD, five nurses had MSc (ranging from Critical Care, General Nursing and Public Health. Further delineation of demographics would have led to identification of individual participants. For continuity this did include some key participants from the previous workshops, however, the original participants felt that for the second workshop participants needed to have a clear and focused role so they chose who would attend. This was one of the first instances of stakeholders starting to take ownership of activities and making decisions that would affect the way the study progressed (Vangeepuram et al., 2023)

Table 6.10 Breakdown of participants attending strategic workshop

Stakeholder	Total Number of participants	Number of participants who also attended workshop 1
MOH	X 2	X 1
NMCZ	X 2	X 1
ZUNO	X 1	X 1
UNZA	X 1	X 1
Tertiary Referral Hospitals includes paediatric hospital	X 3	0
One College of Nursing	X 3	X 2

Table 6.10 clearly shows the decision to include participants from practice by including three participants from the Tertiary Referral Hospitals. This second workshop was able to consider the findings from the national e-survey and relate these back to the documentary data analysis. It also focused on validation of the Advanced Diploma in Critical Care, and it was important to note that by the time this second stakeholder workshop took place, there was unanimous acceptance of the need to move to higher education and prepare for the BSc curriculum. However, as in the previous workshop, the participants again stressed the need to continue the Advanced Diploma, describing it as a very important stepping stone and initial training in critical care. Although here the change in perception and attitude was evident with stakeholders openly stating they were keen to develop and introduce a BSc programme. They accepted that this would entail a longer training period, but wanted to initiate the steps to develop their own higher-level programmes which would end the necessity to send staff abroad for training and increase expertise within the country:

> *'…there will be reduced costs for the country as we won't need to send nurses overseas and patients won't need to go overseas for treatment…'.*

Another important change in thinking emerged when considering education approaches for the new programmes. This time, although there were differences in opinions regarding the use of simulation, overall, there was an acceptance that it might need to be introduced. A view that had been evident in the national e-survey findings, which had been positive to the use of simulation. It was at this point that strategic stakeholders made an announcement that would permanently change critical nursing in Zambia. They were adamant that they now wanted to the study to develop a career framework, and for it to include the proposed higher-level qualifications. While they accepted this would involve additional costs and resources, they were now adamant that on-job training and short courses were not an option, as they would not meet the needs of the workforce. This was an important move, as short courses have traditionally been seen as a fast way to upskill the nursing workforce and as an approach used in LIC / LMIC, as they meet the challenges of limited and short donor short funding cycles (Stephens et al., 2017; Macey et al., 2022). However, stakeholders had changed their views and now supported higher education level courses. Mena-Guacas et al (2023) argued in their systematic review, that on-job training does in the short term, increase nurses' knowledge and skills, but it does not and cannot replace formal education which leads to higher level expertise, recognition of the role of RCCNs and through that career opportunities. This perspective is supported by the WFCCN who conduct a global survey of critical care nursing organisations every 4 years (Williams et al., 2023). Their most recent survey (conducted post Covid-19) identified, that regardless of region or wealth group, one of the universally identified themes across organisations was access to quality education programmes (Williams et al., 2023). Therefore, the decision to use an approach that encompassed an educational model in conjunction with a career framework was adopted as this offered a long-term strategy which could be used to continue to develop the critical care nursing workforce for the future.

Stakeholders then needed to work together to discuss and debate what they saw as the key differences between Diploma and BSc programmes. In consequence, as part of the discussion stakeholders were asked to identify why they felt a BSc in Critical Care Nursing was important and to articulate what they saw as the differences between a Diploma and Degree programme. Feedback from stakeholders included the key statements (figure 6.12):

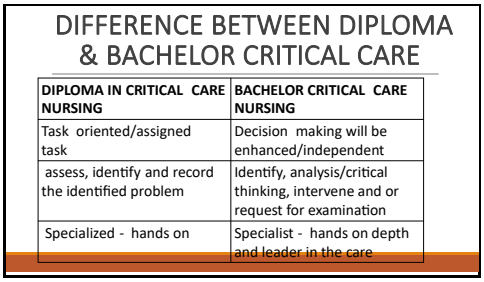


Figure 6.12: Differences between Diploma & Bachelor Critical Care

They reported that BSc education would enable nurses to take a more active role in planning as well as delivering patient care, in an environment where there are few trained doctors and nurses with appropriate critical care experience. They argued that this would support essential task-shifting and increased provision in services delivered across the country. They provided a definitive argument that nurses were crucial to developing services and using evidence to improve patient safety and quality services.

They also agreed that the introduction of a BSc programme would increase career progression, retention and motivation. For the first time they unanimously argued that the new programme would lead to financial savings for health service providers by increasing access to education, instead of relying on the few who had had the opportunity to train in other countries. This led to a lively debate and discussion in which all participants joined, regarding the term specialised versus specialist. The experts / stakeholders stated that in their view nurses at Diploma level were '*specialised nurses'*, whereas those with BSc level education could be seen as '*specialist nurses'*. This viewpoint was accepted by the group and in consequence, also formed the basis for the development of the career structure which included recognition that the Advanced Diploma programme would feed into the BSc programme and ultimately an MSc. It was at this point that the need for a suitable approach for the curriculum was first introduced. This included different concepts, such as the spiral curriculum, however, even though higher-level curricula had not been developed participants could see the benefit of discussing different approaches. It was evident to the research team that this was something that would need further discussion in future workshops, and curriculum design was therefore, retained for future consideration.

In participatory co-operative inquiry it is important to accept the group decision, they were adamant that they needed more time to focus on this issue. Therefore, although no decisions were made, this opened the debate into the importance of critical care nurses being recognised as having specialised /specialist expertise within the hospital workforce establishment, and the need for them to be remunerated for their specialist education and training. This led to a commitment by stakeholders to increase the profile of critical care nursing to make it a more attractive speciality for nurses, the first time such a formal commitment had been made. In support of this examples were cited by unions and critical care nurses, that some of the longer established specialist nursing roles such as Operating Theatre Nursing (also only educated to Advanced Diploma levels), were recognised in terms of pay and position. However, despite their crucial role, for critical care nursing there was still no recognition that critical care nursing was a speciality it its own right.

This was partly due to the lack of accurate data, for example, when a senior MOH representative, asked how many critical care nurses there were, at the time (and this is still an issue) the only records available were those from the training institution. It was evident that not all nurses registered their new qualification with the NMCZ, and in addition, there was no record of who had remained working for the MOH, for example, a nurse could leave the public sector and work in a private hospital or migrate and not inform the regulator. Discussion of this revealed that stakeholders/participants felt this lack of registration and/or information of change could be because as it offered no recognition or career advantage '*the* [the nurses] *see no advantage and no point in registering'.* This was a major concern, because in consequence, the actual number of critical care nurses in practice remained unknown. This made (and still makes) it difficult for policy planners to identify what the current establishment is and how these nurses fit within or support the aims of the National Strategic Health Plans (MOH, 2017 and 2021). It was hoped that with development of higher education, a career structure and accompanying recognition the situation would change, and newly qualified nurses would choose to register their qualifications.

The final issue discussed entailed acknowledgement that the introduction of new and higher-level programmes would require education faculty to teach them, however, with few critical care nurses at BSc or MSc level, the stakeholders found it difficult to decide what the next step should be. Nevertheless, they wanted it recorded, that there was clearly added value to having BSc level critical care nurse and the next step needed to be to develop the programme. They argued that concurrently, there needed to be strategies developed to capacity strengthen faculty for the new programmes. These last steps were a major change in thinking, moving well beyond what they had considered at the previous workshop. For the study, this major change in thinking was welcome as it supported the aims and objectives of the study, with recognition of the positive outcomes for critical care nursing clearly recorded (figure 6.13).

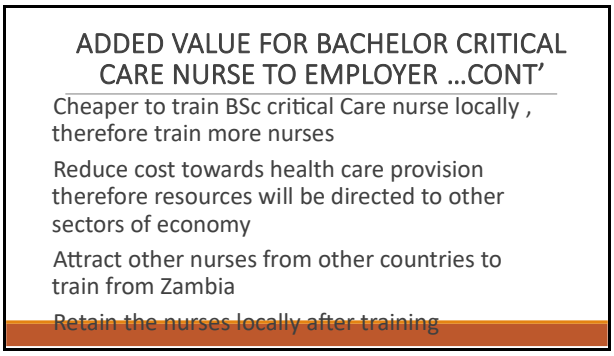


Figure 6.13: Value for BSc Critical Care Nurse for Employers

Overall, at this point stakeholders / participants were very positive about the outcomes of the work to date, however, they were adamant that it was essential that they, the stakeholders

were engaged throughout the development of the conceptual framework and career structure. They pointed out only that way could they support developments and work towards implementation of any or all changes suggested and move the critical care agenda forwards.

6.5 Overall Conclusion/Summary from Cycle 1

Looking back at this workshop, as part of a participatory cooperative inquiry study where shared activities are key components, this workshop clearly demonstrates the first steps in partners taking ownership of the study and beginning to lead activities (Russ et al., 2024). Stakeholders recognised the importance of education and were now advocating for major changes that would permanently change critical nursing in Zambia, something not even being considered before this study commenced. They now openly wanted to develop higher education courses, for critical care moving this branch ultimately to MSc level, a first for nursing in Zambia, and one which would place a currently un-recognised field of nursing to the forefront of developments for the whole profession.

At this time, the stakeholders recognised that to be accepted, it was important for all developments to be shared facilitating open discussion, and acceptance of the major development to move towards a career structure that went from initial registration to MSc level and above. In consequence, during this phase of the study, it was agreed that dissemination needed to be included. Therefore, as a first step the findings from the development and revalidation of the Advanced Diploma in Critical Care Nursing were published in an international peer-reviewed journal (appendix six). This cycle illustrated the importance of including critical care nursing in the development of their profession. The national e-survey widened access enabling respondents from across the country to have their voice heard at a national level, and it meant key stakeholders had access for the first time to how the critical care nurses themselves felt. It also showed the importance of including key stakeholders in discussions and the formulation of advances in nursing, with as indicated, the majority of participants not being critical care nurses, but nevertheless fighting for moving the nursing profession forwards.

Chapter 7: Cycle 2: Focus Groups, Stakeholder / Research Workshop and National Engagement

This chapter presents the second cycle of the participatory co-operative inquiry process. As this cycle builds upon cycle 1 (chapters six), it was decided that as in cycle 1 the second stakeholder workshop needed to be the final activity. Therefore, the two focus groups were held, one with Critical Care Nurse Tutors and one with Registered Critical Care Nurses. Then a research workshop with Critical Care students completing the Advanced Diploma in Critical Care was held. This meant that the stakeholders research workshop was conducted in the light of the outcomes of cycle one, and the findings from the two focus groups and research workshop with students. This chapter with its planned key outputs has been designed as both a working document that demonstrates the stages that constitute professional development and a document for use in hospitals and universities / Colleges to guide and lead education and development. As with the previous cycle, focused literature searches revealed a lack of research from LICs and no research evidence of context specific conceptual frameworks for critical care nursing in Zambia and Africa. This meant the study had to take a step back and review available evidence on specialist practice in critical care and acute settings.

7.1 Focus Groups

A total of 5 Educators (focus group 1) and 6 RCCNs (focus group 2) participated. It was not seen as appropriate to delineate gender and academic qualification, as from the 11 participants only one was male and only one had a degree, further delineation could lead to identification of participants. For clarity the two sets of findings were reviewed together and compiled into one composite table (table 7.1). As this study used participatory co-operative inquiry it was important that all those that participated were fully represented in the discussion. Therefore, the composite table from round 1 can be found in appendix seven and only the second round which included revisiting the themes and the context checks has been included in the text. The use of ubuntu in this research study, was a positive step, as it encourages full participation and prevents one person (or persons) dominating the discussions and decisions (Matahela & Ngwenya, 2025; Khan & Ntakana, 2023). Also, the nature of using ubuntu requires all participants to actively engage and share their experiences.

Table 7.1: Round 2 Framework Analysis

Quote	Perceptions, Thoughts & Context	Review and refinement of Code	Category / Theme
'… because we are not recognised … they [nurses] *get discouraged… so they would rather go to a speciality that they know immediately they finish …* [where] … *they will be recognised…'*	Lack of recognition leads to discouraged nurses. Potential loss to critical care nursing / country.	Recognition Discouraged Leaving cc	**Recognition**

'…there are no degrees… so they did …general nursing or public health…'	No critical care degree career choices	Lack of opportunities	
'…there are very few specialised critical care nurses…'	Limited number of qualified staff	Recognition	
'…you need to know neuro gastro trauma obstetrics orthopaedics and emergency… you have to have that broad understanding of every speciality almost, because those patients can be admitted…'	Range of expertise needed is large. How do you do this in a one-year programme?	Recognition of level of programme Limited content to cover all needed	**Recognition of level of education**
'… you can't cover neonatology, paediatrics and adults in any depth in that time…'	Content limited in current programme Level of course.	Current programme limitations Level of course	
'… the neonatal component is short with students spending the majority of time in ICUs with adults and children…'	Content limited in current programme Level of course	Current programme Level of course	
"… what is an advanced diploma …a diploma is a diploma …it's just another diploma…"	Recognition that the advanced diploma is limited qualification	Level of course	
'…there are those doctors who will just look at the nurse and think maybe … they don't know what they're doing… they [doctors] know it better'.	Recognition by others Expertise not recognised.	Recognition Of critical care Recognition by doctors	
'…when they see you doing something different from what they know or maybe using a piece of equipment differently from the way they do, some are interested to learn…'	Starting to Sharing knowledge. Seen as the experts	Expertise extended Leadership teaching role	
'…there are those who are willing to learn and they ask questions and they also um, trying to learn from you… yeah… so you work together and you'll be there may be in the lead to help them do what they are supposed to do…'	Differences in professionals Teaching and leadership role.	Leadership Recognition of level of education	
'… so as much as we want to promote… we are stuck… there is nothing that's really pushing me to go further…'	Lack of opportunities. No leaders to guide	Lack of career opportunities No leaders to guide	**Leadership**
'… immediately you make a mistake… the whole hospital is going to hear about it…' *This inevitably affected their moral and as one stated '…we are not really motivated…'.*	Blame culture Leadership accepts responsibility Little motivation.	Leadership	
'…most of the time you just hear people saying something nice about you when you die…'	Blame and bullying-	Poor leadership	
'…in the resuscitation ward… they will call a nurse from ICU to … be with the nurses in the resuscitation ward … you use your skills in how to handle the	Extended role Expected to lead in and outside of critical care.	Extended role and diversity Recognition	**Extended role and diversity**

patient… and if they need resuscitation… you do that…'	Task shifting and new expectations – now expected to guide and lead specialist colleagues. Needed but no time allowed.		
'…there will be a need for you to rush to see a patient or maybe intubate a patient because for them to move the patient to ICU before the patient is intubated might be too late…'	Extended role Recognition of skills Task shifting Needed but can adversely affect care on critical care unit.	Extended role Recognition	
'…the skills that you acquire as a critical care nurse, you can use them anywhere… and in the hospital set-up… like here where we are, you can work in the outpatient department… too… you can work in the medical surgical wards…they have critically ill patients…'	Transferrable skills able to work where needed. Recognition of knowledge and skills.	Transferrable skills Extended role and diversity	
'…our ICU is very small… so you find that … in the wards… you have patients that are critically ill… and you need critical care nurses there…'	Recognition of need outside of critical care. Need for critical care nurses to be placed in general wards.	Traditional role of working in critical care challenged.	
'…we train them and then they go'.	Migration from increased knowledge and skills.	Migration Employability	**Migration**
… we have one nurse who is currently working in the UK as is on vacation leave [90-120 days] … if she does not return she will be a deserter and will be removed from the payroll… it will be difficult if she ever wants to work here again…'	concept of desertion, with long term adverse effect on career.	Migration	
'…another nurse returned as she had trouble in the UK so came back and managed to get a contract with the MOH.	Realities of return. Disappointing she came back not from choice but due to difficulties.	Migration and return	
… all her friends that she left are now nursing officers' tutors… she is just an RN working on a medical ward… doing weekends and nights looking after 40 – 50 patients… she lost everything her status… seniority… and will be there until she retires…'	Lack of Career opportunities No acceptance of individual choice. No forgiveness	Migration opportunities	
'I am a critical care nurse….'	Pride in new role	Pride opportunity	**Opportunities**

	Opportunity to change role		
…' in the hospital where I was coming from there were none…so… I think we gained more confidence being at a bigger hospital… unlike our general hospitals… [or] central hospitals where we are coming from…	Country wide need for critical care Opportunities	Recognition of need for critical care opportunities	
'The ICU opened in 2010 we were calling it an Acute Ward… and were only registered nurses there… being headed by a midwife… we had a lot of challenges in that when a critically ill patients comes we don't know how to intubate… all we knew to do was the routines… the vital signs… the measuring of urine and everything as in the acute bay nursing care…'	Lack of recognition Lack of appropriate education Lack of appropriate leaders.	Current programme Leaders needed	**Current programme**.
'…there are no progression pathways for us hence few candidates enrolling in the programme…'	Lack of education and career. Nurses choosing different options.	Employability Opportunities	
'…they only learn the procedure…when we did our[critical care] training we had to do Tom and Jerry where someone would follow you into the clinical area and we have to do things in practice…'	Assessments in clinical practice are crucial now processes have changed	Current programme assessment	
'…in the main ICU… a few years ago would have a patient… one patient in two… three days… but not of late… we've got… we have had an increase number of patients… conditions like cardiovascular conditions were quite rare… but now we've been seeing much more of that… there's been a change in almost everything…'	Changes in number and complexity of patients. Also, changes in expertise needed.	Changing role Changing disease burden	**Changing disease burden**

7.1.1 Theme 1: Recognition

During cycle 1 a major concern expressed by the stakeholders, was that critical care nursing was not recognised as a speciality (Ayebale et al., 2020), which impacted on the profession as a whole. The focus groups participants also saw this as a key issue but took it further arguing that recognition needed to be not just by the MOH but on a wider basis. They identified the need for professional recognition by peers, as well as management, the MOH, and public. With regard to their peers, while the nurses had wanted to become critical care nurses' they had not realised prior to training, that even amongst their peers there was very limited recognition of what they did, and as a result:

> *'… because we are not recognised … they* [nurses] *get discouraged… so they would rather go to a speciality that they know immediately they finish …* [where] … *they will be recognised…'*

They could all give example of colleagues who wanted to progress within their own sphere, but in the absence of any formal recognition, and no specific higher education, the only option they had had was to leave critical care and to study BSc or MSc in General Nursing, Midwifery or Public Health:

'…there are no degrees… so they did …general nursing or public health…'

This meant that to gain promotion, they had left their chosen speciality, and inevitably, as one tutor went on to say that once we lose these nurses *'…they don't come back… they move on…',* leaving a depleted workforce to be stretched even further. They wanted to see the situation change, for themselves, their peers and above all to '…*improve the care we offer…'.* They had spent years teaching and nursing in an area they saw as vital but where nobody recognised what they did or how they did it. Many of their peers, with critical care expertise and experience had chosen to move on to the detriment of both the courses and the service delivered. In a country where there are few registered critical care nurses, the loss of one or two senior staff can have a major adverse effect on individuals and the unit.

All those interviewed were clear that unless the situation changed to give them official recognition it would be difficult to attract nurses into critical care, and the service would continue to struggle to maintain the expertise that they needed. Looking at their current work situation, they could not see how they could gain such recognition, seeing themselves as clinical nurses rather than the change agents and leaders they needed to be. The educators, although they had additional skills saw themselves as delivering specialist education, which the hospital wanted, but did not see themselves as being in a position to change management views regarding recognition of critical care as a whole, particularly as one participant indicated:

'…there are very few specialised critical care nurses…'

However, if those who are leading critical care in terms of education and practice do not take the lead, it is hard to see how change can or will occur. When this was raised, their responses made it clear that they wanted to be able to influence others, but felt they lacked the leadership and management skills to do so. They argued that the critical care course and training for educators had focused on critical care knowledge and skills, but this had not given them the skills to be able to influence others' perceptions of the speciality as a whole.

7.1.2 Theme 2: Recognition of Level of Qualification

As shown in cycle 1 (chapter 5), the national e-survey found that when asked, the majority of those surveyed argued that critical care nurse education should be at either BSc or MSc level. They were adamant that given the range of knowledge and skills needed, a one-year Diploma was not adequate.

'…you need to know neuro gastro trauma obstetrics orthopaedics and emergency… you have to have that broad understanding of every speciality almost, because those patients can be admitted…'

'… you can't cover neonatology, paediatrics and adults in any depth in that time…'

The critical care nurses and tutors recognised and supported the need for higher level qualifications and that as the quotes above indicate, a 1-year Advanced Diploma could not encompass the range of roles such as neonatology, paediatrics, renal and cardiac surgery. They acknowledged that given the current workforce challenges, critical care nurses needed to be *'…all-rounders…'* as having dedicated neonatal, paediatric, adult and specialist units was unrealistic. However, as at the time, there was only one national neonatal intensive care unit and two paediatric intensive care units in the country, the course had focused on the main patient groups of adults and conditions. In consequence, as one nurse tutor said:

'… the neonatal component is short with students spending the majority of time in ICUs with adults and children…'

The tutor went on to point out that students coming from the few neonatal and paediatric units were often exposed to areas they would never practice in, and so for them too the focus was inappropriate as they needed to be on neonatal or paediatric critical care. The tutors were concerned that this approach did not fully meet anyone's individual requirements. However, they hoped that a new higher-level programme might be able to contain sub-specialisations and increase the depth of knowledge. Under the present education provision, they could not see how they could change the current education challenge. One participant said:

'…what is an advanced diploma… a diploma is a diploma… it's just another diploma…'

However, when asked to consider the differences in qualifications and length of training between critical care nurses and physician anaesthetists (the designated Medical Lead in Critical Care), there was a silence. This question was asked because although demonstrating a similar skill set, the nurses were awarded an Advanced Diploma in one year and the physicians gained a master's qualification over several years. Clearly, they had not considered this before the focus groups, and it was at this point they started debate amongst themselves about their career and future options. They accepted that the limited number of available physicians meant they would have to continue with their extended roles and for the first time their eyes were opened to opportunities. They could also see the inequity in professional groups, in that one group was given automatic recognition and while for the other group the complexity of their role had never been recognised.

Linked to the above, was the relationship that the nurses had with their physician colleagues, as the challenge that they had found themselves facing was new. Critical care nurse education

and training had been established for less than a decade when the study started, and partly because it had not been officially recognised, what it meant in terms of nursing care and expertise was not clear to other professions. Also, physicians tend not to know details regarding nurse education and training, so were used only to registered nurses at diploma level in consequence as one reported.

> *'…there are those doctors who will just look at the nurse and think maybe … they don't know what they're doing… they [doctors] know it better'.*

They were proud they had completed additional specialised education and found it frustrating that their expertise was not fully recognised. They accepted that they were gradually finding that the consultants accepted them and their expertise, '…*consultants are comfortable to work with you because they… they know that you know…'.* However, some went on to say they still had challenges working with more junior doctors, possibly because '*…. Um…. The younger doctors… the junior doctors … feel intimidated…'.*

However, one pointed out that:

> *'…when they see you doing something different from what they know or maybe using a piece of equipment differently from the way they do, some are interested to learn…'*

While another reported:

> *'…there are those who are willing to learn and they ask questions and they also um, trying to learn from you… yeah… so you work together and you'll be there may be in the lead to help them do what they are supposed to do…'*

This was the first indication that critical care nurses were beginning to be accepted across the multi-disciplinary team, including by medical students and junior physicians. This was a big change for them; however, they needed to reflect on how they use this newly acquired professional position, which although not officially recognised was a direct result of having completed the Advanced Diploma programme.

7.1.3 Theme 3: Changing Disease Burden

Participants reflected in the patients they cared for, pointing out that not have only have the number of admissions to critical care increased. The comments regarding the changing burden of disease, were consistent, highlighting what is a national issue and is impacting on nurse education and training. Also, the types of conditions now included non-communicable diseases that would not have been seen in critical care in the past. This was important because it highlighted two things, firstly, the need to look at the curriculum which had little focus on cardiac disease and recognition that the workload on critical care was expanding.

> *'…in the main ICU… a few years ago would have a patient… one patient in two… three days… but not of late… we've got… we have had an increase number of patients…*

conditions like cardiovascular conditions were quite rare… but now we've been seeing much more of that… there's been a change in almost everything…'

This was an important point because when the advanced diploma was developed the content focused on skills development not on understanding specific diseases. However, it was evident to participants that this did not give them the information they needed for the patients admitted to critical care. As one participant said:

'…you need to know neuro gastro trauma obstetrics orthopaedics and emergency… you have to have that broad understanding of every speciality almost, because those patients can be admitted…'

The findings from this, fit with the critical review of the literature and the documentary data analysis which fit with the changing burden of disease. This also, supports the rationale for moving to higher-level education and longer courses, confirming that the Advanced Diploma is a good start but cannot cover the complexity of diseases that critical care patients now present with.

7.1.4 Theme 4: Leadership

As indicated in the previous theme, both critical care nurses and tutors recognised the need for strategic leadership. They reported that often the level of qualification is linked to promotion, not clinical ability, because they are civil servants and need to have degrees and higher degrees to be promoted. Therefore, without graduate and post-graduate courses in critical care, as one put it:

'… so as much as we want to promote… we are stuck… there is nothing that's really pushing me to go further…'

Nor did the system offer promotion, as their comments revealed the need for critical care nurses to have the opportunity for graduate and post graduate education. Only that way would they gain promotion and the skills to appropriately challenge the status quo, and through that champion their peers and promote change. In addition, as a relatively new speciality they were concerned that everybody was watching to see if they were *'…any good…',* arguing that:

'… immediately you make a mistake… the whole hospital is going to hear about it…'

This inevitably affected their moral and as one stated *'…we are not really motivated…'*. Perhaps the saddest comment of all, was one supported by the whole of that focus group:

'…most of the time you just hear people saying something nice about you when you die…'

Hearing these comments, they were asked what they meant by this and there was unanimous recognition that there is a blame and bullying culture in nursing. They did not see any way to change this, while this been internationally recognised, it was disappointing to find it so

prevalent in Zambia and was reported nearly two decades ago (Amoo et al., 2021; Munthali et al., 2008). It was interesting to note, that as the quotes above illustrate there was little focus on what leadership meant in terms of nursing knowledge and expertise, possibly because at advanced diploma this was not a major component of the programme. Therefore, they had had little exposure to leadership and management another reason for moving the programme to a higher-level education to enable them to gain the knowledge and skills they needed to become effective leaders and managers.

7.1.5 Theme 5: Extended Role & Diversity of Practice

A consistent theme was the need for critical care nurses to be able to manage a wide range of emergency and critical care situations and settings both within and outside of the critical care unit. One participant explained:

> *'…in the resuscitation ward… they will call a nurse from ICU to … be with the nurses in the resuscitation ward … you use your skills in how to handle the patient… and if they need resuscitation… you do that…'*

Participants recognised that critically ill patients can be found throughout the hospital and therefore, the knowledge and skills they had, were often required across the different settings. They accepted they had a responsibility to guide and support their colleagues and that the majority of the critically patients were on the wards. As one participant went on to say:

> *'…there will be a need for you to rush to see a patient or maybe intubate a patient because for them to move the patient to ICU before the patient is intubated might be too late…'*

For others, there had been a realisation that the skills they had gained although designed for critical care units, were being increasingly, unconsciously valued across the hospital, with critical care nurses being recognised as having a unique set of skills that were transferrable.

> *'…the skills that you acquire as a critical care nurse, you can use them anywhere… and in the hospital set-up… like here where we are, you can work in the outpatient department… too… you can work in the medical surgical wards…they have critically ill patients…'*

Some went on to explain, that unlike the main referral hospitals, in smaller hospitals:

> *'…our ICU is very small… so you find that … in the wards… you have patients that are critically ill… and you need critical care nurses there…'*

It was evident from the focus groups that the nurses recognised the diverse nature of their role, they were happy with their extended knowledge. They reiterated there was need for recognition and opportunities for them to develop and progress with their own career ladder, reinforcing the urgent need for a scope of practice and national career structure.

7.1.6 Theme 6: Nurse Migration

In the focus groups, participants chose to discuss the topics of low morale, low pay / recognition and nurse migration together. The nurse tutors recognised that sadly they were training nurses to go abroad, with knowledge and skills which not recognised at home, were internationally sought. There was agreement that if this situation did not change, then the cycle of *'…we train them and then they go'* would continue. They knew that when the nurses realised the possibilities of better opportunities overseas or in the private sector, they moved on, leaving the public hospital system. When discussing this, two participants cited experiences of nurses who have gone overseas, one of whom had chosen to take advantage of the bonus leave days:

> *… we have one nurse who is currently working in the UK as is on vacation leave [90-120 days] … if she does not return she will be a deserter and will be removed from the payroll… it will be difficult if she ever wants to work here again…'*

They recognised that there were risks to this approach, she had had no official approval or sanction for her time abroad, this meant that officially she was still on the official pay role but regarded as being on extended leave. If she delayed her return for any reason, the lack of official approval meant that she would automatically be regarded as a 'deserter', a description that would lead to her being removed' (taken off) the official payroll. This would be regarded as permanent, and difficult to reverse, should she wish to return to work. As they went on to say, even when someone had had approval for travel, returning was not easy:

> *'…another nurse returned as she had trouble in the UK so came back and managed to get a contract with the MOH.*

This nurse had in their words *'managed'* to return to employment, but that did not mean she could pick her nursing life back up where she had '*left off':*

> *… all her friends that she left are now nursing officers' tutors… she is just an RN working on a medical ward… doing weekends and nights looking after 40 – 50 patients… she lost everything her status… seniority… and will be there until she retires…'*

They were disappointed for her, but agreed that she was lucky to have been accepted back as a nurse and were clear that the situation they described was permanent. She would not be given chances for promotion or even offered further training. They were also adamant that leaving to work abroad was negatively viewed by senior staff, with nurses viewed as *'leaving Zambia without enough nurses'.* They reported that there was resentment of their choice to and that as a result they were not generally welcomed back by the authorities or their peers.

7.1.7 Theme 7: Opportunities

As the discussions progressed, the issue of the level of the qualification and the lack of opportunities this brought came up again and again, a typical response was: *'…why would*

you study another diploma…'. The participants wanted career progression not just '*another diploma'* they accepted that the content would be new, but in a country where progression was dependent on academic qualifications they realised that no matter how much they studied an advanced diploma would not move them onto a higher scale. They knew there were already some BSc programmes but did not want to have to study one of the few available degrees in general nursing degree, public health or mental health, as that meant leaving probably permanently their chosen specialism.

> *'I am a critical care nurse…..'*

They wanted one for critical care, they had made their choice when they went on the critical care course and wanted to continue their chosen route. They reported having experienced the challenge of working with someone promoted because they had a degree, even though it was not in the specific specialist field they worked in. They were adamant that this had to change with critical care nurses with degrees and higher degrees leading critical care teams and units.

Also, they wanted their own local programmes, recognising that it was too expensive to send key staff abroad to train. This approach, used to increase expertise in Zambia had meant that usually only one nurse could go at a time, and in consequence building faculty and a workforce was '*very slow'*. In addition, these staff were not trained in a Zambian context but had to adapt training from a different system and cultural context to their role and responsibilities. Also, some other countries such as South Africa will train for other countries, but offer only a theoretical training, as non-national students are not allowed to give clinical care. This results in academic but not clinical leadership, yet critical care has key competencies that have to be achieved for patient safety. Again, participants were definite that only the development and validation of Zambian programmes would change the situation by developing culturally competent and safe nurses, thereby offering an attractive specialist nursing programme.

7.1.8 Theme 8: The Current Programme

Participants identified the positive aspects of the education programme, for example, nurses from smaller hospitals were given the opportunity to see the more complex care offered in Tertiary referral hospitals as one critical care nurse' who trained in a '*big hospital'* reflected:

> *'…a big hospital… unlike the hospitals from where I came from... so from there we were able to see different conditions…unlike those which we meet in the hospitals where we came from… 'the procedures which are done that side…'*

The nurse went on to say that:

> *'…in the hospital where I was coming from there were none…so… I think we gained more confidence being at a bigger hospital…'*

Some participants reflected on how they had seen services develop since completing their training. For example, one participant said:

> *'The ICU opened in 2010 we were calling it an Acute Ward… and were only registered nurses there… being headed by a midwife… we had a lot of challenges in that when a critically ill patients comes we don't know how to intubate… all we knew to do was the routines… the vital signs… the measuring of urine and everything as in the acute bay nursing care…'*

While another participant commented on how much practice had changed since critical training began:

> *'…so when we started training the critical care nurses… it bought a bigger change… we even had new machines that came in… that we never knew how to use initially… but after the [critical care] training we got to know how to use a ventilator… the monitors… and everything… so we even started intubating… of course with the help of the anaesthetist being around… so it has changed so much…'*

One of the few neonatal critical care nurses pointed out the challenges they faced in the early days:

> *'…on the neonatal side we got a midwife…. but we had the equipment packed no one knew how to use it … so I got the equipment and oriented them… and now there are less cases of babies with asphyxia… we can intubate… we can give surfactant and there are babies being saved…'*

The focus groups clearly gave participants the chance to reflect and debate on their experiences and successes. This was important they had been encouraged to share what they learnt and what they do with their peers and the discussions went on for some time. However, they all identified that one of the problems they all faced was lack of recognition and that this also affected career opportunities, as one participant pointed out:

> *'…there are no progression pathways for us hence few candidates enrolling in the programme…'*

They appeared disappointed that the result of this, was that less nurses were applying for critical care education and training, they argued that this was because other programmes that had positions within the establishment such as operating theatre nursing were proving to be more attractive, and they were retaining their recruitment numbers.

Another, cause for concern, raised by participants was the use of OSCEs, which from the discussion points raised, was seen as controversial, as one participant said:

> *'…they only learn the procedure… when we did our [critical care] training we had to do Tom and Jerry where someone would follow you into the clinical area and we have to do things in practice…'*

However, another participant, agreed with the limitations of OSCEs, but pointed out, that with *'…Tom and Jerry…'*:

'…it was difficult as we could only do the procedures on the types of patients available…'

This meant that some students could learn the procedures, but were unable to try them out in practice, thereby, widening the theory – practice gap. This is supported by Katoka-Mukwato et al (2013) who argued that there must not be an over reliance on OSCE, however, it is a cause for concern that OSCEs have now replaced all practical examinations in all fields of nursing with the exception of operating theatre nursing.

The discussion, then moved to the use of simulation. This has been a topical discussion in the stakeholder research workshop, with a view that manikins were not adequate tools, however, they could be used prior to clinical placements, to confirm students had the necessary skills. Interestingly, respondents in the national e-survey accepted the need for simulation (n= 46 /65.7%), however, a small number (n= 15 / 21.4%) were not sure. The reason for this could have been due to some RCCNs only having experience of OSCEs. As one focus group participant said:

'… is the use of simulation really possible in a developing country?...'

There were mixed views of this, as some participants recognised the challenge with access to resources such as manikins, but another participant said:

'…the reality is not all the procedures can be done in clinical practice … and the OSCEs alone are not enough…'

It was evident from the discussions around OSCEs and simulation that the move away from traditional teaching methods needed more consideration. There was almost overall acceptance that the system of assessing competence in clinical practice was best. To date, there has been no official research or evaluation by nurses to assess the impact on the competence of graduating students.

7.1.9 Summary

One of the challenges of the focus group, was that once participants started discussing topics, they were animated and enthusiastic about the opportunity they had been given to share their perspectives. They were clearly comfortable discussing matters together, even though some of the topics were personal and the individuals did not necessarily know each other well. This fitted with ubuntu's concept of interconnectedness and the importance of discussions and sharing information as part of communal responsibility and developing the collective voice (Ajitoni, 2024; Ébalé & Mulemi, 2023).

The findings from the focus groups with RCCNs and Critical Care Tutors, reflected what had been found during the initial critical review of the literature, documentary data analysis, national e-survey and initial stakeholder meeting. These participants were living the

challenges and realities identified in the literature; however, they were working in isolation. Reviewing the reflexive journal, the focus groups were positive, and were immensely proud of what they achieved. The focus groups were the first time that someone had asked them about what they do. It was almost as if they felt because someone was listening to them, wanting to hear what they really thought, they could for the first time share with each other and the researcher their experiences of the realities and hopes for the future. As noted in the researcher's reflexive journal, this was the first time that the researcher had used ubuntu for focus groups, therefore, it was a learning experience. The ease with which participants could discuss every topic without reservation or prompting was new. Also, the groups supported each other, even when they had differing viewpoints, there were non-confrontation, enjoying discussing the differences and trying to negotiate a shared perception. This communal approach with its shared responsibility of providing input into the career structure and conceptual framework. This clearly resonated with them as it linked them to the formal developments, and they could see themselves and their voice being heard within the wider community.

7.2 Research Workshop with Student Critical Care Nurses

The next phase of the study was to hold a research workshop of students completing the Advanced Diploma in Critical Care. This format was chosen for its flexibility and due to the number of the participants that attended. Also, it facilitated the use of additional strategies such as group discussions which were then fed back into a plenary session. It is a summary of the plenary findings that is presented here. A total of 21 student critical care nurses participated in a research workshop). All had diplomas in nursing and 18 females and 3 males. Further delineation of Province where participants came could result in identification of participants. This initially was intended to be a focus group, however, as they were adamant that they wanted to be part of the discussions and development of the career structure and conceptual framework, the decision was made to convert this to a research workshop. This would enable all participants to join and have their voice heard and as they felt strongly that they could see the relevance of this study to themselves, their peers and the critical care nursing community, this was an example of ubuntu in action. The difference for traditional studies, is that with participatory co-operative inquiry the challenge is for the researcher to be flexible and find solutions. For the researcher the challenge was how to record everyone's viewpoints. Therefore, flipcharts were added in and participants initially worked in smaller groups and then one big, shared group to discuss the views from the smaller groups.

The focus of this group was inevitably different to that of the tutors and qualified critical care nurses. It was interesting to see how the smaller group discussions raised different issues and when brought back as a group, they acted almost as a catalyst, with the group freely

discussing viewpoints. It is important to note, that students for all Provinces in Zambia, with one or two from each place, the choice was made not to identity either hospitals or Provinces as this could lead to identification of individuals. As with the focus group datasets only the second table with the context check has been included in the text, with the first table in appendix eight.

Table 7.2: Second Round: Framework Analysis			
Quote	**Perceptions, thoughts and context**	**Initial codes**	**Emerging categories**
'…I think the first person a critically ill patients should see is a qualified critical care nurse…'	Patient central, specialist role necessary	Specialist care	**Role**
'*…we need to be there …we can organise the ward…'*	Management skills acceptance of responsibility	Leaderships and management skills	
'…we take care of the critically ill patients … we provide highly specialised care…'	Able to deliver Specialist care	Specialist care	
…as a specialist you can make decisions… you don't need to wait for a doctor.. … if CPR is needed…I'll do it…'	Specialist role and critical decision-making skills sits in 2 themes	Role and function	
'…the problem is shortage of drugs…so care is compromised…'	Perennial problem raised at almost every meeting	Shortages in access to medication	**Resource limitations**
'…we can't check things like ABGs..but we need these…'	As above	Shortages in access to essential blood tests etc	
'… you know patients can be different types of conditions that we need a specialist [nurse] *to take care of them…'*	Different to general patients more expertise needed	Increase knowledge from general nursing	**Knowledge**
'…if you don;'t have that knowledge … if you are just a general nurse you will not know that a patient is worse…'	Specialist knowledge for good care and patient safety	Knowledge	
'… she [critical care nurse] *… can share … that motivated me to study..to get the knowledge…'*	Wanted to learn following role model	Education role model	**Education**
'...I've made efforts .. read…search the literaure …it sticks in my mind… if I do my own research it's difficult to forget… do you get me…'	Own route to learning recognising limits of available information need for access to education	Education	
'... we don't have tutors that have done critical care …there are very few…so we need more…'	Lack of faculty to support education	Education	
'… you are literally there with your stethoscope …bilateral airway.. ECG all those things are not OK… you can take action…'	Extra adiditional skills at higher level needed	Advanced skills	**Advanced Clinical skills**
'*…we need to act… according to ..ECGs we need to know how to*	Range of clinical expertise needed	Advanced skills	

operate the ventilator ….to intubate then ventilate…'			
'…how to interpret ABGs…to look at pH …carbon dioxide…and so on…'	Skills to interpret advanced testing etc	Advanced skills	
'… *you have to think ahead…whether there's a doctor or no doctor… you know what you're meant to do…to decide …in emergencies…'*	Critical decision making skills. And cnfidence to follow through	Clinical decisions	**Decision making**
'…We… are different .. look at general nurses .. every time the patient's condition changes .. they call a doctor and wait for instructions…'	Change in expertise and role following education able to make clinical decisions	Able to make decisions	
'… *we make decisions …assert…we stand on our own… when you know* [the right decision] *no one ….not a doctor is going to intimidate…'*	Confident of clinical decision making skills. Will wo work autonomously and lead	confidence	

The key themes identified in the table have been discussed sequentially. However, it is important to mention that there was definite overlap between themes and every effort has been made to avoid duplication. At the time of the data collection, students were almost halfway through their programme and had completed two theory blocks, clinical practice and their introductory examinations.

7.2.1 Theme 1: Role

Students all recognised the importance the speciality they had chosen and were clear that their role was key to patient safety and improving outcomes. They recognised that their role was not just in the critical care unit, and they had a responsibility to care for all those who were critically ill. It has to be noted, that at the time of the study, the Emergency and Trauma Nursing speciality and accompanying education programmes had not been introduced, in consequence, the critical care nurses provided the specialist nursing expertise across the patient pathway. One student said:

> *'…I think the first person a critically ill patients should see is a qualified critical care nurse…'*

The group expanded on this, pointing out that in addition to their clinical skills, their knowledge and expertise the ability to lead patient care:

> *'…we need to be there …we can organise the ward…'*

They were proud of their newly acquired knowledge and skills, pointing out that the care they could see the difference in care when a critical care nurse was on duty:

> *'…we take care of the critically ill patients … we provide highly specialised care…'*

For the first time, they could now see how they had changed during the programme and could see what they could not offer as specialist critical care nurse. They are no longer reactive to patient care but had become proactive decision makers who were happy to stand by the decisions they made.

> *'…as a specialist you can make decisions… you don't need to wait for a doctor… if CPR is needed…I'll do it…'*

It is important to point out that given Zambia has a hierarchical health system with nurses being subservient to doctors, this comment was surprising. Because the students were only five months into their specialist training, it demonstrated that even in a relatively short time there could be radical changes in attitudes and self-belief. They had developed confidence in themselves and their expertise, therefore, the question had to be asked what could be achieved in a one-year programme.

7.2.2 Theme 2: Resource limitations

Although students were working in a tertiary referral hospital that was deemed to be well resourced, the students recognised that the resource limitations in practice impacted on their education studies. This was an expected response, but revealed the challenges faced when trying to bridge the theory practice gap. Students had studied key points such as arterial blood gases (ABG) which they had hoped to have seen for the first time, but as one group stated *'…we can't check things like ABGs...but we need these…'.* Similarly, others who had hoped to see all the critical care drugs being used, had found *'…the problem is shortage of drugs…so care is compromised…'.* Students did recognise that they had the opportunity to see complex cases that would not be found in the smaller units and would be able to take that knowledge back with them when they returned to their hospitals once they had completed the programme.

7.2.2 Theme 3: Knowledge

This theme was linked with the one above, with students recognising the complexity of critical care patients in the unit and on some of the wards. One group said *'… you know patients can be different types of conditions that we need a specialist [nurse] to take care of them…',* however, on probing they recognised that critical care nurses need to have all round knowledge, to deal with the range of patients admitted to critical care.

One key point that they had learnt, was that many critically ill patients are on the wards, and they were concerned that as ward nurses did not have the knowledge they had recently gained, they would not know how to identify the deteriorating patient. Affirming the need for critical care nurses to be in ward areas as well as in the critical care units.

> *'…if you don't have that knowledge … if you are just a general nurse you will not know that a patient is worse…'*

7.2.4 Theme 4: Education

One student gave a personal account as to why she had applied for the programme. She was a ward nurse, who had seen a critical care nurse working with patients and had recognised the difference between what she could offer and what the critical care nurse could offer. This inspired her to train:

> *'… she [critical care nurse] … can share … that motivated me to study...to get the knowledge…'*

Several of them commented on the change in approach to education that they found on the advanced diploma. They recognised that they were expected to take responsibility for their own learning, rather than expecting to be given all the knowledge and skills they needed through didactic lectures. This was an interesting point as stakeholders were keen to move away from the didactic approach to adult learning.

> *'...I've made efforts ... read…search the literature …it sticks in my mind… if I do my own research it's difficult to forget… do you get me…'*

However, the students also pointed out one of the biggest challenges to the programme, was:

> *'... we don't have tutors that have done critical care …there are very few…so we need more…'*

The tutors they had were mixed, with some not being critical care educated, which made it difficult to act as role models and to mentor the students. This is an important point and emphasises the need for faculty development at the same time as the introduction of new programmes. Also, the current approach of training overseas was no longer sustainable, in terms of numbers and finances. In addition, the main partner who offered training, only offered theoretical courses with the practical component only seen in observation and no competence assessment undertaken.

> *'…have mentor time factored into a clinical shift…'*

Similarly in practice, students recognised that they needed support and guidance in clinical practice. However, the challenge was that with few critical care nurses in practice who are often in administrative positions or were the only critical care nurse on the shift, supervision was variable. In consequence, they recognised the need for mentorship, however, they were unable to suggest that could happen, unless there was significant increase in critical care nurses in practice.

7.2.5 Theme 5: Advanced Clinical Skills

Unsurprisingly, given students were completing a diploma programme, they were skills and tasked focused. This is reflected in the types of activities they focused on in the discussion:

'… you are literally there with your stethoscope …bilateral airway... ECG all those things are not OK… you can take action…'

'…we need to act… according to ...ECGs we need to know how to operate the ventilator ….to intubate then ventilate…'

It was also interesting to note, that the students focused on emergency skills, and this could fit with the perception that critical care is all about advanced equipment and life-saving interventions.

'…how to interpret ABGs…to look at pH …carbon dioxide…and so on…'

None of them volunteered information on the rehabilitation, nutrition, end of life care and care planning. Yet these are just as important, especially, because with more specialised nurses recognising deteriorating patients and performing more emergency procedures, more patients will survive. They will then need the less dramatic aspects of critical care nursing practice.

7.2.6 Theme 6: Decision makings

As alluded to previously students have moved from a traditional Zambian nursing stance, to become knowledgeable care providers able to be proactive in assessing and planning a patients care. They had clearly recognised the lack of critical care doctors (intensivists) meant they were going to have to take the lead:

'… you have to think ahead…whether there's a doctor or no doctor… you know what you're meant to do…to decide …in emergencies…'

They could see in a short time, the changes in their own performance, and were clearly growing into their new role, seeing themselves as different:

'…We… are different ... look at general nurses ... every time the patient's condition changes ... they call a doctor and wait for instructions…'

Their confidence and self-belief enabled them to make their own decisions and act on them:

'… we make decisions …assert…we stand on our own… when you know [the right decision] no one … not a doctor is going to intimidate…'

It was evident that students completing the advanced diploma in critical care were already to see differences in their approach to practice. They no longer saw themselves as general nurses and had accepted that they needed to start to make decisions and act independently. They recognised that their role now had extended to include the need to have the knowledge to initiate care, not just to follow the doctor's orders. They had already accepted the extended role and task-shifting due to the limited numbers of doctors in critical care. This was an example of how a relatively short programme can transform practice.

7.2.7 Summary of the Research Workshop

The enthusiasm and determination of participants to be involved was unexpected but welcome. The flexibility in the use of the research method participatory co-operative inquiry, worked well and allowed for all participants to be part of the study and for nobody to be left behind or left out. Reflecting on this workshop the use of ubuntu made it possible, however, as this was early on the study, the researcher had not previously realised how strong a community can be and that they came as a group who were prepared to, and wanted to take part and share their views. This should not have been a surprise, as ubuntu grew from with Africa and therefore, inherent within this is recognition of the oral tradition and the pleasure of sharing ideas and thoughts to facilitate decisions (Matahela & Ngwenya, 2025; Ajitoni, 2024).

7.3 Stakeholders Engagement

Following the focus groups and the research workshop with critical care students, it was seen as important to share the findings, therefore, a stakeholder engagement meeting was held. Representation for the stakeholder's workshop included 10 participants (table 7.3). Four of whom were male, one was a medical doctor, one nurses had a PhD, four nurses had MSc (ranging from Critical Care, General Nursing and Public Health. Further delineation of demographics would have led to identification of individual participants. The purpose of this meeting was to discuss the qualitative findings and how they would influence the development of the conceptual framework and to start the steps towards developing a supporting career structure for critical care nurses.

Table 7.3: Breakdown of Participants

Organisation	Number attending
Ministry of Health	X2
Nursing Regulator	X2
Nursing Union & Professional Membership organisations	X1
Education Providers	X3
Critical Care Nurses	X2

As participants from the focus groups and research workshop were not present at this meeting, a presentation was given to share the findings from these workshops. This included sharing the results of the framework analysis with its actual quotes, and stakeholders did the context checks to make sure that the themes had been appropriately generated. They then used the quotes and themes within their discussions. The following is a summary of the key points from these discussions.

Both the career structure and conceptual framework were seen as crucial, as the focus groups have indicated, the nurses had no recognition of their role and had no proper career progression. The lack of understanding of the role of a critical care nurse was evident when participant reported that a senior nurse had said to her:

'… any nurse can look after a critically ill patient... they are just unconscious… we look after unconscious patients on the ward…'

Reviewing the datasets to this point, it was recognised that the situation needed to change if critical care nurses were to have the job satisfaction, that would support retention. The MOH had already accepted they needed to develop a conceptual framework; however, the focus groups and research workshops had demonstrated to them the importance of a career structure. These two needed to be interlinked, such that together they recognised their increased knowledge, skills, responsibility and autonomy. This is supported by international literature which has also identified that one of the reasons for nurses migrating from LIC to HIC is due to the lack of career progression opportunities (Bayuo et al., 2023; Konlan et al., 2023).

Stakeholders also accepted this study was necessary, as it would allow for succession planning and remove the necessity of having to send nurses overseas for graduate and post-graduate qualifications. This was seen as a way to *'…break the status quo…'.* The MOH reported that in other specialities, nurses and other healthcare professionals sent abroad, on the whole came back to Zambia with theoretical qualifications but no higher-level clinical competencies (Abdoola et al., 2025). They had recognised that some of the countries offering programmes, only allowed observation and no actual clinical practice (Ohene et al., 2021; Ruthe & North, 2020). Initially they had not realised that their students would not be allowed to learn through practice, however, in the absence of any alternatives, they had accepted the situation because at least they had professionals with higher levels of knowledge, which could be used to support education.

They also accepted that as Van Biljoen-Mokhotla and Makhene (2023) South African study had identified mentorship and role modelling were important for specialist nurses. However, prior to this study, there was no formal mentorship for critical care nurses and without national recognition, they were struggling to form a professional identify. This also meant there was little place for them in strategic leadership roles, which in the long-term could improve recognition and acceptance of this speciality. This was an action point for the development of a mentorship model to support the implementation of the new conceptual framework and education programmes.

Again, stakeholders raised the urgent need for increasing the numbers of critical care nurses. In other fields of nursing, such as paediatrics and midwifery, direct entry was seen as a solution for increasing numbers. However, at this point there was a disagreement between the MOH and critical care nurses regarding the best way to increase and enhance critical care nursing services. The MOH were adamant that the best way to do this was to develop a direct entry

programme from school for critical care nurses, because currently they were drawing from a limited pool of registered nurses:

> *'…we need numbers… we can't keep training from within the workforce… as we need the Registered Nurses too…'*
>
> *'…it's like a leaking bucket… the more you pour in [workforce] they more they leave to undertake specialised training or work overseas…we need to increase the overall workforce and not take from the workforce…'*

The critical care nurses in practice, educators and nurse managers, strongly objected to this approach, arguing that critical care is a speciality that builds upon the skills gained during RN education and practice,

> *'… they need to have experience of being an RN…'*
>
> *'…in my hospital… there are only the three of us… we find that when we have knocked off [finished shift] … when you are gone if a patient comes in who needs intubation and be connected to a ventilator we will be called at home at whatever time… no direct entry RCCN would have the confidence and skills to work alone at night…'*

They were adamant that direct entry RCCNs would not be able to develop the necessary competence to meet the requirements of specialist practice, in the time allotted through direct entry programmes. The NMC openly admitted they had considered direct entry roles because *'…we cherish new ideas…',* seeing them as *'…adding value to training process of nurses in the country…'.* However, in the face of strong arguments from nurses, educators and managers views they accepted that for this specialism it was not appropriate.

The topic of BSc Nursing was discussed, reflecting the discussions on higher level qualifications, while all stakeholders accepted the need to introduce this new programme. The regulator pointed out that there:

> *'…remit is to only regulate diploma programmes… for bachelors and masters we register the nurse but the programme is developed and run by universities…'*

Therefore, they recognised this would change the landscape of post-registration education for the country. This led to a discussion regarding concerns that the introduction of higher-level programmes within one speciality would result in nurses applying for this programme and no other programmes such as HIV Nurse practitioner or Operating Theatre Nursing. In consequence, it was important to develop templates which could be adapted for use by other specialist programmes when they are ready to upgrade. This was seen as a positive step to support the move from all the advanced diploma programmes towards BSc level.

The MOH, at this point, raised the issue of the need for '*…Bachelor's nurses to stay at the bedside…',* as currently once nurses have gained a graduate qualification they see *'…offices and schools [Colleges] … as better than clinical areas…'.* In consequence, they leave the

clinical settings and the direct benefits to patients are lost. This point was challenged, as the current situation only allowed for General Nurses or Midwives to complete BSc programmes, the direct impact to the critically ill patient would be limited. It was accepted that with the introduction of BSc in Critical Care Nursing initial graduates would likely end up in administrative positions or teaching roles. However, as more graduate nurses completed programmes these nurses would take on a mentorship, guidance and leadership role at the bedside, thereby raising practice to a new level. To do this graduate nursing needed to be embedded into a new career framework. Critical care nurses supported the need for Advanced Diploma and BSc Nurses to remain at the bedside, from their experience:

> *'…sometimes in a shift, there's only one critical care nurse… and then you have maybe a number of critical ill patients which need your attention…'*

They argued that critical care nurses are seen as 'experts' who are support teams outside of critical care units and have a hospital wide impact *'…sharing their knowledge and skills with others….'.* They went on to point out that:

> *'…there are very few specialised critical care nurses… therefore there will be a need for you to rush to see a patient or maybe intubate a patient because for them to move the patient to ICU before the patient is intubated might be too late…'*

The MOH recognised the transferable skills of critical care nurses arguing they can be deployed anywhere in the healthcare system. This was supported by one of the critical care nurses who agreed:

> *'…the skills that you acquire as a critical care nurse… you can use them anywhere… and in the hospital set-up like here where we are you can work in the outpatient department… you can work in the medical surgical wards… they have critically ill patients… our ICU is very small… bed capacity is now ten… so you find that even in these wards… you have patients that are critically ill… and you need critical care nurses there…'*

Another critical care nurse shared her experiences:

> *'…there was a boy who was discharged over a 2-day public holiday… he was brought back to critical care as he had deteriorated… general ward nurses don't know how to give oxygen… we need critical care nurses everywhere…'*

Participants recognised that much of critical care nursing work is hidden and the findings from this study to date had opened their eyes. It had challenged their perception of what was the totality of critical care nursing. This issue of invisible work is not uncommon in nursing, it was first described by Nardi and Engestrom (1999) over two decades ago, who argued that to fully understand the role of a specific branch of nursing, it is essential to understand a professional's invisible work. Therefore, bringing together all the elements from this study (stakeholder research workshops, focus groups, research workshops with students and national e-survey) had provided insights they had never considered and a greater

understanding of the value of the critical care nursing role. Figure 7.1 was developed during the workshop as it illustrated by the concept.

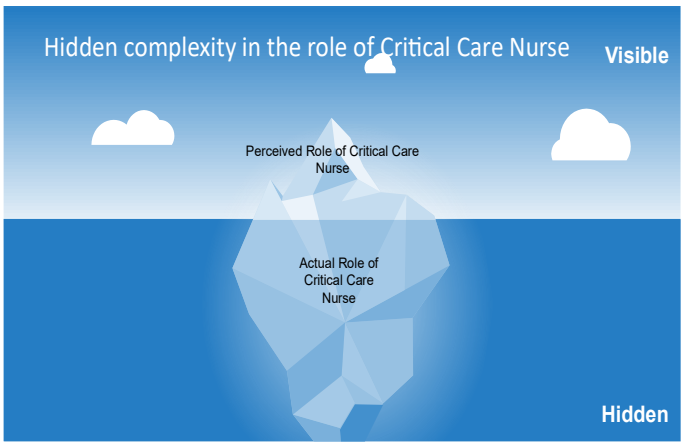


Figure 7.1. Hidden complexity in Practice

Reviewing all of this, the strategic engagement meeting completed with the following policy recommendations:

1. BSc in Critical Care Nursing must meet the educational requirements as outlined by the United Nations Educational, Scientific and Cultural International standard classification of education (UNESCO, 2011), the World Federation of Critical Care Nurses (WfCCN) educational content standards (2020) and the Zambian MoH and GNC standards for post-basic nurse education.

2. Current and future programmes must have the flexibility to evolve and use a variety of teaching and assessment strategies to respond to the current and future healthcare needs (this includes blended learning, simulation, self-directed study and the strengthening of assessment and clinical mentorship).

3. There needs to be an opportunity for transition for those who already hold a current Advanced Diploma in Critical Care to 'top-up', without the requirement to undertake elements already taught and assessed (this has the opportunity to reduce the time away from the clinical area and increase the number of BSc nurses with enhanced skills in a shorter period of time).

4. There needs to be recognition that any BSc in critical care nursing should match international standards and therefore last between 12–24 months.

5. All education programmes must continue to include all specialist areas including neurology, trauma, emergency nursing, paediatrics and neonatology (once a critical mass

of nurses has been trained, these specialist areas should evolve into courses in their own right).

6. There needs to a formal request made to the MOH, GNC and ZUNO to continue to lobby to recognise critical care nursing, through nursing posts being recognised in the nursing establishment, remuneration and recognition for specialist training.
7. A period of internship (preceptorship, supernumerary period) should be included in future programmes, this should be between 1-3months and completed in the student's own hospital.
8. Opportunities for continuing professional development (CPD) must be embedded and made available for all critical care nurses to keep pace with changes in critical care practice (this is especially relevant for nurses working in regional hospitals who may have limited access to peer support and networks).

These recommendations were the basis for further work in the development of the career structure and conceptual framework for critical care nursing in Zambia.

7.3.1 Summary of Strategic Stakeholder Meeting

Reflecting on the strategic workshop, it was again that working together to achieve consensus was a much quicker process than expected. It also provided a link to practice as the focus groups and research workshop allowed for voice of practice to be heard and considered in developing the policy recommendations. The further demonstrates the importance of using an African philosophy to underpin the study, as this enabled interlinking between different groups within the community. For the participants this was seen as a natural way to work.

7.4 Summary

This chapter has demonstrated the differences between critical care nurses (including tutors) and student critical care nurses. Understandably, students were interested in their programme and the knowledge and skills they were acquiring during the programme. In contrast, critical care nurses had a more strategic approach. What was interesting was just how much students had changed in a relatively short period, and the extent to which they had already aligned themselves to the broader picture of critical care. Reflecting on this, these rapid changes which were clearly demonstrable, could be why overall so much value is placed on these Advanced Diploma's, and why they are seen as successful. The next stage in this research project was to develop the mentorship model, the BSc in Critical Care Nursing and the definition and scope of practice. These would all be integral components of the career structure and conceptual framework.

Chapter 8: Cycle 3: Cross Sectional Survey and Mentorship Model

This chapter presents the final cycle of data collection and analysis for the development of the conceptual framework and career structure. It presents the findings from a national cross-sectional survey of critical care provision, development of the mentorship model and a final stakeholder engagement meeting, which built upon the previous cycles. It was essential that this study developed not only strategic guidance but also had a clinical aspect, as it was seen as important for this study to be operationalised. Therefore, as part of the study, a mentorship model was developed and evaluated, as it was recognised by participants and key stakeholders this was the missing piece of the puzzle. In participatory co-operative inquiry, ownership of outputs and outcomes is key (Vangeepuram et al., 2023) and to support this the model was developed and accepted, nationally disseminated and then published in a peer reviewed journal, the full article can be found in appendix nine (Carter et al., 2021). Therefore, this chapter only gives a summary of this activity.

8.1 National Cross-Sectional Survey

The cross-sectional survey was a one-point intervention of 19 public hospitals (16 public and 3 mission hospitals). This was carried out to provide a current picture of critical care availability, as part of data triangulation (Noble & Heale, 2019), giving an integrated overview of similarities and differences between the datasets. As it was not possible to include direct patient information, this dataset was used to give an indication of critical care utilisation. The MOH saw this as crucial as it provided a snapshot of patient admission and causes of admission, data not routinely available. In consequence, the sample was selected by the MOH, as these were hospitals with functioning critical care units. Each hospital was independently visited and records of patients admitted to critical care extracted and reviewed. For consistency a grid was developed such that the same data was collected from every set of records reviewed (Wang & Cheng, 2020).

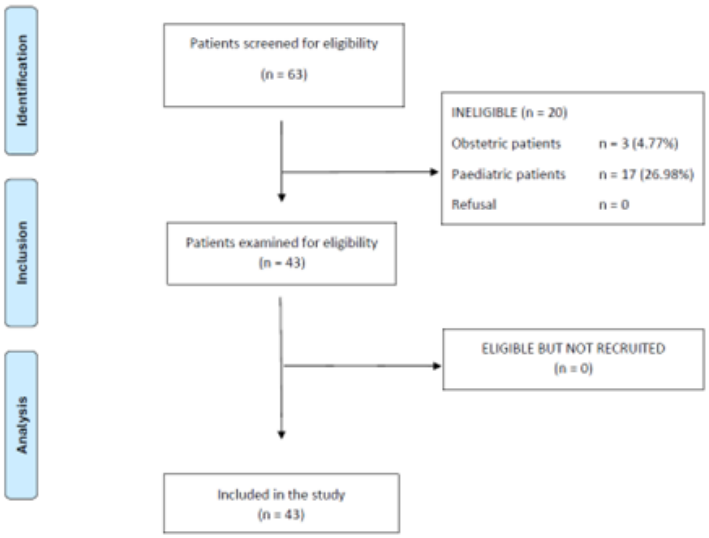
8.1.1 Results

It is important to point out that the review of the records revealed that there were inconsistencies in the documentation, and that in some instances key information was missing. Therefore, the analysis can only be descriptive and give an indication of adult critical care patients for the days in which data was extracted. Nevertheless, this was still new information, not routinely collected or evaluated and has given an insight into utilisation in critical care units.

Over the data collection period of 12 days, a total number of critical care beds were identified 108 (65 mixed Adult & Paediatric, 20 Paediatric and 23 Neonatal beds), with 63 critical care patients. Again, as with the national e-survey an adapted STROBE flowchart was used (Maatouk et al. 2018). See figure 7.1 below. Of the 63 patients, 43 (68.25%) were adult patients and included in the study. There were 20 (31.75%) patients excluded (obstetric

patients (3 / 4.77%) and paediatric patients (17 / 26.98%) as they did not meet the inclusion criteria.

Figure 8.1: Study Enrolment Flowchart using STROBE Criteria



8.1 Demographics and reason for admission to critical care

Table 8.1: Sample Sex, Age and Reason and percentage for adult admissions to Critical Care

	Sex			Reason for Admission to Critical Care				
Age (years)	**Male**	**Female**	**Total**	**Trauma**	**Medical**	**Surgical**	**Total**	**P value***
16-20	1 (2.4%)	3 (7.1%)	**4 (9.5%)**	1 (2.3%)	2 (4.7%)	1 (2.3%)	**4 (13.0%)**	**0.264**
21-30	6 (14.3%)	7 (16.7%)	**13 (31%)**	4 (9.3%)	6 (14%)	3 (7%)	**13 (30.2%)**	
31-40	4 (9.5%)	3 (7.1%)	**7 (16.7%)**	1 (2.3%)	4 (2%)	3 (5%)	**8 (18.6%)**	
41-50	3 (7.1%)	5 (11.9%)	**8 (19%)**	1 (2.3%)	2 (4.7%)	5 (11.6%)	**8 (18.6%)**	
51-60	1 (2.4%)	1 (2.4%)	**2 (4.8%)**	0 (0.0%)	1 (2.3%)	1 (2.3%)	**2 (4.7%)**	
>60	4 (9.5%)	2 (4.8%)	**6 (14.3%)**	4 (9.3%)	0 (0.0%)	2 (4.7%)	**6 (14.0%)**	
Total	**19**	**21**	**40**	**11**	**15**	**15**	**41**	
	Missing data: 1 age, 2 sex, 2 reason for admission to critical care							
	*P value was used to compare reason for admission and age							

Characteristics from the patients giving reason for admission are outlined in Table 8.1. Descriptive statistics were used to summarise each of the variables. The majority of patients were aged between 21-30 years (13 = 31.0%), and most were female (21 = 52.5%). Medical and surgical conditions were equally represented in the data sets (15 = 36.5%). However, within the 21-30 age range, the highest admission rate to critical care, were due to medical conditions (6 = 14.0%), followed by trauma (4 = 9.3%), then surgical conditions (3 = 7.0%).

This was similar in the 31-40 age range, however, in the 41-50 age range, the highest reason for admission was surgical (5 = 11.6%), followed by medical (2 = 47.0%) and trauma (1 = 2.3%). This changed further in the >60-year category, with trauma (4 = 9.3%) being the highest, followed by surgical (2 = 4.7%). Data analysis showed a p-value of 0.264 which was not statistically significant, possibly because numbers were too small. In consequence, it was not possible to consider whether there was a relationship between the age and reason for admission.

8.1.1.1 Source & Time of Admission to Critical Care

Table 8.2: Source and time of admission to critical care

	Time			
Source	**08:00 – 20:00**	**20:01-07:59 (Out of hours)**	**Total**	**P Value**
A&E	14 (35.0%)	4 (10.0%)	18 (45.0%)	0.703
Filter Ward	4 (10.0%)	0 (0.0%)	4 (10.0%)	
Ward	7 (17.5%)	2 (5.0%)	9 (22.5%)	
Operating Theatres	5 (12.5%)	2 (5.0%)	7 (17.0%)	
Other sources*	1 (2.5%)	1 (2.5%)	2 (5.0%)	
Total	31 (77.5%)	9 (22.5%)	40 (100.0%)	
Missing data: 3 admission source				
*Out Patients Department (OPD), Intra-hospital transfers				

The majority of patients were admitted from Accident and Emergency (A&E) (18 = 45.0%), followed by wards (9 = 22.5%), operating theatres (7 = 17.0%), filter wards (similar to observation and admission units) (4 = 10.0%). A minority came from outpatients' departments (OPD and inter-hospital transfers) (2 = 5.0%) (table 8.2). Most patients were admitted during the date time shifts between 08.00 and 20.00 (31 = 77.5%). The reason why patients were not admitted from filter wards out of hours was not stated, however, it is important to note, that these wards are co-located to A&E units, which allows for ongoing stabilisation and investigation (Bould et al., 2015). Also, it may be as they may have been still designated as being in the A&E department. A p value of 0.703 was deemed not statistically significant, this may well be because the numbers were small, therefore, statistical analysis is not accurate for such small groups.

8.1.1.3 Physiological Variables on Admission to Critical Care

Table 8.3: Based on the Zambia Early Warning Score what percentage of patients had abnormal physiological variables on admission to critical care?					
		At risk score			
		Normal	**At Risk**	**Very High Risk**	**Total**
Parameter	**Respiratory rate per minute**	4 (4.9%)	24 (55.8%)	15 (34.9%)	**43**
	Heart rate per minute	21 (48.8%)	13 (30.2%)	9 (20.9%)	**43**
	Systolic Blood Pressure (mmHg)	14 (32.6%)	10 (23.3%)	19 (42.2%)	**43**
	Diastolic Blood Pressure (mmHg)	13 (30.2%)	9 (21%)	21 (48.8%)	**43**
	Pulse Oximetry (%)	15 (34.9%)	7 (16.3%)	16 (37.2%)	**38**
	Temperature (°C)	16 (37.2%)	12(27.9%)	15 (34.9%)	**43**
	Glasgow Coma Scale	5 (11.6%)	4 (9.3%)	30 (68.7%)	**39**
Missing values: Pulse oximetry 3 (11.6%) and Glasgow Coma Scale (4 (9.3%)					

Table 8.3 provides a summary of vital signs and 'at risk' parameters. Respiratory rate, heart rate, blood pressure (systolic and diastolic) and temperature were recorded for all patients (n=43). However, pulse oximetry (39 = 91.0%) and neurological assessment (Glasgow Coma Scale) were not recorded in 4 (9.3%) and 5 (11.6%) patients respectively. Overall, patients had a greater 'at risk' or 'very high' risk score for each vital sign parameter, showing signs of organ dysfunction. The most frequently occurring vital sign in the 'at risk' category was respiratory rate (24 = 55.8%). However, in the 'very high' risk category the most common physiological issue was change in blood pressure (Diastolic Blood Pressure (21 = 48.8%) and Systolic blood pressure (19 = 42.2%). This was a cause for concern, as a drop in blood pressure is seen as a seen as a terminal sign, particularly in younger patients (Hagedoorn et al., 2020; Resuscitation Council UK, 2024).

Table 8.4 Vital Signs recorded at 'at risk' and 'very high risk'							
		At risk Areas					
		0	**1**	**2-3**	**>4**	**Total**	**P Value**
Very High-Risk Areas	**0**	0 (0.0%)	1 (2.4%)	0 (0.0%)	0 (0.0%)	**1 (2.4%)**	0.127
	1	1 (2.4%)	4 (9.8%)	5 (12.2%)	1 (2.4%)	**11 (26.8%)**	
	2-3	2 (4.9%)	6 (14.6%)	5 (12.2%)	0 (0.0%)	**13 (31.7%)**	
	>4	8 (19.5%)	7 (17.1%)	1 (2.4%)	0 (0.0%)	**16 (39%)**	
	Total	**11 (26.8%)**	**18 (43.9%)**	**11 (26.8%)**	**1 (2.4%)**	**41 (100%)**	
Missing values: 3							

Table 8.4 provides an overview of the number of vital signs recorded within the ‘at risk’ and ‘very high risk’ areas on the observation chart. Within the ‘at risk’ area of the Zambian observation chart patients recorded at least 1 physiological variable suggesting organ dysfunction (18 = 43.9%). However, given these were adult critical care patients, it was not unexpected to find that within the ‘high risk’ areas most patients scored in more than 4 areas (16 = 39.0%).

8.1.2 Discussion

This cross-sectional study dataset presents a summary of the adult patients admitted to critical care units in 19 public hospitals, the data that was shared with key stakeholders at the final stakeholder engagement meeting. Stakeholders were surprised that there was no consistent reporting of critical care utilisation, they cited examples in midwifery and paediatrics, whereby standard metrics are collected monthly. However, they accepted the limitations of the data and identified this situation needed to change, also that critical care leadership should be the solution. Nevertheless, critical care nurses argued that it would be difficult to become a critical care nurse leader, as their role is not recognised, there are no higher-level courses, and no career structure. It was at this point the MOH accepted their argument and affirmed their commitment to addressing this, citing the development of a BSc programme and national career structure as examples of strategic planning in progress.

The data did confirm the findings from the critical review of the literature (Chapter 2), the documentary data analysis, comments made during focus groups and national statistics. Zambia has a young population and therefore, the common causes of admission in countries with older populations are not so evident, instead patients tend to be younger. This is also in line with WHO (2025d) who go on to report there is a lower life expectancy in Zambia and indicated in other studies within the region (Sawe et al., 2014; Bashir et al., 2023). It is also important to note, that although not the remit for this study, critical care units also admitted paediatric and obstetric patients, identifying the varying case mix, which is similar in other LIC (Kwizera et al., 2022; Prin et al., 2019). Interestingly in contrast to both HIC and other LIC’s, the male / female breakdown of patients admitted to critical care units in Zambia differed to other studies within the continent (Bashir et al., 2023; Lat et al., 2021). However, it has to be accepted as outlined above, this is a one-point intervention, and the patient population may not be representative.

In this study, the most common reason for admission to critical care was split equally between surgical and medical conditions (15 / 36.5%). It is important to note, that this finding is different to other single centre studies conducted in Zambia. For example, a larger descriptive observational study of critical care services within a tertiary referral hospital in Zambia,

reported 62.0% of the 793 patients admitted were due to surgical causes, followed by a high proportion of trauma cases (36%.0) (Janowicz et al., 2017). However, this difference may be because the tertiary referral hospital accepts complex surgical referrals from across the country.

It was an unexpected finding, that many of the critical care units in Zambia were not at full capacity, this may in part be due to the limited number of critical care staff, with many smaller hospitals only having one or two critical care nurses (Macey et al., 2022). Thus, the units cannot safely run at full capacity. This is similar to other studies, for example, Wong et al (2020) reported that despite Malawi having a high burden of critical illness, with a high prevalence of head injuries and trauma in particular, critical care beds were underutilised. However, it has been noted, that in both Zambia and Malawi, low numbers of nurse / doctors and high patient ratios on the ward, together with limited screening tools such as EWS, means that many patients are not referred to critical care. The African Critical Illness Outcomes Study (ACIOS) a 22 nation point of prevalence study identified that most patients are nursed in the general wards and either have delayed or no critical care intervention (Baker et al., 2025). This is supported by the finding that most patients requiring critical care were admitted from ED not ward areas.

This study of 19 hospitals confirmed that access to critical care services in Zambia as in other countries in Sub-Saharan Africa is limited. Dart et al's (2017) Zambia study and the ACIOS study (Baker et al., 2025) not only demonstrates the potential scale of resources required to provide comprehensive critical care services but also fits Murthy et al (2015) estimation of <1 critical care bed per 100,000 population. This is similar to both Uganda and Malawi, which have 0.1 and South Africa where there are 6.0 critical care beds (which can provide mechanical ventilation) per 100,000 (Wong et al., 2020; Ayebale et al., 2020). Other reasons for underutilisation of critical care services may be the absence of admission and discharge protocols (Prin et al., 2019). This may be because the majority of critically ill patients are on general wards being managed by ward nurses and doctors, who have limited, or no, critical care training. Without such specialist knowledge, they struggle to cope with acute exacerbations and/or patient deterioration and are less likely to escalate care provision (Lillie et al., 2015; Spencer et al., 2023).

In resource constrained acute settings, it has been proposed that an EWS tool or a colour coded observation chart should be used (Beane et al., 2018; Kruisselbrink et al., 2016). However, it has to be noted, that this alone will not improve recognition and escalation in patient care if there are insufficient staff, training and education, resources, and critical care availability. In addition, healthcare professionals need to demonstrate sound clinical

judgement when assessing patients. However, it is a cause for concern that several studies have identified the challenge of infrequent recording of vital signs (Beane et al., 2018; Mills et al., 2021), which could lead to missed opportunities to recognise the deteriorating patient. In addition, the Covid-19 pandemic has highlighted that pulse oximeter technology may under detect hypoxia in darker skin tones, resulting in occult hypoxemia (Sjoding et al., 2020). Over an 8-month period Beane et al (2018) evaluated the use of core vital signs used as part of a EWS to identify patients at risk of death or another adverse outcome. The findings revealed that vital signs which did not require specialist equipment (heart rate, respiratory rate, and blood pressure) were the highest parameters recorded. In addition, full sets of vital signs were often recorded on admission, due to the expectation that this information is used as a tool to guide diagnosis and request further investigations. In this study, some hospitals reported not using the EWS chart because of challenges with photocopying and obtaining a continuous supply of printed copies. Therefore, for some hospitals, use of the EWS was intermittent.

There is an urgent need to develop context specific prognostication tools which take account of age, different physiology and disease patterns and the fact that patients may present later in their disease journey (Beane et al., 2018; Hersh & Beesley, 2018). Using the Zambian MOH EWS chart this cross-sectional study found vital signs were consistently recorded on admission to critical care. However, there was a high proportion of patients who presented with abnormal vital signs suggesting organ dysfunction. Respiratory rate has been identified as the first sign of critical illness (Elliott & Baird, 2019), and the data reveals that the majority of patients had an abnormal respiratory rate (‘at risk’ and ‘very high risk’) in 39 / 43 (90.7%). In addition, the majority of patients (16 / 39%) had more than >4 red boxes (very high risk), suggesting patients were at higher risk of an adverse outcome such as a cardiac arrest.

This study also revealed few patients were admitted to critical care out of hours. This is a similar finding to Prin et al (2020) study into the day and time of the week of critical care unit admission in Malawi, who revealed most patients were admitted during the day and on weekdays. Unfortunately, due to the limited availability of standardised reporting it was not possible to identify outcome for patients admitted in Zambia or to find reasons why fewer admissions took place overnight.

Nevertheless, the findings of this cross-sectional study did provide valuable new insights into the type of adult patients admitted to critical care units in Zambia, time of admission and EWS on admission. However, caution should be exercised when generalizing these results to the wider population due to the small sample size, the risk of bias and the non-standardisation of the documentary records. Further research using larger sample size, as well as longitudinal designs, are needed to establish stronger generalizability and causality of the observed

relationships. Several potential sources of bias may have influenced the outcomes. Firstly, the variables collected and analysed relied on data gathered by others and accuracy could not be assured. Secondly, due to the short time frame, it may not have fully captured the fluctuations in adult critical care admissions over a more extended period. In consequence, the findings might not represent seasonal variations and peaks in activities e.g. influenza outbreaks, rainy seasons and malaria etc. Therefore, care should be taken when interpreting the outcomes of this element of the study.

While it is accepted that this study did not review every hospital with a critical care unit and was conducted over a short period of time; the MOH had identified hospitals with critical care units in every province, which they believed were fully functional and in consequence, the study has provided a snapshot of a country-wide perspective. As outlined previously, it is a cause for concern that incomplete data sets prevented more detailed analysis, however, this is not an uncommon phenomenon in LIC (Janowicz et al., 2017; Murthy et al., 2015). Another limitation was the records contained, limited laboratory results and investigations, which meant it was not possible to use a validated critical care prognostication scoring tool. However, the use of the Zambian observation chart provided a nationally accepted scoring tool helped to give an indication of critical care case severity.

8.2 Mentorship Model

The mentorship model was a bonus output and only identified as being needed at a stakeholder meeting part way through the study, when the national e-survey results, findings from the focus groups and research workshop with students were presented. This reported that the majority of respondents felt a period of supervised supported practice after completion of the critical care course was appropriate (Chapter five). This was deemed as crucial as both stakeholders and participants recognised that in preparation for the new curriculum and career framework there would need to be support in practice. Also, it is important to acknowledge, that stakeholders wanted the mentorship model to stand alone, but to be linked to the career structure and conceptual framework. Their rationale was that mentorship should not be a one-point intervention but should be evident throughout a nurse's career. This is supported by Munir (2021) who points out that when practising ubuntu, development of the individuals within the group, collectively develops the community. Also, that as nurses become more senior, they have a responsibility to support and guide their junior colleagues, so that they too can develop and achieve their full potential. The mentorship model developed was designed to fit within the current critical care nurse education programmes, however, it was accepted that a peer mentorship system would ultimately be needed as the career structure is implemented.

The State of the World Nursing Report (WHO, 2020) recognises the importance of mentorship of specialist nurses to enable them to continue to extend and enhance their skills. This perspective was recognised by the Ministry of Health (2022) National Health Strategic Plan as crucial, as a barrier to service delivery in specialist areas was the limited availability of mentorship. Specifically for nursing, the MOH Plan aimed to enhance and strengthen mentorship for qualified nurses. Mentoring has been globally accepted as an important approach to developing nursing practice and supporting career development (Kulik and Nguyen, 2017). For critical care nurses, this is supported by the WFCCN (2020) recommendations that it supports the application of theory to practice and assessment of clinical competence. However, the term mentorship has different meanings and is often used interchangeably with other terms such as coaching (Manzi et al, 2017). However, this term was used as stakeholders and critical care nurses did not want it confused with other terms used such as preceptorship, which is used for pre-service education programmes.

At the time the term mentorship was deemed appropriate as the RCCN was seen as mentoring RNs and student Critical Care Nurses, therefore, the relationship was and still is based on the novice working with an expert (Bain et al, 2013; Kulik and Nguyen, 2017). Also, given Advanced Diploma students spend more time in clinical practice, the apprentice model of nursing supported the need for the development of a mentorship model (Voss et al., 2022) (see chapter two). Stakeholders recognised the importance of students working in practice as this was professional socialisation (Sibiya et al., 2018), during which RCCNs were crucial role models. Therefore, the vertical mentoring model was deemed as appropriate.

However, looking back at this study, as the numbers of RCCN have increased and higher-level qualifications (BSc and MSc) have been introduced, peer-to-peer (horizontal) mentoring may well be more appropriate (Mirgissa et al., 2023). Therefore, it is evident that the mentoring model designed needed to be able to evolve with critical care nursing practice, to include RCCNs mentoring newly qualified RCCN and RCCNs mentoring leaders. This is because nurses who have completed specialist education programmes may have a need or ongoing clinical mentorship as often, particularly in Zambia, nurses work in isolation (Macey et al., 2022). Turale and Kunaviktikul (2019) also argue mentorship should not just be at the bedside but needs to be continued to strategic leadership. In addition, mentorship has been identified as crucial as it supports improved job satisfaction, reduces turn over, improves care, recruitment and retention (Van Camp & Chappy., 2017; Lartey et al., 2014; Moudi et al., 2022). In this study, because of the stage of critical care nursing only the first two levels were conceptualised and evaluated (RCCN to RN / RCCN to Critical Care Student). Now there are three Colleges and two universities delivering Critical Care Nursing and faculty mentorship and development now need be considered. In consequence, these will be the next stages to

be completed as post-doctoral work which will include horizontal mentoring strategies with RCCNs and faculty.

The mentorship model was developed after careful consideration of a series of international mentorship models, including those from within the region. For example, the African Federation of Emergency Medicine global mentorship programme (Scott & Brysiewicz, 2017) was presented. However, it was unanimously decided that this model was too restrictive, in addition, stakeholders saw this as an opportunity to develop a model that could be translated to other specialities as they too moved to a higher education level. From all the models' considered, stakeholders and practitioners, preferred the model developed in Uganda for midwives, because it had three main elements, all of which fitted with the proposed training and role of RCCNs (Kemp et al., 2020). However, stakeholders wanted a model that helped nurses see the importance of remaining at the bedside regardless of qualification, therefore, they saw the patient as central. With the student next, surrounded by clinical instructors, mentors and tutors. All of this sat within the three main domains of clinical learning environment, teaching and assessment tools leading to professional standards. Figure 8.2 illustrates to the total model agreed and implemented.

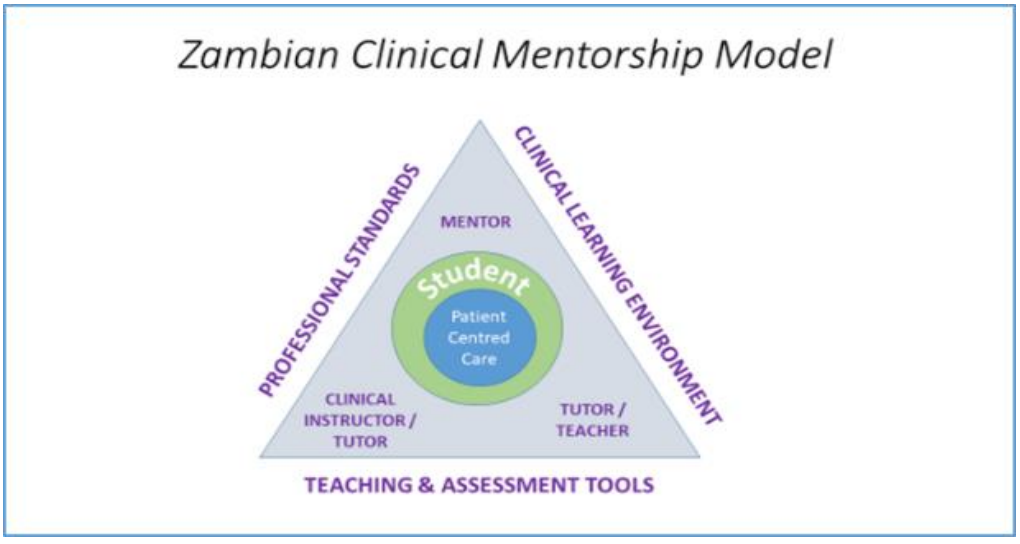


Figure 8.2: Agreed Mentorship Model (Carter et al., 2021: pg. 548)

This was an important outcome as throughout the project mentorship had been mentioned, for example, in the first stakeholder workshop, senior critical care nurses identified the need for mentorship and a period of consolidation as a newly qualified RCCN. The national e-survey (Chapter six) supported this, with a recommendation of 1-3 months supervision (n=29 / 56%). However, the challenge was that they could not enforce this, as in some hospitals there were very few critical care nurses. In consequence, there was nobody to mentor them, particularly if they were returning to smaller hospitals to set up new critical care units. This is supported by comments in focus groups as presented in the published article (appendix nine). However,

the MOH recognised this was less than ideal and hoped at the numbers of RCCNs increased they would be able to support and mentor each other.

Five years on and post Covid-19 pandemic, virtual mentorship offers potential opportunities. While mentoring of RNs and critical care students will remain face-to-face, the opportunities for mentoring newly qualified RCCNs in their units, leadership and faculty development are possible. The benefits of virtual activities include reduced costs spent on local and national travel, reducing the environmental impact and increases the opportunities for engagement, particularly those in remote settings across the wider geographical area of Zambia can participate. Virtual mentorship has been recognised as a way to build research capacity amongst nurses and doctors (Buser et al., 2021; Toyin-Thomas et al., 2024. However, it is important to note that healthcare professionals completing higher-level studies are often at different stages of their career, which means they may choose to engage in virtual activities as they see the benefits of networking both individually and professionally. However, there are several limitations particularly for nursing, these including the cost of using the internet and problems with access to laptops and the internet. In addition, evidence has shown that nurses may have limited digital e-health literacy, which may be a further barrier to engaging in virtual activities (Shiferaw et al, 2020). However, it is important to note that although knowledge can increase through virtual activities, this approach cannot replace clinical competence (Notter et al., 2024. Carter et al., 2023). There is limited research on the impact of virtual activities for specialist nurses, in consequence, there is a need to undertake further research into this area to generate new knowledge and insights into the barriers and enablers regarding virtual mentorship programmes for specialist practice.

As discussed previously, the mentorship model was specifically designed to fit with the then Advanced Diploma in Critical Care Nursing. It was important to point out that as the Advanced Diploma had been developed with Western educational theories, it was important that the mentorship model fitted with these. It is also important to point out that when this model was developed, there had very little published evidence on the use of ubuntu and ubuntugogy in the international literature. Therefore, as stakeholders wanted a model which could be internationally accepted, there need to be a compromise, and the decision was taken for the model to stand alone. Nevertheless, its design is such that as they move more towards different educational theories, such as ubuntugogy, it could be modified to fit changes in education delivery.

8.3 Summary

In participatory co-operative inquiry and ubuntu, ownership of outputs and outcomes is key (Vangeepuram et al., 2023) and it was important for all participants that the model they had developed was shared with peers nationally and internationally. The cross-sectional survey

was completed collaboratively with representatives from the MOH, education providers and critical care nurses from practice. The data gathered has provided useful insights, but it has also raised the need for critical care nurses to develop and carry out their own research. For example, this was the first time, that as a multi-stakeholder group they could see the positive steps they had all made and the areas where more work was still needed. For the first time, critical care nurses were openly acknowledged as offering a solution within the context of their healthcare system. This supported the need for a national career structure which would provide opportunities for development of individuals, the professional group, while at the same time, could help address the challenges seen in practice.

To facilitate access to the mentorship model, and how it was developed and evaluated the decision was made to nationally disseminate and publish in a peer reviewed journal an overview of the findings (Carter et al., 2021). Therefore, this chapter has included a summary of the development of the model, with the full article given in appendix nine. During the development of the conceptual framework the mentorship model was reviewed and accepted by all key stakeholders.

These two datasets demonstrate the importance of researching ‘with’ not ‘on’ participants. This allowed them to see for themselves the findings and how they had been generated. Thus, they were able to accept them in their entirety using them to plan the way forward, and advocate with key stakeholders for the need for change. This was the first time, such an integrated approach, which brought together MOH, regulators, unions / professional organisations, practitioners (nurses and doctors), students had been used in a united endeavour to move practice forward.

Chapter 9: Conceptual Framework and Career Model

This chapter illustrates how the career structure and conceptual framework were developed as the study progressed. As previously stated, this was a complex study, and on reviewing the different concepts that were identified throughout study, it was evident that a new career structure and conceptual framework needed to be developed which addressed the specific needs of Zambia. While at the same time in its own right providing a substantive contribution to new knowledge. From the start, inherent in the MOH request was the need to develop a format that they could accept and use both strategically and at local level. This chapter sets out the theoretical underpinning and rationale used to develop the new career structure and conceptual framework, illustrating how they evolved and changed as the sequential mixed methods data sets were analysed, impacted on each other and on the study as a whole.

Perhaps one of the most challenging aspects of this study, was moving from a Western philosophical approach to specialist nursing and practice, to the African philosophy of ubuntu. It is important to point out, that because education of Zambia's history, Western philosophies have been accepted and used in nursing research and education. However, this innovative and unique study provided an opportunity to challenge the status quo and to use a context specific African philosophical approach. As outlined in chapter three, Zambian nurse education and research is based on Western philosophies and this study chose to use ubuntu, the spiral curriculum and Bloom's taxonomy, thus mixing the best of both. This is because, the MOH requested that critical care nursing could provide an exemplar for developing specialist nursing practice in Zambia, as it included transitioning from specialised diploma to specialist BSc and MSc level education. This has also provided a longer-term roadmap or pathway for the transition from Western to African philosophies, as it is recognised that change would need to be gradual.

9.1 Impact of Developing Higher Levels Programmes

Having reviewed educational theories (chapter three) all stakeholders agreed that the current Advanced Diploma and new curricula (BSc and MSc) should identify a curriculum design that maximised learning (Brunner, 1974). The acceptance of ubuntu and rejection of only using traditional learning theories, in favour of moving towards ubuntugogy was a major step. Stakeholders were keen to consider how they could start to change from only using traditional teaching methods and find a way to harmonise and integrate the more inclusive approaches identified. They recognised that their education system had been built on Western traditions, therefore, they accepted that they could not radically change the education system overnight for one new specialist programme. However, they wanted to find a way to introduce the teaching methodologies that fit with ubuntu. Therefore, the group went on to review the following additional theories Vygotsky's (1978; 2023), Dewey's (1963; 1966) and Brunner's

(1974) theories. Vygotsky's (1978; 2023) zone of proximal learning requires teachers to take learners on a journey from the unknown to the complex (Chambers et al., 2013). It involves scaffolding whereby the learner builds upon their prior knowledge and learning is based upon what the learner can do with or without help from a teacher. However, Xue (2023) points out a limitation of this approach is the learner can become passive if the teacher provides excessive support. Strategic stakeholders rejected this approach given the variety of students prior experiences, with not all students required to have worked in critical care. They felt that weaker students could be carried by peers and teachers and hence, would be less likely to adapt to self-directed learning. There was a concern that as a result some students may not move forward and gain the knowledge and skills needed if they were unable to encounter complex situations (Webb et al., 2019). Within ubuntu, mutual communality means that group working can be an advantage, as ubuntu requires an open and respectful dialogue within the group, to identify and understand the issue, for example, personal, financial, health concerns (Matahela & et Phil, 2025; Tembo, 2023). The collective responsibility of the group can support the individual through their challenges and enable them to find a shared solution that can allow the group to function effectively (Khan & Ntakana, 2023). In practice, this may take the form of peer support and/or mentorship. However, one strategic stakeholder in this study pointed out:

'…its possible for the student to hide in the herd…'

This perception may have been because the participant will have been applying a Western rationale, which is individualistic in practice and learning (Tembo, 2023; Khan & Ntakana, 2023). In ubuntu, it is important to point out that educators (and assessors in practice) are also part of the community, therefore, there is collective responsibility for each individual within the group to search out those that need additional support to enable them to achieve their full potential (Matahela & Ngwenya, 2025). From a Western perspective, this is not an unfamiliar approach for registered nurses as they have a responsibility and accountability for their own practice and that of others (NMC, 2018). However, it is important that in ubuntu it is not a punitive approach but rather a supportive and empathetic approach which prevents misunderstandings and exclusion from the group (Matahela & Ngwenya, 2025). They accepted that as Dewey's (1966) concept of learning suggests, learners need to reinforce what they are doing in theory and practice with sequencing which helps to build the theory practice gap (Reese, 2011; Brownie et al., 2018). While stakeholders liked the link to clinical practice, they were concerned that experiences could be regarded as the starting point of knowledge acquisition. Whereas they recognised that as specialist nurses, clinical practice builds upon previous experiences and knowledge. Therefore, adopting ubuntugogy would help restore interconnectedness and help restore the theory practice gap. At the same time, it

would bring the academic institutions closer to the clinical institutions; to recognise they are one community (Matahela & et Phil., 2025).

After careful study and review of adult learning theories (Knowles, 2012; Knapke et al., 2024; Mandlelize and Sepeng, 2024), as outlined in chapter three, the one that seemed to link best with ubuntugogy was Brunner's (1974) spiral curriculum and Bloom's (1968) taxonomy. Therefore, this was accepted by stakeholders, as they saw it as an appropriate way to start to move away from the traditional didactive teaching approach used in Zambia. This structure when applied to the curriculum and career structure would allow students to build upon their previous academic and experiential experiences. By revisiting and building upon previous key concepts and skills, in a more complex manner over time, the students are able to progress through the academic levels. The spiral curriculum is often presented as vertical process (bottom to top); however, strategic stakeholders felt it as important to recognise that the process is also horizontal with topics building within a year (figure 9.1). It is important to point out the spiral curriculum was seen as a series of spirals that builds upon each other, which would build the career structure as well a building the individual curricula at Advanced Diploma, BSc and MSc levels. Combining these approaches would give a coherent structure that was interconnected with the individual and each core component, to enable critical care nurses to shape the future and be able to address the complex health challenges that arise from the ever-changing burden of disease. This interconnectedness with mutual responsibility guides individual and group (professional) learning fits with ubuntugogy.

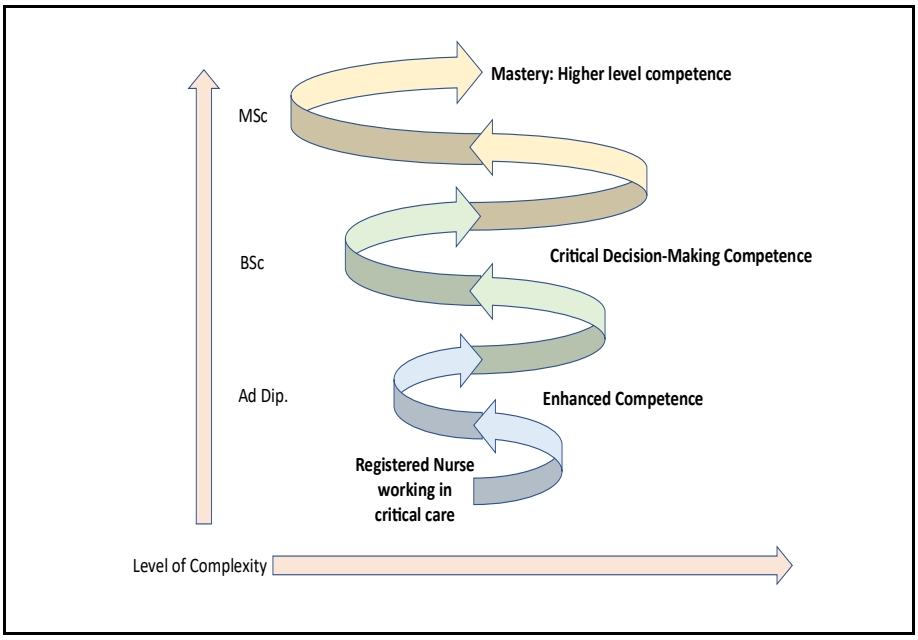


Figure 9.1: Spiral Curriculum

It is important to note, that often the spiral curriculum relates to the education framework, however, ubuntugogy recognises that education is not in isolation, and as a nurses

professional practice evolves as they grow and develop in their knowledge and expertise. It is influenced by all aspects of life and professional events, the community and society, which can be both positive and negative. This includes remembering where you have come from, how that applies to where you are and where you are going. This fits well with the spiral curriculum which starts by reviewing the knowledge and skills a nurse has but then moves to deeper knowledge and skills. As each stage of the spiral curriculum introduces a new education component. This allows the nurse to understand and identify how the new knowledge and skills are needed to improve the overall health of the patient, family and wider community. The community includes both society and the hospital, nursing and healthcare profession as a community. This was seen as crucial as in the Zambian context, often critical care nurses work in isolation, with limited support from other professional groups, therefore their new knowledge and skills have a wider impact than solely on the patient.

Stakeholders felt that this educational approach using the spiral curriculum would allow for higher level education courses such as BSc and MSc programmes to be designed. This would enable critical care nurses to gain the higher-level knowledge needed to master higher level skills. Essential to developing as strategic leaders and practitioners, they needed to be able to demonstrate critical appraisal and decision-making skills in practice. This was seen by stakeholders as crucial and as a patient safety issue, particularly important as critical care nurses are often required to practice independently (Aamodt et al., 2025; Macey et al., 2022). It is important to point out that one outcome from this study is that this approach has been taken forward as the education basis for the development of future specialist curricula.

9.2 Development of the Career Structure for Critical Care Nurses

To make sure that the career structure and conceptual framework developed were accessible, acceptable and appropriate for practice in Zambia, it is important to note that this study took place at a pivotal time for critical care. Data collection and initial findings took place prior to the Covid-19 pandemic (see chapter ten), however, as a result of the pandemic, critical care nursing in LIC has become recognised and more valued (Macey et al., 2022). In Zambia prior to the pandemic nurse education for registration was only at diploma level, and critical care as a post qualifying programme was therefore introduced at advanced diploma level. The challenge of this decision was that nurses in Zambia are civil servants, and for their civil service, promotion (and that includes salary), is based upon education level, with graduate status and above accepted and advanced diplomas not recognised (MOH, 2024). Thus, critical care nurses with an advanced diploma received no official recognition or additional remuneration, a situation that needed to change.

A second challenge emerged when reviewing the advanced diploma, as chapter five reveals, in the stakeholder meetings it emerged that at MOH level these nurses were not seen as specialist practitioners but as having specialised knowledge, a lower grade of expertise, which did not merit formal recognition. Yet these same stakeholders were in support of advancing the nursing profession. A contradiction in approach, confirming the need to change attitudes if the new conceptual framework was to be accepted and implemented. A way needed to be found to illustrate the actual knowledge and skills of the group. Having been working in practice and teaching both students and qualified staff, it seemed that an actual clinical example might provide the best demonstration of critical care.

Traditionally, in Zambia, nurses had been educated and assessed using a procedures manual, which detailed standard procedures in which the nurse must be competent. However, the new role of critical care necessitated a move from this traditional approach. It was accepted that short training courses previously seen as a solution for task shifting, were no longer appropriate (Okoroafor & Christmal, 2023). Instead, there needed to be a move to formal academic education and clinical competence, at BSc and MSc level, making it possible for the MOH to recognise critical care nurses' professional roles and standing.

The career structure and conceptual framework are inextricably linked as they guide the Registered Nurse through specialist nursing identifying the possible routes that can be followed. At the same time, they are based upon an all-encompassing career progression model that can only occur when all elements have been studied and successfully passed. During a stakeholder meeting discussion of the proposed career framework led to the suggestion that there could be a direct entry pathway for critical care nursing. The MOH argued they urgently needed numbers and the challenge with in-service training was it removed nurses from the already depleted and overstretched workforce. However, the possibility of direct entry nursing was categorically refuted by critical care experts. Their perspective was supported by evidence gathered from focus groups of specialist nurses who also unanimously rejected direct entry critical care nursing. Their rationale was that critical care competencies were far beyond the usual competencies of nursing and direct entry programmes were not long enough or at a level to enable students to develop both basic and advanced critical care competencies. When this model and evidence was presented and debated with stakeholders, including those in practice, it was agreed direct entry critical care nursing was not an option. The diagrammatic representation below was accepted without the direct entry option (figure 9.2).

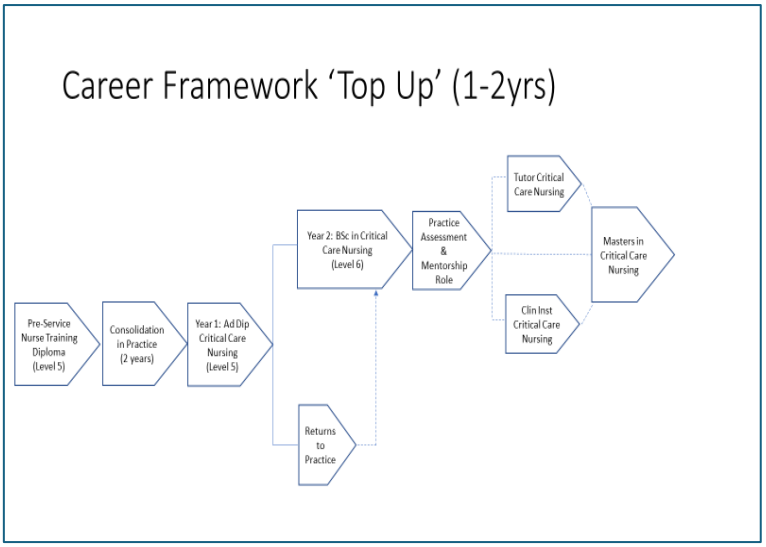


Figure 9.2: First draft of the Career Structure for critical care nurses

The first draft (figure 9.2) of the career structure for critical care nurses focused on the move from pre-service to advanced diploma to BSc. This structure provided an opportunity to introduce the concept of recognised prior experiential learning (RPEL). Harris and Wihak (2017) define RPEL as an approved process which allows for formal and non-formal learning acquired through life and work experiences to be recognised and contribute towards an academic programme. This approach has been successfully used in other countries in Africa, which needed to rapidly upgrade their workforce from Diploma to BSc (Udeagha et al., 2022; Mothokoa & Maritz, 2018). For example, Mothokoa and Maritz (2018) point out the use of RPEL was a way to bridge nurses in South Africa who had been blocked through apartheid, to access higher level qualifications and advance their careers. It is also important to acknowledge that RPEL widens access to education, employment opportunities and empowerment for marginalised groups (Roy and El Marsafawy, 2021). As with many countries the majority of nurses in Zambia are female (WHO, 2020), in consequence, increasing access and opportunity would allow for females to progress and to gain greater opportunities for employment and promotion.

Specifically for Zambia, the RPEL approach would allow critical care nurses with an advanced diploma to be recognised for their previous study and experience. Findings from critical care nurses who participated in the focus groups, were concerned that they would have to repeat knowledge and skills they had already acquired, and felt this was demotivating. In addition, for the MOH, their concerns focussed on building a specialist workforce within an already overstretched and limited workforce. A fast-track route would reduce the number of nurses out of the workforce for a prolonged period of time, which would impact on the numbers that could be trained. Also, there would be a financial saving due to shorter courses. As outlined,

previously, the MOH were reluctant to stop the Advanced Diploma route, this also had an added bonus, as students who felt they could not meet the BSc level education, could still complete a specialised course in critical care. This approach was accepted by both critical care nurses and strategic stakeholders. As outlined in chapter three, this approach supported the concept of the spiral curriculum within the spiral curriculum, which meant that knowledge built throughout the nurses' career and promoted adult learning and ubuntugogy.

A second structure was presented (figure 9.3) which included different sub-specialisms within critical care nursing, such as neonatal and paediatrics. This was presented in direct response from the focus groups and stakeholders who had recognised that the current model of 'one-size fits all' approaches for critical care education was not working. At the time of the study, direct entry paediatric nursing was relatively new (THET, 2015), and neonatal nursing had not commenced; both these programmes contain limited critical care content. However, it is important to note, that given Zambia's high birth rate and young population (WHO, 2025e) there is a need to acknowledge that neonatal and paediatric services, need critical care education and training to grow the specialist workforce to keep pace with demand. While it is accepted that the current model of adult, paediatric and in some hospitals, neonates nursed in one critical care unit that was identified from findings from this study, is similar to findings from other countries (Macey et al., 2022). Therefore, the proposed career structure, included all students completing the Advanced Diploma as the first year of specialist training, so that they would gain experience in all areas. This would provide a foundation, and they would then specialise into either adult, paediatric or neonatal critical care in the second year (figure 9.3). This was seen as crucial to provide an option to future proof the career structure and provide all options for stakeholders to consider.

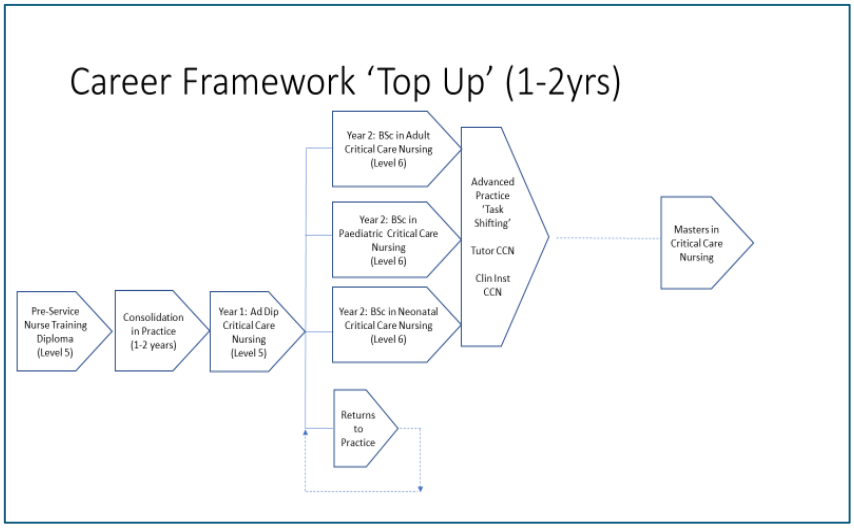


Figure 9.3: Career Structure with sub-specialisation

Concerns with this model were raised by stakeholders, as they felt this was one step too far and were concerned that they needed nurses that were able to nurse all patient groups. However, the critical care nurses were open to this structure as they recognised that in practice, most were nursing adults and children, with neonates being a separate service in many hospitals. They also acknowledged that at the time, there were just two paediatric hospitals in the country and there was a need to develop this workforce, and the current programmes had relatively little time in these areas. However, stakeholders were concerned that this would cause challenges with the delivery of the different programmes because of the limited teaching workforce. In consequence, it was agreed this would be a long-term aspiration.

This led to a finalised career framework which was accepted by all key stakeholders. They recognised that the agreed career structure involved both vertical and horizontal progression. While traditionally career frameworks are seen as vertical, in terms of seniority, hierarchy and increased responsibility, stakeholders felt it should also be horizontal as a pathway, as it recognised the value of each stage in a nurses' career. Also, given the current challenges with the workforce, a newly qualified critical care nurse, could have a large responsibility due to the limited availability of other healthcare workers and this should be reflected in the pathway. The agreed career framework is outlined in figure 9.4.

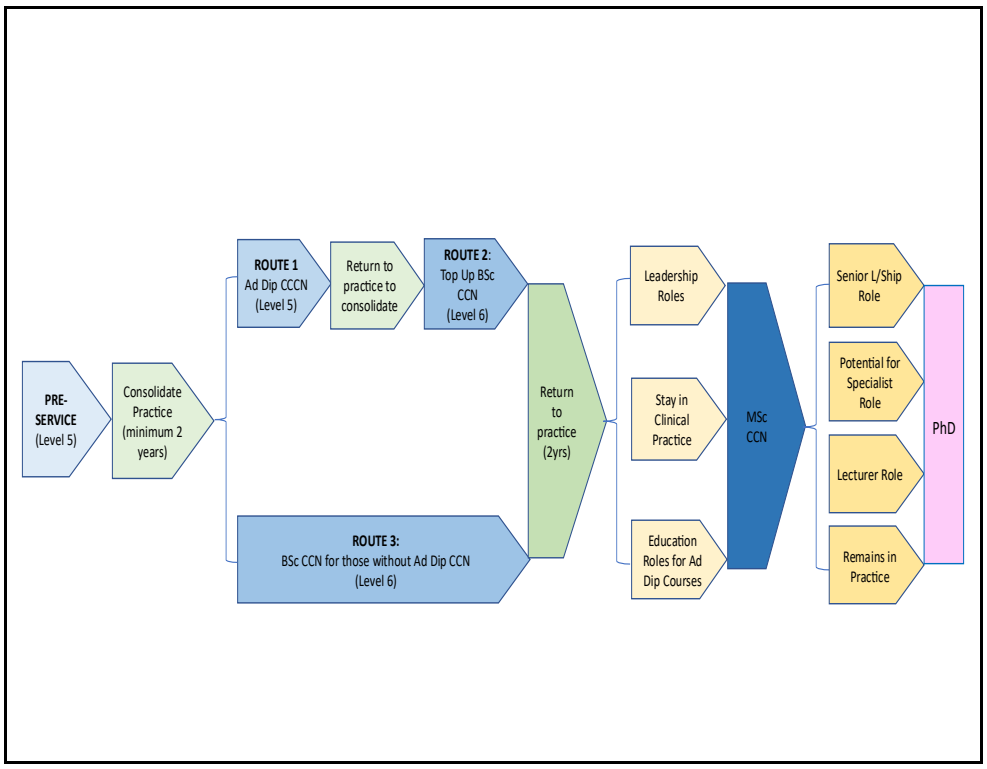


Figure 9.4: Visualisation of the new career structure for critical care in Zambia.

With the majority of nurses completing a Diploma at the point of entry registration, there needed to be a bridge from Diploma through BSc to MSc level. Therefore, the Advanced Diploma could be studied independently and used to RPEL into the BSc programme at a later stage. This would allow all nurses who had completed the Advanced Diploma in Critical Care Nursing, to continue with their studies without being disadvantaged. Therefore, two routes were developed:

- Route 1: Programme for those with Advanced Diploma
- Route 2: Those without formal critical care qualification

9.2.1 Route 1: Those with an Advanced Diploma in Critical Care Nursing

This roadmap was designed to meet Zambian regulations for BSc level study. The planning stage involved engagement with stakeholders and detailed study of the content and competencies of specialised critical care nurses. The proposed programme was designed to be completed in two years. During the first-year students complete modules / courses requisite for BSc level study but not undertaken in initial nurse training or the advanced diploma course. In line with the nature of critical care nursing, anatomy, physiology and systemic pathology are seen as crucial, as only with an in-depth knowledge of these topics can the specialist practitioner develop knowledge, skills and attitudes required for BSc level practice. It is also accepted that in a BSc programme, the basic sciences of human psychology, biochemistry and sociology must be included in the overall study programme. In recognition of the move from diploma to BSc level study a course in academic skills had to be included in year 1. The second year focused on the knowledge, skills and attitudes needed to raise the expertise gained in the advanced diploma itself to BSc level. An additional component of this year is the research project, through which students demonstrate their ability to integrate and apply all elements of the total programme. The progression is summarised in table 9.1.

9.2.2 Route 2: Those without formal Critical Care Qualification

This route was designed to meet Zambian regulations for BSc level study for nurses who did not have a recognised qualification in critical care nursing. The planning stage involved engagement with stakeholders and a detailed study of the content and competencies of specialised critical care nurses. The students in this group while entering education and training to become specialist practitioners, do not have the required expertise to move directly to degree level study. As with all BSc students in Zambia, they are required to complete courses not offered in pre-service education and training. They also need to cover the entire programme for specialised and specialist critical care nursing, thus, their programme encompasses three years, with the second year delivering the content necessary to move

towards BSc level practice. Table 9.1 outlines the progression for those without a specialist course.

Table 9.1: Summary of Progression Routes			
Year	Course	Route 1: Progression for those with an Advanced Diploma in Critical Care	Route 2: Progression 3-year Programme
1	Natural Sciences	Exempt	Exempt
2	Basic Sciences	Required	Required
3	Specialist Critical Care Nursing	Exempt	Required
4	Specialist Critical Care Nursing	Required	Required

The challenge for Zambia was trying to build capacity within an already overstretched workforce. Therefore, these pathways allowed for those with critical care qualifications to have their prior knowledge and skill recognised but also return them to their clinical areas in the shortest time possible. It was important to recognise the need to develop a sustainable critical care nursing workforce and not plug the gap caused by the absence of doctors. Therefore, it was important that the terms ‘task-shifting’ and ‘advanced practice’ were understood by stakeholders.

In nursing, while it could be argued that the workforce conceptual framework could be superficially identified as ‘advanced practice’, it is important to note that the International Council of Nurses (2020) identifies that such nurses must be educated to a minimum of MSc level. In the Zambian context the jump from Diploma to MSc level education was too great, due to a lack of in-country education programmes, and limited numbers of graduate level critical care nurses, faculty and leaders in practice. However, strategic stakeholders were keen for the career structure to have room for MSc level practice in the future. Also, that the difference between specialist and advanced practice was understood, in the Zambia context, the term ‘advanced nursing practice’ is not a concept that is recognised by the nursing regulator. Therefore, when developing the career structure, key discussions were held to explore the different levels of practice, with careful consideration given to understanding and defining the difference between diploma, BSc and MSc level nurses. During the review and validation events stakeholders shared their expertise and experiences and using these worked together to clarify the rationale for a BSc and MSc in Critical Care Nursing. This included definitive statements as to why degree level expertise was important and the differences between the programmes.

9.2 Scope of Practice

As part of the process to differentiate between the different levels of critical care nursing, it was agreed that the overall scope of practice needed to be defined and accepted. At the time of the study, nursing in Zambia was governed by the General Nursing Council (GNC) and

through the Nursing and Midwifery Act which had been revised in 1997 (GRZ, 1997). When the Act was repealed in 2019, to reflect the changing role of nurses the regulator changed its title and remit to the Nursing and Midwifery Council of Zambia (NMCZ) (GRZ, 2019). This study spanned both Acts which provides nurses with a scope of practice which includes prescribing drugs in accordance with the nurse and midwifery formulary. Following a diagnosis they need to undertake therapeutic interventions which may consist of insertion and removal of devices, intubation, resuscitation and infusions (GRZ, 2019). This allows for a greater scope of practice reflecting the healthcare environment in which nurses practice. To be acceptable to the MOH, specialist practice needed to be added to the conceptual framework and accompanying policy model, stating the approved definitions and a scope of practice specifically for critical care nursing. Therefore, following one of the workshops the following statement regarding critical care nursing was developed to underpin the new conceptual framework. This states a Registered Critical Care Nurse is:

> *'A registered nurse who has successfully undertaken an approved course of studies in the art and science of critical care nursing to become a skilled practitioner, crosscutting all specialisations. The knowledge skill and expertise are not only confined to the critical care unit but have a hospital wide impact in the prevention of acute deterioration, assessment and management of critically ill patients during all phases of their care from the immediate life-threatening and acute stages of illness and disease through the rehabilitative care to recovery and / or end of life care.*
>
> *Critical care nurses are an essential element of the health care team, who in clinical practice often spend the most time with critically ill patients and are responsible for the co-ordination of all patient care. They are often the conduit between the medical teams, patients and their families. With ongoing continuous professional development and experience, critical care nurses will continue to develop their knowledge, skills and expertise in clinical leadership and management and decision-making. They share and develop critical care nursing in practice through bedside teaching, assessment and mentorship of peers and others.'*

Once this definition had been submitted to, and accepted by the MOH and the nursing regulator, it provided, for the first time, an approved scope of specialist practice. This resulted in the role of critical care nurses becoming openly recognised, with their increased scope of practice and 'task-shifting' acknowledged and accepted. For the first time at strategic level, it was recognised that critical care nurses provide comprehensive care to the critically ill patient. The scope of practice was then used to develop the different levels of critical care nurses, which was based on application of the spiral curriculum and Bloom's taxonomy. The scope of practice identifies the ubuntu concept of the interconnectedness of the critical care nurse.

9.3 Conceptual Framework

In epistemological terms, developing a conceptual framework provides an insight and snapshot of reality into a particular area of practice or problem, which improves knowledge and understanding (Flannery, 2016). This was essential as to be accepted and implemented

there needed to be structure and coherence in a context specific format, that was accessible, acceptable and fitted within the implementation strategies in use by key stakeholders. For this, it was crucial that critical care nurses at all levels had the opportunity to input into the developments that would affect their professional speciality. The use of a mixed-methods co-operative inquiry methodology facilitated their input at relevant points in the study and enabled them to see how their contribution fitted into the study. The development of this conceptual framework and model enabled relationships and links to be established locally and nationally and provided new insights and knowledge of this new area of nursing practice in Zambia.

Of key importance for Zambia, was that as Glover et al (2020) argue a conceptual framework provides a web of interlinked concepts which can be used to understand a phenomenon. While Turan et al (2022) point out a conceptual framework allows for concepts to be classified, defined, and organised into ideas and identify the links between them. Therefore, for this study a conceptual framework was crucial, providing a substantial contribution to new knowledge needed for this speciality to take its rightful place in the health system (Lingreen et al., 2021). It is accepted that as Ivey (2015) argued, in recent years conceptual frameworks have become seen as less applicable. However, as Nelson (2017) points out they can still have a key role as they offer insight and explanations for professional nursing curricula and practice. This is an essential issue when a new speciality with its own career structure is being developed. However, it is important to note that there is potential confusion in the use and understanding of conceptual frameworks, as over time the term has been used interchangeably with theoretical frameworks a different concept, which limits their definition and use (Green, 2014; Nelson, 2017). Luft et al (2022) argue that such a transposition is wholly inappropriate as a theoretical framework is very different, having a strong theoretical base. Their view that it is essential to comprehend the difference is supported by Vieira et al (2021) who point out conceptual frameworks have a different remit and are designed to guide nursing practice as it underpins both knowledge and skills. As Lingreen et al (2021) point out if conceptual frameworks are based on limited theoretical foundations there is risk that the framework and model will not be able to bridge the theory-practice gap. this is supported by and will be either inappropriate or ineffective, thereby defeating the rationale for their development (Ravitch and Carl., 2023). Therefore, to avoid any confusion in this study, table 9.2 below has been included highlighting the differences between theoretical and conceptual frameworks.

Table 9.2: Differences between Theoretical and Conceptual Frameworks (Adam et al., 2018, pg. 440)	
Theoretical Framework	**Conceptual Framework**
Provides a general or broader set of ideas in which a study belongs	Refers to a specific or narrower ideas a researcher utilises in their study.
Based on existing theory / theories in the literature which has been tested and validated by other scholars	Based on the concepts which are the main variable in a study.
Form of a module than pivots a study, with its exponents and the results of their studies.	Researchers own constructed model that they use to explain the relationship that exists between the main variables in their study. It can also be an adaptation of a model in an existing theory which a researcher adapts to suit their research purpose.
It is well developed, designed, and accepted.	Its design is not accepted, but it's a proposal of the researcher's answer to the research problem they have devised.
It offers a focal point for approaching the unknown research in a specific field of inquiry.	It is the framework that shows logically how the research inquiry is to be undertaken.
It consists of theories that seem interrelated with their propositions deduced.	It consists of concepts interconnected to explain the relationships between them and how the researcher asserts to answer the research problem defined.
It is used to test theories, to predict and control the situations within the context of a research inquiry.	It is aimed at encouraging the development of a theory that would be useful to practitioners in the field.

As Ravitch and Carl (2023) point out conceptual frameworks consist of multiple layers that intersect the concepts and evolve during the research study, referring to this as an ecosystem, with multiple parts which are both interconnected with an interdependence on the various parts. Therefore, when planning this study, the seminal work by Bordage (2009 pg. 313) was an invaluable starting point, with its argument that a conceptual framework should be a lighthouse lens which can 'illuminate' and 'magnify' concepts (Bordage et al., 2016). In Zambia, where the country had no professional framework and model for practice, use of Bordage's (2009) approach provided an essential first step that enabled the MOH and Critical Care Nurses to gain insight into and understanding of how their profession had developed over time. It also enabled the hidden and visible areas of specialist practice to be explored and understood at both policy and practice level. Using this, it was possible to search out and illuminate areas of specialist practice described as 'hidden in plain sight' which meant that these could be made visible and explored by practitioners, and then recommendations made for policy makers leading to increased understanding on all levels.

As a key aim of this study was to develop a new way forward for specialist practice; it was seen as essential that all explanations, descriptions and developments be visible to practitioners, educators and stakeholders. In consequence, this whole chapter has been presented as a working document demonstrating how the conceptual framework developed and evolved into its final format. Once complete it was submitted to the MOH, who after careful consideration, fully accepted it without change. Therefore, it can now be used by hospitals and

universities / Colleges to underpin their education and development of new programmes. This positive output is far more than had been initially hoped for, with critical care now having a government approved base on which to build. This unexpected bonus has had far reaching consequences, as searches of the literature identified that prior to the study no specific conceptual frameworks for critical care nursing in Zambia and Sub-Saharan Africa could be found.

As part of the development of the conceptual framework, extended international searches were carried out to explore and review other specialist areas of practice, to ascertain whether any of these could offer examples that could be used in this study. The searches revealed that over a decade ago, Wolf et al (2012) outlined a conceptual framework for emergency nursing in Africa, arguing that emergency nursing practice should be recognised as having have distinct areas and criteria for practice. Their work included evaluation of cognitive and psychomotor skills, comparing the different areas using Benner's (1984) competency framework. However, a limitation of this work for Zambia was that it was based on developments from high income countries. In consequence, although the new Zambian critical care nursing conceptual framework and model also reflects different areas of practice, Benner's (1984) conceptual model was deemed too narrow and limited, so was rejected as a comparator. The African Federation of Emergency Nursing curriculum (2016) was then reviewed, this was developed following Wolf et al's (2012) conceptual framework, but a major concern arose on reviewing the curriculum itself. The content was found to be limited, using terminology such as 'basic', 'intermediate' and 'advanced' to differentiate the different levels of knowledge, and there were no clear definitions of what each level meant. Also, there was no distinct difference in the clinical competences at each of the three levels, and no apparent definitive link to education and training. Had this approach been accepted for Zambia, it would have limited developments of specialist practice as it would not have been possible to develop the workforce in terms that fitted with the Zambian healthcare system. For example, a Registered Nurse who had completed a specialist programme at Diploma level was deemed to have more than 'basic' skills, but there was no framework to map the skills against, and no way to identify what this meant in terms of specialist competences. Therefore, as with Wolf et al's (2012) original work, this curriculum could not be used to make formal assessments or comparisons to support critical care nursing in Zambia.

In a search for more relevant research, Vieira et al's (2021) global review of conceptual frameworks of intensive care nursing practice was critically appraised, but this revealed that there was no consensus or even general agreement for use of any specific conceptual framework or model. Patient centred care was identified as a core theme, but this still needed to be formalised into an accepted framework. In this research study participants at all levels

consistently argued that patients must be the centre of care although it accepted that as Vieira et al (2021) argue no one model will fit all areas. Instead for each specific area of practice, new models need to be created to address the individual needs of patients and critical care units (Henriksen et al., 2021). The extended searches also revealed that over the last two decades, few studies have even attempted to explore the use of conceptual models in critical care nursing (Vieira et al., 2021; Tembo 2023), supporting Sale and Carlin (2025) argument that nursing has lost its way. This is not only a missed opportunity, but it could also have adverse effects on the profession. In the absence of a conceptual framework to guide them, it is difficult for policy makers, education providers and nurses (including students undertaking specialist programmes) to understand the overall perspectives that constitute nursing. Also, to follow how the programmes are designed and integrated to enable them to become and sustain being competent specialist practitioners.

Recognising the importance of individualised care with the patient being central, was the starting point for the conceptual framework, the patient pathway in critical care was mapped. This exercise revealed inequity in resourcing and care at different stages of the pathway. Again, the literature was limited particularly for Sub-Saharan Africa, but overall, a range of themes were identified which included high mortality and morbidity, lack of resources, lack of trained critical care staff and lack of access to critical care (Baker et al., 2025) (see chapter two). While some of these issues were clearly beyond the scope of the nurse and the conceptual framework being developed, some of the factors needed to be included as they could be attributed to a variety of issues, including the care provided prior to admission to, during and post critical care.

In consequence, this conceptual framework was developed using an abductive process which involved integrating theory and empirical data (chapters 5-8), which included reviewing and critically appraising integrating existing conceptual frameworks (Lingreen et al., 2021). This approach was adopted because of the limited availability of evidence and models in Sub-Saharan Africa in general and Zambia in particular. In consequence, as this was an iterative process, which continued throughout the study, leading to the conceptual framework evolving, and integral within each iteration building and refining the previous steps to enhance understanding of the findings. As outlined in figure 9.5 below, there were several outputs from this research study that needed to be carefully integrated into the overall framework for it to successfully meet the needs of critical care nursing in Zambia. As indicated previously, Bordage (2009) lighthouse concept, was used to illustrate how the conceptual framework as the main beam and the factors circling round feeding into it.

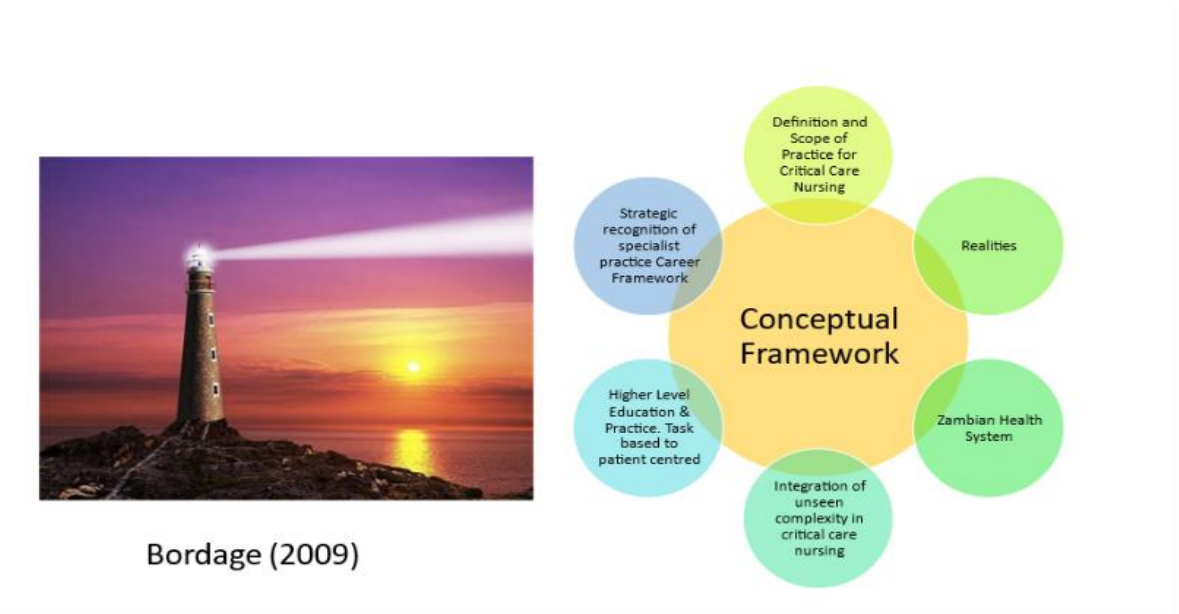


Figure 9.5: Components of the conceptual framework

One such framework initially identified as a possible starting point was Henriksen et al (2021) conceptual framework on core qualities and competencies for critical care nurses. This is directly related to critical care nursing practice and encompassed the non-technical aspects of the nurses' role. However, on detailed critical review, this framework did not encompass all aspects identified by participants in this study, and additionally (as with much of the literature found), it was based on a HIC setting. Also surprisingly, as it is a recently developed framework it did not take account of the need for the patient to be at the centre of care. The need to reject this conceptual framework, was not unexpected, nor was it an unfamiliar outcome of critical appraisal. Maxwell (2013, Pg 41) recognised the challenges of finding appropriate conceptual frameworks, pointing out that they need to be individually developed and created, not discovered or found 'ready-made' and that they need to be tailor made for each specific setting and recognise the socio and cultural context (Tembo, 2023).

The challenge was that there are a range of different nursing models all of which are based on HIC healthcare settings, use different domains and have different processes for application. In addition, these were all designed as theoretical models which could then be applied in clinical practice. In consequence, they took no account in differences in specialities and were developed in an era where specialist practice was relatively new. In the UK, models were trialled and used for several years, as they were developed in an era when nursing was trying to identify its role as separate discipline to medicine (Zhang, 2024; Murphy, 2010). Originally designed for general nursing practice, few were developed specifically for critical care. In the UK the Mead Model of Care (Edwards, 1992) was developed to offer a framework to support

critical care nursing practice, however, a critical review of the literature identified minimal current evidence on the use of critical care models (Vieira et al., 2021).

After reviewing several different conceptual frameworks (Vieira et al., 2021; Henriksen, 2021; DaSilva et al., 2015; Sommers, 1987), none of which were seen as suitable for the Zambian context being Western based and developed. Following this several models were discussed, for example, Sommers (1987) although dated, stakeholders did like the integration of general nursing models, such as Roper, Logan and Tierney (1990), this was the basis for the UK Mead Model, but it was found to limitations in care planning in practice (Viera et al., 2021). In addition, again they were not designed for an African context. There was also some confusion over the term nursing model and conceptual framework, and there was a discussion, which led to recognition that although Roper, Logan and Tierney's (1996) nursing model were used in Zambia, it was not critical care specific. In addition, stakeholders reported that nursing models are only taught to BSc and MSc nurses, theoretically with little application into practice. While Zambia has retained a focus on nursing models, the limited published evidence on their use in resource limited settings further reduced their applicability. As Tierney (1998 and 2020) has pointed out several times, nursing models did have their place, but globally their use has continued to decline as specialists' nurses and new fields of nursing focus on developing patient pathways for specific diseases and conditions (Zhang, 2024). Therefore, it was felt that a new conceptual model which was context specific needed to be developed, this is supported by Vieira et al (2021) critical review of the literature, which identified many critical care models are outdated and there were few studies supporting their implementation, resulting in them remaining theoretical. In consequence, stakeholders were clear they wanted a current conceptual framework which could be operationalised and was context specific.

Ubuntu has the potential to support the creation of a new critical care nursing model and framework, which will fit within the African context as it takes account of the individual, the community and society as a whole. Mulaudzi and Gundo (2024) outlined development of an Ubuntu community model in nursing in selected provinces in South Africa, and demonstrated the interconnectedness of all aspects of life on health. In consequence, for this study ubuntu was used to develop the conceptual framework, and how this could be used further to develop a framework for practice.

Henriksen et al (2021, p4706) conceptual framework which used arrows to illustrate the core qualities and competences in education of critical care nurses, was the most suitable visual format. However, this was education based and did not truly illustrate the nature of critical care nursing practice, which is not static. Therefore, the conceptual framework developed for this study, accepted the concept of a central point with key activities focusing on the central point. However, vital to this conceptual framework was using ubuntu to encompass the patient, and

their families, surrounded by the hidden and visible complexities of critical care nursing. To recognise the continual nature of nursing care, the model was presented as an iterative cyclic process (figure 9.7). This was chosen as it is similar to the cycles of the nursing process and could therefore, fit within the overall Zambian nursing structure. To synthesis the findings from the different components of this study into the final conceptual framework, table 9.3 was constructed, identifying the different research methods, findings including main themes and how these linked to the career structure and conceptual framework.

Table 9.3: Summary of Research Methods, Findings and Main Themes										
Documentary data analysis	**Stakeholder research workshops**	**National E-Survey Questionnaire**	**Focus Groups**	**Research workshop with critical care students**	**Stakeholder Engagement (2)**	**Cross Sectional Survey**	**Mentorship Model**	**Scope of practice**	**Rationale for career structure**	**Conceptual framework theme**
Health System strengthening	Need for change	Critical Care Units & Staffing	Leadership	Resource limitations		Critically ill patients on wards need for RCCN everywhere	Professional Standards	Hospital wide impact	Confirms need for career structure for RCCNs	Recognition of role and function Competence Patient safety Communication
Health Care Statistics			Changing disease burden			Characteristics of patients admitted to critical care (neonates, paediatrics, obstetrics and adults)		Cross cutting all specialities	Refute need for direct entry CCN Need to increase RCCN Identification of different knowledge and skills needed	Competence Education & lifelong learning Patient safety Communication
General Nurse Education & Practice		Experience								Competence
Need for critical care and critical care nurse education	Assessment of competence Mentorship of students Move away from traditional pedagogies Prepare for higher level programmes	Academic Course Structure Level of education E-Learning Simulation	Extended role & diversity of practice Opportunities The current programme	Knowledge Education Advanced Clinical Skills Decision Making	Higher level qualifications Transferable skills		Teaching & Assessment tools	Mentorship CPD to develop knowledge skills and expertise Leadership Management Decision-making	Strengthening workforce through career structure Academic courses linked to practice	Patient safety Mentorship Education & lifelong learning Constant and alternative bedside presence Delivery of holistic care
		Protected time post course			Mentorship		Clinical Learning Environment	Mentorship Bedside teaching role Mentorship of peers and others Approved course	Supported need for career structure Developing different roles and opportunities Career progression	Constant & alternative bedside presence. Competence Communication Education & lifelong learning Mentorship

Using the table above, the next step was to integrate the different outputs from this study into the overall conceptual framework. This was crucial to allow that all of the elements of critical care nursing are explicit and would help make the implicit explicit. Figure 9.6 illustrates the themes of the conceptual framework and how they linked to the scope of practice.

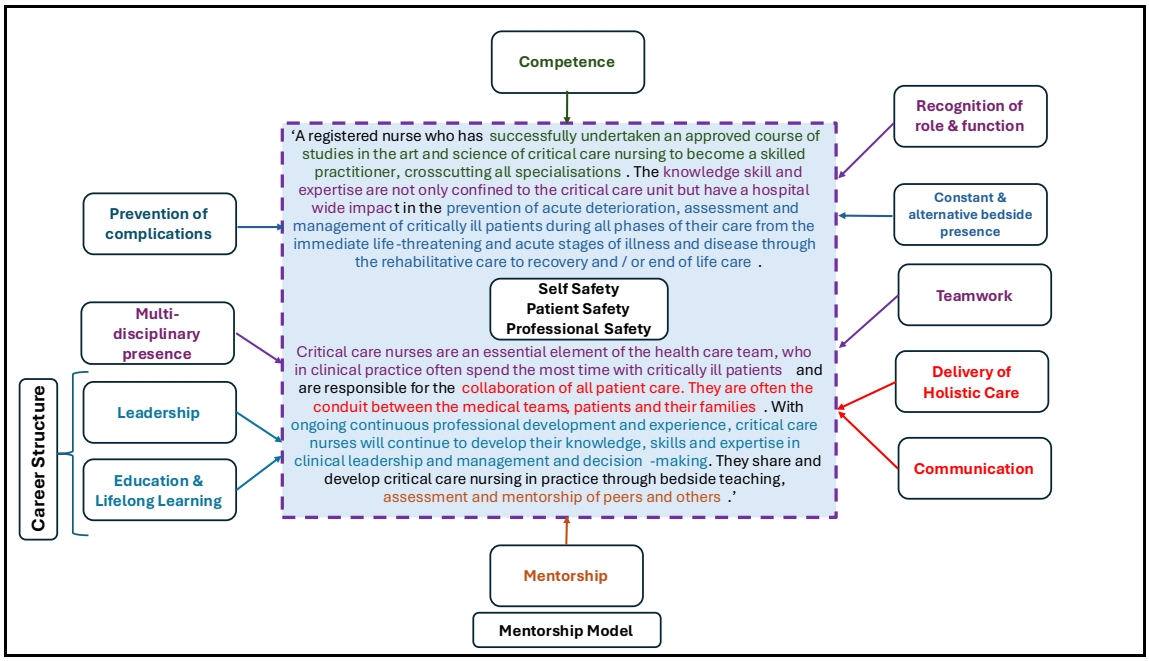


Figure 9.6: Linking of Themes from Conceptual Framework to Scope of Practice.

When developing the final conceptual framework, it was important to differentiate the concepts within safety. Traditionally, the focus has only been on patient safety, however, while the term patient safety was an important theme identified by stakeholders, this did not address other key elements of safety that affect patients. As Henriksen et al (2021) points out being safe may not translate to patients feeling safe, for example, patients admitted to critical care may feel vulnerable (Latour et al., 2022), even though in hospital terms they are deemed safe. While Oyama et al (2025) identified that patients admitted to critical care often experience physical and psychological discomfort, which includes communication difficulty. In consequence, it was important that patient safety was accepted as crucial together with the holistic care of patients to make them feel safe was equally important. Also, it is essential to point out that professionals need to feel safe, but it is only recently, that focus has been placed on the impact of the work environment, cultures and practices on nurses themselves (Mistri et al., 2023; Maslow, 1943; Hoaas et al., 2018). This was seen as a key concept, as in terms of ubuntu everyone is inter-connected, therefore, if the nurse or other healthcare professional feels vulnerable, this affects the group and ultimately the care provided. Stakeholders recognised that the current international definition of patient safety was not adequate as it did not meet the ubuntu concepts (WHO, 2021). In consequence, the terms self-safety (relating

to the patient feeling safe), patient safety (relating to the patient being professionally safe) and professional safety (healthcare professionals feeling safe).

When developing the conceptual framework, it was important to understand the Zambian context for healthcare delivery. Family members are important and an integral component of patient care and safety in both the hospital and community setting, therefore, in ubuntu the term ‘patient’ encompasses the family. However, it is important to point out that in the critical care setting, family members may have a less obvious role and the nurses need to find strategies for inclusion that will prepare them for post-critical care, which may include bereavement or complex rehabilitation needs.

The next step was to develop the overall conceptual framework. The challenge here was representing a 3-dimensional framework in 2-dimensional terms. Ubuntu is not linear; it is cyclic with integration and interconnectedness within and across the different domains. When developing a diagrammatic representation due to the nature of the final conceptual framework, no one diagram adequately explained how the concepts are linked together. Therefore, figure 9.7, shows the diagrams side by side. Figure 9.7a illustrates the conceptual framework using a lateral perspective, which shows the cyclical nature, with safety at the apex. The conceptual framework was designed as a triangle, whereby a sound base is needed to build upon. It recognises, through the spiral curriculum, that critical care develops through the course of their careers, that can be revised and reflected on with gradually increasing complexity. In terms of ubuntu, as the community of critical care develops and evolves, newer groups are added to the group, ultimately, leading to a community that encompasses and works with all levels of safety. Figure 9.7b shows an overhead view of the conceptual framework and this illustrates the interconnectedness of each concept and the central notion of safety.

This framework was accepted by the MOH, and for the first time, they had a conceptual framework based on patient safety an essential component of their strategic health plan (MOH, 2022). They liked the fact that the patient was central to all care, and that using this approach it would be possible to identify curricula and competencies for the full scope of practice of critical care, something they had not been able to do. It also has the benefit of being in a format that can be applied at all education levels, thereby providing the basis for a progressive career structure for critical care nurses. This model had been designed in a format that was acceptable to critical care nurses, educators, regulators and policy makers. All of these groups had had their own ideas as to what was essential, and reviewing this new framework each group had been able to check and agree the inclusion of what they saw as core elements. The final conceptual framework combined all the elements from this study seen as essential, recognising 11 key criteria incorporated into the model.

Figure 9.7 Conceptual Framework for Critical Care Nursing in Zambia

Figure 9.7a: Lateral View of the Conceptual Framework

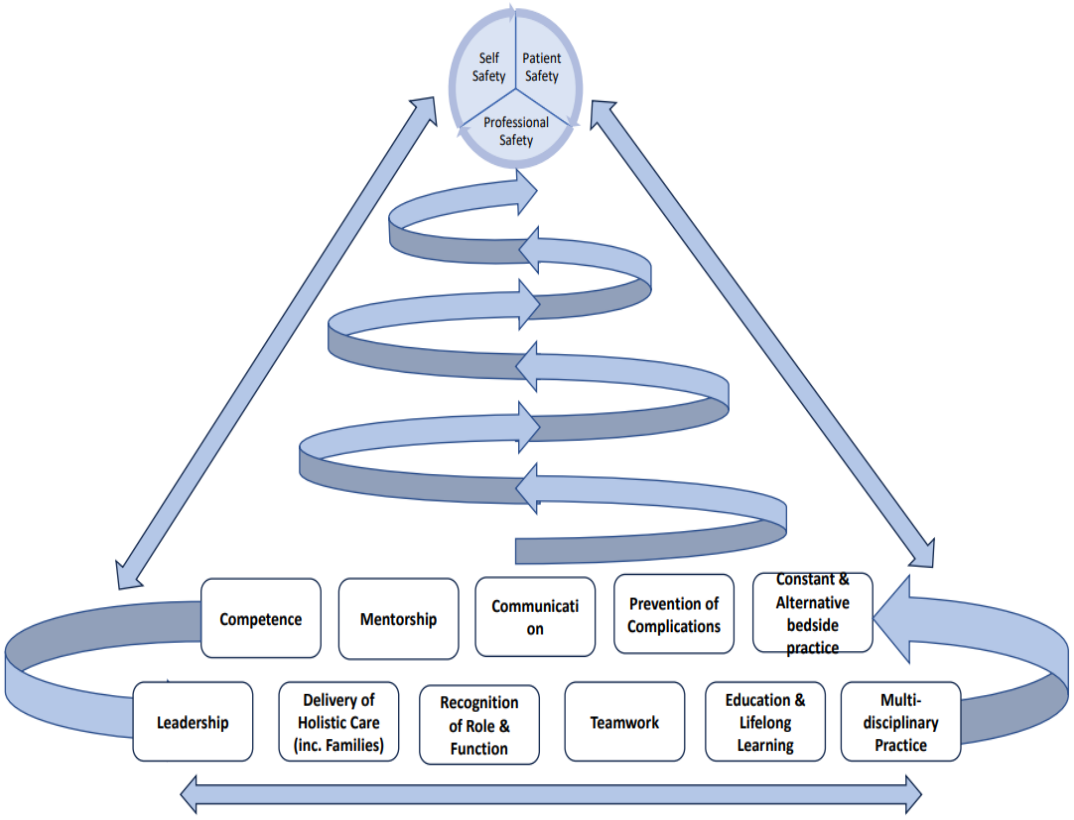


Figure 9.7b: Overhead View of the Conceptual Framework

Education and lifelong learning were deemed crucial to support a career framework and encourage nurses (and employers) to support nurses to complete higher level studies. In addition, access to continuing professional development (CPD) is necessary to remain clinically current and abreast of changes in evidence (Bvumbwe et al., 2025). As illustrated in this study, mentorship was identified as essential, particularly because there were limited numbers of critical care nurses in practice, therefore, mentorship was identified as a way to share knowledge and skills but also raise the standards of nursing care in practice. Therefore, the mentorship model developed in chapter 7, was also adopted and was published in an international peer review journal (Carter et al., 2021) (Appendix nine).

The WHO (2020) identified the urgent need for nurse leadership at all levels, therefore, this was seen as an important component of the framework. Due to the challenging and demanding field of critical care nursing, effective nurse leadership was seen as crucial to achieve the best outcomes for patients with complex needs. This would enable them to respond to the unique, dynamic and constantly evolving situations that arise in the critical care environment. Also, it was recognised that at the time, there we no strategic critical care nurse leaders, therefore, it was accepted that leadership education needed to be at all levels to fit them for roles from bedside to national leadership and not a short add on, when a nurse is promoted.

While communication, prevention of complications, constant and alternative bedside presence, multidisciplinary presence, competence, teamwork and delivery of holistic care were all identified as separate elements, in practice they were seen as inter-related and interlinked. They were also needed to explain the hidden complexity in critical care nursing to both patients, family members, other nurses, other healthcare professionals and policy makers. At the time, the majority of RCCNs were educated to Advanced Diploma level, where care given is based on descriptive protocols learned as step-by-step tasks with repetition leading to task based competence in following procedures. Thus, decision making was based on experience not the critical appraisal and review evidence needed by critical care nurses (Stalpers et al., 2025). This was an important point because with complex nursing activities seen as tasks, their intrinsic value was not seen by nurses or others. Figure 9.8 provides an example delineating the steps in decision making of a nurse at diploma level (the level of RCCNs at the time of the study).

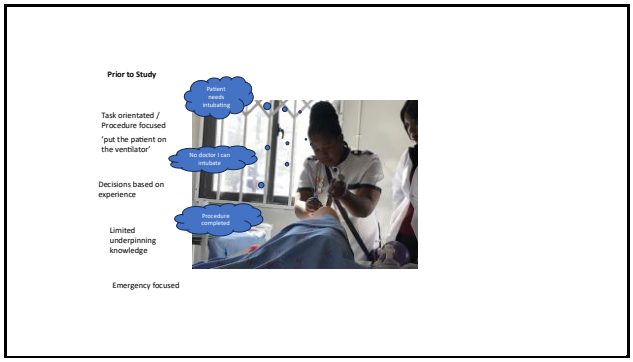


Figure 9.8: Diploma Level Approach

It was accepted that critical care nurses needed enhanced competences from the additional education and training at advanced diploma level and therefore could take on more specialist roles. Jackson et al (2021, p.1) argue, “nursing is multi-faceted, comprising a composite of physical, emotional, cognitive and organisational labour”. However, looking at the curriculum for the advanced diploma critical care, while critical care nurses were seen as needing specialised knowledge, but not as having specialist roles, the focus was not on how the different components combine to facilitate the critical decision-making, higher-level competences, leadership and management or research found at specialist BSc level practice. Hence there was no formal scope of practice designating use of these recognised attributes of specialist practice and nor were they evident in practice. This may have been in part because the complex nature of nursing has numerous elements that for those outside the profession are hard to recognise, particularly as nurses respond to individual patient need, and in consequence to the non-nurse care appears variable (Borghmans et al., 2024). The challenge of demonstrating the difference between perceived care and actual care is not new, with increasing emphasis on the hidden complexity of critical care (Stalpers et al., 2025) figure 9.9 below illustrates the reality of the differences between actual and perceived roles.

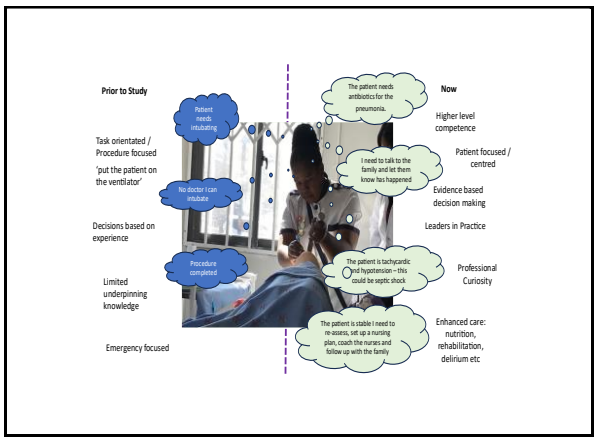


Figure 9.9: Using Enhanced Knowledge and Skills

The new conceptual framework, scope of practice and career structure for critical care nursing needed to reflect the higher-level physical, emotional, cognitive and organisational knowledge and skills. Figure 9.9 illustrates how critical care nurses are now able to link knowledge and skills to deliver holistic and complex care, which includes communication and support for the family members. It also affirmed the need to develop the career structure, as this would lead to the recognition of the role and function of critical care nursing identified in the conceptual framework, to provide sustainability and retention. The then 1-year advanced diploma was a good starting point but did not provide the depth of expertise needed to accept and safely deliver many of the 'tasks shifted' by doctors into the role of specialist practice. As indicated in this study, the new conceptual framework for critical care nursing has moved away from task centric nursing practices to holistic patient care which includes family involvement, an important step in reinforcing individualised care with the patient central in the model, a radical change to practice. This move from tasks to holistic care, means that it is essential that critical care nurses are proactive in the care provided and can adapt and address the ever-evolving patient and family situation.

The MOH and stakeholders were adamant that critical care nurses needed to be visible in practice and wanted to challenge the perception that once a higher-level qualification is achieved, the nurses move to an administrative job. It was acknowledged that initially, to begin the first cohorts of higher-level courses would result in moves to administrative jobs, as more graduates qualified, they would provide higher level care at the bedside. However, for this to be possible, this needed to be included in a recognised and accepted career structure. With the conceptual framework accepted, in the absence of appropriate international data to support and/or guide development of the career structure, the decision was made to map out the service actually being delivered in Zambia. This would then be used as the basis for moving forward, identifying exactly where critical care sat in service provision. The findings from this exercise were unexpected, although there had been government investment with recognition of inequity of service provision, the full extent of the disparities had not been evident. Strategic documentation (MOH, 2017) referred to investment in resources but reviewing exactly where resources had been spent revealed a very uneven spend. This illustrated the extent of the challenges facing critical care and the need for the nursing provision to be seen as a recognised speciality for government to address the focus of its investment. Figure 9.10 below demonstrates that at the time when the mapping was carried out, critical care was a relatively minor part of service provision. This finding fits with international statements at the time that critical care was seen as a 'luxury service' (Mer et al., 2022) and that in resource limited settings other higher priorities existed that governments should focus on (Losonczy et al., 2021).

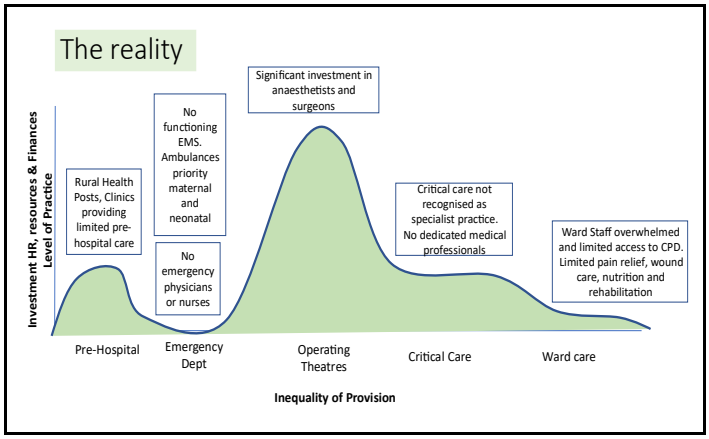


Figure 9.10: Development of Acute and Critical Care Healthcare Services

The documentation also revealed that although there were rhetorical statements on the importance or primary care and rural health (MOH, 2022) in reality these too were relatively small aspects of service provision. There was little evidence of pre-hospital emergency care, with the bulk of investment being spent on increasing the numbers of anaesthetists and surgeons (Meara et al., 2015; Asingei et al., 2023; Asimah-Ackah & Adzo-Kwashie, 2023). Interestingly, it appeared that little or no attention had been paid to increasing theatre nursing although this branch of the profession had been in place since the 1970s. Although, it has to be accepted that without the specialist staff to support the increased numbers of surgeons and anaesthetists, positive outcomes will remain limited (Asimah-Ackah & Adzo-Kwashie, 2023). In addition, there had been no focus on the crucial area of care or what happens to the patient after surgery, which includes critical care. Reasons for this may have included that critical care was not recognised as a full medical speciality, with no dedicated intensivists, and anaesthetists having competing priorities, with theatres formally given much higher priority. In consequence, it was not surprising to find that these were limited services, only slightly better resourced than the wards which were reported to be frequently overwhelmed (MOH, 2017).

In consequence, it was essential that a way be found to gain recognition for these essential nurses, as only that way could their expertise be used to improve the patient pathway, with continuity and links between all the steps being clearly identified (WHO, 2025d). Therefore, the next phase was to review the officially identified individual pathway highlighting the relationship between critical care and ward-based care. This revealed that although not showing as a formal link, the nurses on the wards had recognised the additional expertise found in critical care, and that accessing this could improve the care they gave. This had resulted in the relatively small group of specialist nurses finding themselves in the position of nursing in the critical care and at the same time being called upon to support their ward-based colleagues, in the ED and theatre. This situation was found to be particularly frequent in

smaller hospitals where there are fewer doctors and few if any specialist doctors. To try to cope with this additional role, they had developed a system as illustrated in figure 9.11. However, as the role had no official recognition, they faced significant challenges in servicing the ward requests without detriment to the critical care patients, and long term this extension of services without additional critical care nurses will be hard to sustain.

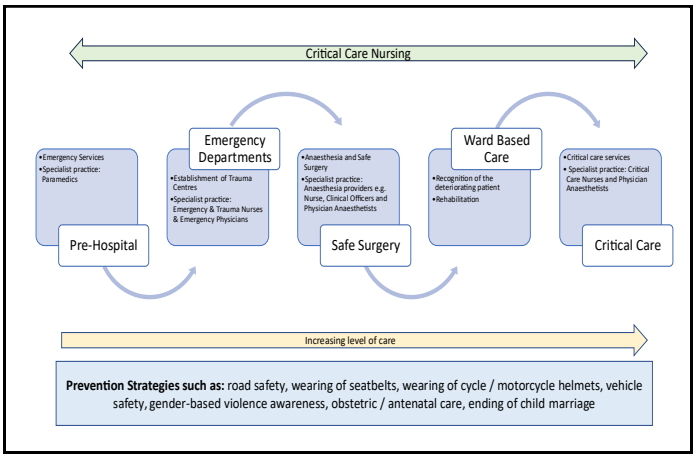


Figure 9.11: Diagrammatic Representation of Surgical Pathway

The examples given above clearly refer to safe surgery and trauma, however, Zambia is facing a rising burden of non-communicable diseases (NCD) (Mukanu et al., 2017). Cardiovascular and ischaemic heart disease has continued to rise and has become increasingly prominent in the working-age population (Mukanu et al. 2017). Therefore, the patient journey needs to encompass the medical pathways such as cerebrovascular accident management, myocardial infarctions, cancer (figure 9.12).

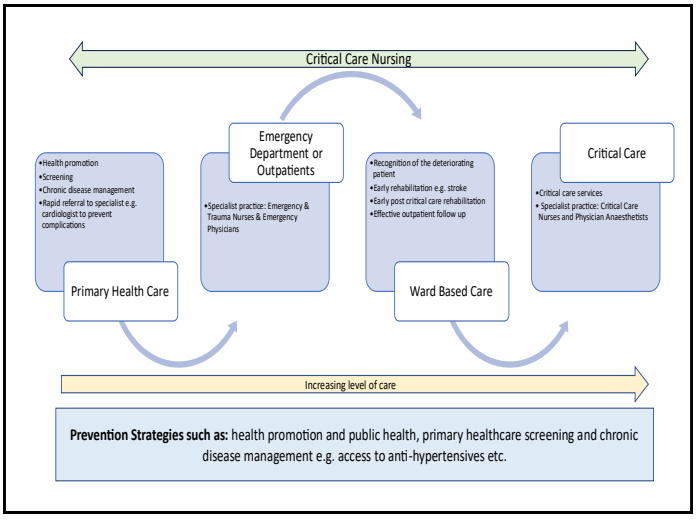


Figure 9.12: Diagrammatic Representation of the Medical Pathway

As the data has indicated for the nurses, these processes were deemed crucial providing context and insight into the strengths and limitations of strategic policy and practice situations. In the light of ubuntu the theoretical construct supporting this study, this was deemed as crucial, as it uses an ethical and values-based approach, essential to provide equity in access to care (Ajitoni et al., 2024; Mulaudzi & Gundo, 2024). With the changing burden on disease, using a philosophy that emphasises solidarity, cohesion, and collaboration can support families and the community as well as the patient (Nyandeni et al., 2024). In addition, this approach can be used to identify and reduce stigma from diseases such as HIV and TB (Rasweswe et al., 2024). For critical care this is a crucial point to consider, the effects of critical illnesses such as life-changing trauma, disease and the effects of critical care such as depression, delirium and loss of social status can result in stigma. In consequence, as Rasweswe et al (2024) points out ubuntu could promote increased compassion and humanity in care. This concept is supported by Tembo (2023) who applied the concept ubuntu to nursing practice.

However, the challenge for critical care in Zambia was that the extended role was not recognised, resources had not been allocated to match workloads, instead as figure 9.13 below indicates although it is international recognised that for critically ill patients there needed to be the highest intensity of resources (Marshall et al., 2017), allocation for this group was the smallest, with ward based nursing, where there was the lowest dependency, receiving the highest level of provision. This situation clearly needed to be reviewed and reconsidered, but this would only be possible once the speciality and the nature of critical care nursing services had been accepted at MoH and strategic management level.

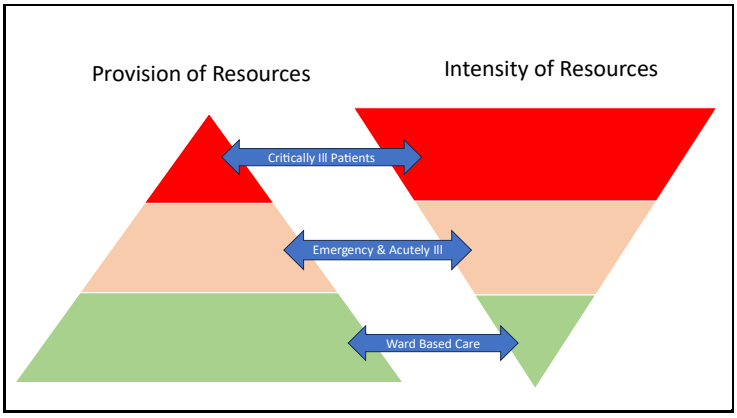


Figure 9.13: Provision of Resources versus Intensity of Resources

To gain recognition and acceptance of the new conceptual framework, it was necessary to raise awareness locally and nationally of the role and scope of practice of critical care nursing. For effective implementation of services across the country, it was essential that the existing contradiction in funding be recognised at all levels, and the need for change accepted, only

once this occurred could the anomaly in resourcing be addressed. Prior to Covid-19 this was difficult, but the pandemic led to a sea-change in attitude with for the first time, critical care being internationally accepted as a core service and not a luxury (Mer et al., 2022). This has in turn has led to the re-evaluation of service provision, with questions being asked regarding funding the different elements of service provision.

9.5 Summary

This chapter has outlined how the career structure and conceptual framework were sequentially developed from the datasets and interactions with key stakeholders and critical care nurses. Both were fully accepted and are now part of the national structure for nursing. The definition and scope of practice have been published in the revised Advanced Diploma and BSc curricula and used to inform policy through a safe staffing position paper for Zambia. It is also important to note, that the development of the conceptual framework included a revision of the use of the term ‘patient safety’ and has been expanded to explicitly identify the safe needs or the patient, the professional and the organisation. This new definition of safety rather just patient safety could be used in practice.

At the start of this study, the request to develop a conceptual framework and career structure seemed huge, however, it has to be noted that the choice of ubuntu and participatory co-operative inquiry, led to the full and open participation and sharing by all stakeholders and strategic leaders. Using this approach, no unilateral decisions could be made in the development of the conceptual framework and career structure; hence ownership of the outcomes and their acceptance and implementation was crucial. It is important to point out that at this point, it was just prior to the Covid-19 pandemic, which resulted in critical care nursing globally and within the region being recognised. The findings from this study, put Zambia on a firm footing for Covid-19 response in Zambia and the wider region.

Chapter 10: Reflections, Conclusions & Recommendations

"If you want to go fast, go alone, if you want to go far, go together"

(African Proverb)

This chapter outlines the reflections, conclusions and recommendations from this study. This study had two aims, firstly, to develop and implement a culturally competent, culturally safe, and sustainable conceptual framework for critical care nurse education and practice in Zambia. The second aim was to develop policy recommendations for a career structure for critical care nurses. This was a long and complex study, which not only sought to identify and describe the problem but also present solutions and a conceptual framework and model which could be operationalised into policy and practice. This study has illustrated it is possible to use ubuntu as an underpinning philosophical framework for international research (Ajitoni, 2024; Matahela & Ngwenya, 2025). This had not been considered at the start of the study, however, early on it was evident that the traditional Western research methods were missing something and initially resulted in the merge of different research methods. Pragmatism was the only paradigm that seemed appropriate but even that did not address some of my concerns once the study started. In consequence, building on observations and previous experiences, of working in Zambia I needed to find a different approach that I felt fitted with the context of critical care nursing in Zambia. At the start of the study, ubuntu was not discussed as a research concept but as I read more and gained more experience of the different cultures within Zambia, increasingly the concepts of ubuntu fitted with what I had observed. As outlined previously, Africa is a story telling continent, therefore, talking to other researchers, colleagues and critical care nurses in Zambia, resulted in the realisation that if ubuntu could be adapted for use in the study, this would support the development of new and context specific knowledge. Looking back the aims of this study were achieved.

10.1: Reflection on the Overall Research Aims

Aim 1: To develop and implement a culturally competent, culturally safe, and sustainable conceptual framework for critical care nurse education and practice in Zambia.

This aim required input from multiple stakeholders and professional groups. However, it was a much bigger task than anyone had anticipated (me included). The documentary data analysis allowed for national and international documents to be reviewed within the context of the study to provide guidance and adherence to key statements. Ubuntu requires individuals to resolve problems and seek consensus so that all members of the community agree and accept the decisions taken (Mulaudzi et al., 2022). However, it was important to include the perspectives of critical care nurses as often workshop attendance is only for senior staff who may have limited recent clinical experience or critical care nursing experience. In

consequence, the national e-survey allowed for input from critical care nurses from across the country, this then allowed for a series of focus groups with critical care nurses and tutors, followed by a research workshop with critical care students to understand a greater perspective. The critical care case-mix activity allowed for an insight into the types of patients to confirm the cross-cutting nature of critical care and to allow for benchmarking against regional standards.

Following these activities, it was possible to develop several key outputs which included a mentorship model, definition and scope of practice for critical care nursing in Zambia. These activities and outputs were seen as crucial as, at the time Zambia had an Advanced Diploma in nursing and it was essential that future programmes at BSc and MSc were developed. Therefore, it was important to consider how these new higher-level programmes would 'fit' within the current structure. The feedback from the national e-survey was unexpected as it indicated that a small group felt that an Advanced Diploma was at a sufficient level for critical care nurse education. However, during the interviews with critical care nurses and the views of stakeholders this proved not to be the case for the majority. As ubuntu requires consensus setting amongst the community, the decision by strategic stakeholders was to retain the Advanced Diploma. This then supported the development of higher education which encompassed the Advanced Diploma, thereby offering different routes which fitted with the consensus reach and at the same time mean all nurses could make a choice as to which route to take. In addition, at the time, as post registration specialist education for nurses was based on Advanced Diplomas, immediately removing it would have de-stabalised post registration education as one group would have had a different system to the rest of the nursing community. Therefore, it was built into the higher-level education routes which seemed an acceptable compromise as it became part of higher education and not the sole level of provision.

Another challenge was dealing with potential confrontation, for example, at one stakeholder meeting a senior nurse from the MOH was adamant that a pathway for direct entry critical care nursing was needed as there were insufficient numbers of registered nurses within the system to allow for further training. This is where the method chosen proved to be advantageous, because the challenge was taken up and addressed by participants, who were determined to stand their ground. This was not confrontational when linked to ubuntu as the tenets of respect of the individual is paramount, but reciprocal and within the community debate and discussion is encouraged (Mulaudzi et al., 2024). They were able to draw support from each other and as they had been involved in every step of the study from development onwards, they were able to lead the discussions and ultimately, make their voices heard (Mulaudzi et al., 2024). It was interesting to see that when I presented the national datasets, the senior nurse remained

adamant and wanted to railroad the decision so that it would be included in the career pathway. However, together the participants were strong enough to make their points heard and accepted. This demonstrated the power of the philosophy of ubuntu in professional debates, in which different perspectives were presented, listened too, debated, and then shared decisions were made (Budig et al., 2018; Vangeepuram et al., 2023; Tembo, 2023). For some participants this was the first time that they had been able to have their voice heard at strategic level. It would have been extremely difficult for me as a researcher and 'outsider' to try to change policy, as it was, I was seen as one of the groups, who's option was equal with those of other participants. The trust everyone placed in the process was a welcome surprise, although as the study progressed it became accepted as part of the process.

Aim 2: To develop policy recommendations for a career structure for critical care nurses.

This arose as from the MOH request which initiated the project. There was so little education relating to critical care nurse education and practice in Zambia and the region, that every step took time and negotiation. The use of the chosen research method made this possible as it encouraged participants and helped them to remain involved and take ownership of activities and outputs. As this study involved multiple working parts and partners at all levels, the challenge was developing and maintaining a level playing field that all could accept. As a known and trusted critical care nurse and educator, the door was already open, for example, during initial meetings prior to starting the study, the regulator, asked if I was a medical doctor. On being assured that I was a nurse, they relaxed and welcomed me in 'as one of us'. Reflecting on this, it was probably because as a white, young male and a Major in the Army, in their eyes it was a medical role. For me, this was the first time that being a nurse actually opened doors and was an advantage. From them on, I was seen as an accepted member of the team.

To achieve this second aim, activities included an evaluation of the current critical care nurse education and training in Zambia in preparation for higher level courses, stakeholder engagement and documentary data analysis. The workshops and focus groups were very productive and allowed for rich data to be collected that resulted in the development of the conceptual framework which included a career structure from the point of nurse registration to higher degree. The supporting mentorship model and definition and scope of practice for critical care nursing were bonus outputs which turned out to be integral elements of the study.

10.2: Overall Reflections

A totally unexpected outcome was the pace at which the study progressed and the interest and ownership from strategic organisations and nurses in Zambia. I hoped the methodology

would lead to this over the lifetime of the study, however, from the first activity, momentum just grew, due to the increasing strength of community as their knowledge and understanding of each other grew. Reflecting on this, I think it is because, for the first time they were being asked and not told, what needed to happen. This was on two fronts, firstly, international partners with funding dictating what changes had to happen, and secondly, critical care nurses not being involved in discussion and developments for their profession. For example, Zambia is used to international donor support, but with that traditionally the donors have dictated how the funding can be used. Secondly, as the RCCNs were used to see themselves at the bottom of the hierarchy, as they had no strategic recognition or voice. Suddenly, here was a study, working in true partnership with all decisions regarding activities (and funding) made together.

From my perception, the following analogy describes how things happened, the research study can be compared to ‘a pond’.

Table 10.1: Extract from Reflexive Journal (1)

I meet with the Nurse in Charge of the intensive care unit, who I find challenging to work with, whenever we discuss nursing care on the unit. Today, I think I have been accepted and may found a friend after all.

I was asked to deliver a short teaching session to the nurses on the unit on airway management and CPR. I organised airway and CPR manikins from the anaesthetic department, which was a feat in itself - when I asked a UK Anaesthetist if I could borrow them, I was told that these were for medical training and for safe obstetric courses. There was a threat that if I broke them, I would be responsible and would need to supply new manikins. I accepted the ‘risk’ and explained in nearly 15 years of teaching CPR I had never known of a manikin being damaged during training and took the equipment to the ICU and set up for training.

Nurses arrived and they were surprised to see manikins laid out with equipment to practice on. There was excitement and good buzz in the unit, as this was new for them.

I started the session, with the Nurse in Charge standing at the side of watching and listening to what I had to say, I think she was checking to see if I knew what I was talking about. Every so often I stopped and ask if there was anything she would like to add, and she said nothing.

When I got to the point where I wanted the nurses to practice, I asked the Nurse in Charge if she could help, as I could not supervise all the groups (and I was anxious over the comments made by the UK Anaesthetist!). The Nurse in Charge took a group and I can only describe it as a ‘thaw’ - for the first time she looked relaxed, she was smiling when she was teaching and seemed to really enjoy the session. We then went on to team teach the next session and we could almost finish each other’s sentences as we knew exactly the thought process. The second practical session went really well and the Nurse in Charge closed the session and was so happy with what I had done for nurses.

It was at this point that for the first I felt accepted and part of the group. The Nurse in Charge later opened up and said she had been allocated to work in the office by the Nursing Officer and she did not really enjoy the leadership role, she really liked the teaching aspect and her

dream job was to work at the College as a Clinical Instructor for the critical care nursing programme.

It was during one of these conversations, the nurse explained that she wanted a career and her nurses to have opportunities for a BSc in critical care. She said the doctors get education programmes and recognition, the nurses get short courses and never get the chance to develop, but they are often the ones that get left to do the work and they have to do the doctors work as well with an Advanced Diploma.

This made it clear to me the study was bigger than I thought and it was clear some form of scope of practice and career framework needed to be mapped out and I needed to re-think what I was going to do.

A later extract:
I am so sad, I have just heard from a colleague in Zambia, the Nurse in Charge of the ICU was pregnant and had to have an emergency Caesarean Section due to pre-eclampsia, unfortunately, as she was too puffy, so they were unable to gain IV, but they went ahead and gave her a gas anaesthetic. She haemorrhaged on the table but had no IV access, so she went on to arrest. They managed to get an output back and she was transferred to the ICU and nursed by her team. Unfortunately, she re-arrested and did not survive. The baby was delivered alive, transferred to NICU but died a few hours later. I want to dedicate this study to her and her wise words during the early stages of the project and her belief for a future for critical care.

Table 10.2: Extract from Reflexive Diary 2
I have just had a meeting with the Registrar of the General Nursing Council. When we arrived it was all very formal and we discussed what I was doing in Zambia, and she seemed interested. The conversation when in circles for a while, then suddenly she asked a direct question ‘are you a doctor?’. When I explained I was a critical care nurse, it was as it a door opened and the atmosphere changed, suddenly I was more welcome, and the conversation started to flow.
The Registrar has made it clear that they needed to up the level of specialist nursing and they wanted help to develop a BSc in Critical Care Nursing. This fitted with comments made from nurses in practice and they open to ideas wanting to move nursing forwards. This had confirmed the ideas I was developing for the study.

As the researcher, in some ways I was initially the outsider standing on the side and I threw a pebble, which could have sunk, never to be seen again, however, what actually happened was a series of ripples which gradually got bigger and bigger as they gained momentum. The ripples were made by nurses and nursing organisations in Zambia taking the concept and findings to heart and using them to extend and enhance the nursing agenda. As a result, there was never a suggestion that the study would not succeed, they kept adding things in, and ultimately there had to be a debate on what would be the measures of success as that would then govern when to stop. As the researcher it was incredibly difficult as by then, I had become much more the insider with a shared interest in outcomes and I too wanted to see the next step, therefore, it was difficult to find a point to stop. Interestingly since the study completed, the momentum for change and for moving nursing forwards has continued. This has included

the development of Emergency and Trauma Nursing and very recently another MOH request this time to help them develop Cardiovascular Nursing.

The study was welcomed, and as it progressed each step was accepted, so that by the end of the study it had been recognised nationally and internationally, with requests for assistance in supporting critical care nursing in other countries in the region. This has included Malawi, Botswana, Lesotho and Rwanda as well being invited onto the international Faulty for a pan-Africa MSc programme. While this national and international recognition has supported the adoption of the findings from the study, it is important to note that through my commitment to completing the study, my positionality evolved through the lifetime of the study. At the start of the study, my expectation was to complete the study and offer the findings to the MOH and nursing regulator. However, what actually happened was very different and the momentum of the study meant events overtook plans and today the results have been operationalised. The implementation process has already benefitted patients and nurses, with RCCN for the first time being recognised as specialist in their own right who form the backbone for acute and critical care services. Perhaps one of the hardest activities in this project, was developing an exit strategy, in such a way that partners did not feel abandoned once the study had been completed. I therefore developed a support and mentor role, through which I can help and support while gradually reducing my input as their expertise and ownership grows.

10.3 Critique of the Methods Used

This study used a sequential mixed methods approach using ubuntu to guide the participatory co-operative inquiry. As outlined in the philosophy (chapter three) and methods (chapter four) chapters, this approach was chosen due to the complexity of the study and that no one method was sufficient to meet the research aims and objectives. It is important to note that the different research methods were at times delivered concurrently to other activities and throughout the study were interlinked. When I started the study, I had no idea of the complexity and how much effort it would take to successfully complete the project. Initially, I saw it as a mixed top-down / bottom-up approach with the top-down element involving stakeholders and senior leaders enabling them to have their voices heard and input accepted. Also, in a bureaucratic country whereby senior staff have the power to block or enable projects, it was important for them to be fully involved in all stages of the project. However, the bottom-up approach involving critical care nurses in practice was crucial, because with no senior critical care leadership the conceptual framework needed to be appropriate. Also, it was anticipated that over time, critical care nurses with access to higher level qualifications would ultimately start to take senior leadership positions, something that has happened with critical care now having a voice at the strategic level. Therefore, critical care nurses needed to be part of the vision and final outputs so that they could see the opportunities and grasp them. As outlined previously, this study had

a much greater impact than initially planned or envisaged, with many of the critical care nurses having benefitted from the conceptual framework and career structure. For example, there are now increased opportunities for them to work in education offering critical care nursing programmes, and increased education opportunities at BSc and MSc level.

As the study led to critical care nursing becoming recognised and accepted as part of the healthcare community, the RCCNs gained confidence individually and collectively and this led to a new national professional membership organisation, which was recognised at MOH and regulator level, and has successfully delivered a series of international conferences. The opportunities to attend specialist meetings and conferences, as well as national meetings in which they represent RCCN, were never part of the plan. However, it has to be said RCCNs have seized this opportunity with both hands and are now working with peers across the region to help them follow their example, and develop their own career structures. Without this study and the choice of research methods used, none of this would have been possible. As a researcher the choice was right and there are no regrets regarding the study or the choice of methodology. However, it has to be accepted that it was a heavy responsibility, as the activities in this study have revealed, you carry the hopes and dreams of the participants, something that impacts you as a researcher and a nurse.

Pragmatism as a theoretical underpinning was an appropriate paradigm as the study needed a real-world perspective to seek solutions and not a rigid philosophical stance. This allowed for the gradual introduction of ubuntu both for the researcher and participants, something that evolved as the study progressed and that has added considerable value to the study. This has facilitated the development of new knowledge and understanding of how, African philosophy can be successfully used to underpin and guide specialist critical care nursing. This study was solution focused, allowing for flexibility and adaptability at every stage in every activity. This enabled the study to move in the direction that the participants wanted, and it allowed the study to respond to the findings from each stage. Also, ubuntu is action and goal driven which worked well in this study as each research activity resulted in an output which could either stand-alone or contribute to the whole study and the conceptual framework. In addition, this approach allowed participants and stakeholders to clearly see the development of the conceptual framework and how all the ‘pieces’ (outputs) fitted together.

The importance of continuous reflection throughout the study was crucial to ensure that the approach was appropriate and not becoming researcher led. There were several instances where there could have been confrontation between different groups, for example, when the MOH wanted to bring in direct entry critical care nursing and critical care nurses were against this. However, the method and approach chosen while it involved walking a tightrope, let

participants take the lead and develop their own evidence. It was always hoped that ultimately, RCCN would take their seat at the strategic table, however, in reality although they had to drag the chair to the table and elbow their way in. Neverthless, they are now seen as being there of professional right. This was not easy as a mentor and guide I had to step back and see them struggle; however, they felt safe as they could come back for advice and support at any time. As a result, they now see themselves as leaders for their professional group.

It is important to note that one of the challenges was obtaining ethics in two countries, as it involved navigating two very different approaches, sets of documents and requirements. However, it was important that local ethical approval was obtained to provide transparency. It was a different experience to the UK as it involved manually submitting copies of the research proposal, unlike the UK which was online. This involved printing and binding multiple copies and simple changes which were possible with online platforms were not possible, and not having ready access to printers was a challenge. The research questions were different, for example, the UNZA ethics application had to include a literature review and a detailed methodology chapter. The process did allow for both countries, ethical considerations to be covered and areas of difference addressed, however, no changes to the protocol or documents were required. Overall, reflecting on the study the choice of the methodology was appropriate as it allowed for transparency, acceptance as an outsider and participation.

10.3.1 Method 1: Documentary Data Analysis

The documentary data analysis was complex, because much of the African culture is spoken and there are very few publications on critical care nursing within the region. Since the start of this study this has changed, with more peer reviewed articles being published in international journals. I was surprised that in the UK National Archives the amount of information that was held by the then UK nursing regulator the GNC. I was disappointed to see the continued request for help to professionalise and set up a nursing regulator by the Northern Rhodesia and Zambian governments were blocked or ignored. I also noted in my reflexive diary that during the pre-independence and early independence period, UK nurses were fighting for a professional regulatory body and recognition, which challenged my assumptions about Europeans working in Zambia at the time. I also noted that even then European nurses worked in the region for a short period, in what we would term today as a career break. It also reflects how nursing is seen as a global profession with opportunities for travel, however, today, there is more migration of nurses from Zambia to other countries seeking better opportunities.

It is important to note, that this was a long study, therefore, over time, there have been several changes in international and Zambian policy, for example, Covid-19 highlighted the importance of critical care nursing. Also, the WHO has finally recognised the importance of

nursing with the re-introduction of a Chief Nurse (WHO, 2017), designation 2020 as the Year of the Nurse and the publication of the State of the World's Nursing Report (WHO, 2020). These interventions have raised the profile of nursing by shining a spotlight on nursing globally.

10.3.2 Method 2: Research Workshops

As discussed in chapter seven, the decision to include research workshops was needed as numbers attending events where critical decisions were made and often ran for days, it would not have been possible to run these as a focus group. Looking back, having had the opportunity to gather in-depth information and give voice to so many critical care students was a bonus. The original plan to deliver this as a focus group would have considerably reduced the amount and depth of data given and as a result may have limited the study. In addition, without a background of research I would not have had the confidence to change the method for data collection to match the wishes of participants. Also, the flexibility of participatory co-operative inquiry meant that several potential research methods (including research workshops) had been included in the ethics approval. In consequence, I had prepared for flexibility and the use of this method, but had expected to have had more advance warning of the need to change to facilitate planning. The use of the research workshop allowed for greater discussion and debate, and in doing so enriched the study.

10.3.3 Method 3: National E-Survey

As outlined above, this study needed to have input from critical care nurses in practice and it was important that nurses from across the country had the opportunity to contribute, for two reasons. Firstly, I wanted them all to feel valued and part of the study and secondly each Province in Zambia is different. Therefore, the national e-survey was an appropriate approach, however, while this allowed for national representation, issues with the internet were an ongoing challenge. In consequence, the national e-survey time was extended to allow for maximum participation. It was conducted early in the study and while this was useful in the early stages to guide research workshops with strategic stakeholders and the focus groups, it would have been beneficial to have repeated the e-survey towards the end of the study as this would have allowed for national input into various outputs in the study. However, this study grew and had several bonus outputs which allowed for critical care nurses input, for example, the cross-sectional survey. However, due to time, it was not possible to repeat the E-Survey.

10.3.4 Method 4: Semi-structured Focus Groups

Reflecting on the use of focus groups, I should have made the link to ubuntu earlier, as it focuses on debate, discussion and developing consensus. However, to start to learn a new approach that impacts and analyses data was not easy, and I was still processing its implications when I started data collection. The use of semi-structured focus groups was an

appropriate choice for data qualitative collection, as it allowed for greater input from critical care nurses which included educators in two Colleges of Nursing. The focus group discussions took off and the way they interacted with each other was much more animated, yielding much richer data than expected. In addition, as outlined above, it had been planned for students completing the Advance Diploma in Critical Care Nursing to join a focus group, however, as the entire class volunteered, this was converted to a research focus group. This is an indication of the value they placed on the opportunity to discuss and explore issues within a group. In consequence, the focus group and research focus groups provided rich perspectives of critical care nursing views of their profession. Reflecting on my experience, I was humbled by their honesty and felt accepted and not seen as an outsider, although in Western research terms, I would still have been seen as an outsider, however, in terms of ubuntu, the principles of inclusivity and interconnectedness meant that once accepted by the group, in their eyes I was part of the community. While this was rewarding, I found I had actually accepted the group responsibility perspective as well my own feelings of responsibility to the study.

10.3.5 Method 5: Cross Sectional Survey

The cross-sectional survey was an added bonus, it was not initially planned in this study, however, the opportunity arose to include the datasets. This allowed for a snapshot into a national perspective of critical care provision. This was deemed important as it was an opportunity to triangulate the qualitative datasets and prevent the study from being focused on the capital Lusaka, which was not representative of the country. As with many published studies the challenge was the quality of the datasets and information available, which was why a cross-sectional survey was chosen as it was not possible to retrospectively look at all admissions within a period due to poor record keeping. However, the findings confirmed the findings from critical care nurses, that many of the units were not being utilised to their full potential and from the datasets available a mix of patients including adults, obstetric and paediatric patients are admitted within one unit. The findings demonstrated to critical care nurses and stakeholders that there needed to be change and challenge the status quo. This provided an opportunity to widen the study and the community, which prompted further debate and consensus setting.

10.3.5 Assessing the Rigour of the Study

As chapter four indicates, the quantitative datasets were assessed for reliability and validity. The quality of the qualitative datasets was reviewed using trustworthiness and authenticity. While, as with reliability and validity trustworthiness can be assessed during the study as part of the processes for design, planning, data collection and analysis, authenticity can only be assessed on completion of the study (Clarke et al., 2021). Therefore, when reflecting on the study as a whole, the five concepts that constitute authenticity were considered (Amin et al.,

2020). While it is acknowledged that authenticity from a Western perspective can remain individualistic, when used in combination with ubuntu authenticity also has to demonstrate relational links and interconnectedness.

Criteria of fairness, looking back at the overall process at the data collected and analysed, it is evident that voice was given to all participants and equal value placed on each individual participant and their views and perceptions. As outlined above, the use of ubuntu supported equity in the research process.

Ontological authenticity in this study has been illustrated by changes in attitudes to, and actual changes in education, training and practice. This included working towards and achieving consensus and the way in which the study progressed participants became an established group working together for the greater good, in other words successful completion of the project. This was demonstrated through ethical leadership of strategic stakeholders who accepted critical care nurses to be part of the strategic decision-making process for the study.

Educative authenticity, prior to the study, critical care nursing was not recognised as a specialty and there was no career structure. In terms of ubuntu, the result of the study has led to the development of new context specific knowledge, with a career structure and conceptual framework designed to improve the professional role of critical care nurses and through that the care given. Acceptance of these includes encouraging critical care nurses to develop critical decision-making skills and develop personally and professionally, as individuals and part of the community of practice (Muhammad-Lawal et al., 2022).

Catalytic authenticity was demonstrated through participants working together to support the design and implementation of a career structure and conceptual framework that included recognition of the individual critical care nurse and the wider critical care nursing community. Critical care nurses are now able to start to play a strategic role in their own and their peers' career progression.

Tactical authenticity was illustrated through the successful completion of the project. The acceptance and implementation of the career structure and conceptual framework, together with the implementation of a new BSc in critical care nursing, started immediately following this study. Following this, and as outlined above, the career structure has been applied to Emergency and Trauma and Cardiovascular nursing. Finally, critical care nurses are now officially recognised through their own professional organisation.

10.4 Impact of Covid-19

While it is accepted that in this study data collection had completed prior to the Covid-19 pandemic, given the impact on critical care services it was deemed appropriate to reflect on

how the study impacted on and was affected by the pandemic. The Covid-19 pandemic seems a long-time ago, and it is a cause for concern, that the reality was that with funding was diverted from other parts of the economy to support the Covid-19 response, the longer-term impact of this decision continues to affect Zambia's recovery strategies (Chabert et al., 2021). For example, Josephson et al., (2021) conducted a longitudinal household survey from Ethiopia, Malawi, Nigeria and Uganda and estimated 256 million individuals lost income during the pandemic and that student-teacher contact dropped from pre-Covid-19 rate of 96% to 17%. In consequence, the short economic effects are real, however, the longer-term impact on the future nursing workforce could be affected for decades to come.

While it is accepted that the resources needed to focus on the immediate challenge of Covid-19, this impacted on other communicable and non-communicable diseases which meant that some of the hard-won gains of reducing health inequalities were lost. Zambia remains a malaria endemic country and is among the 20 countries with the highest malaria incidence and mortality globally. It is a cause for concern that the entire population is seen as being at risk of contracting malaria. The WHO World Malaria Report (2021) identified that the Covid-19 pandemic has disrupted malaria prevention, diagnosis and treatment. Sampa et al (2024) found that malaria cases in Zambia have risen since the start of the Covid-19 pandemic.

In addition, Zambia continues to have high maternal and neonatal mortality. However, the United Nations identified there had been some improvements in maternal mortality in Zambia, the rates remained high for a LIC, and urgent action was required (UNICEF, 2022). In addition, up until 2018, there was a gradual reduction in maternal and under 5 mortality, however, prior to the pandemic neonatal mortality rates had increased and there is concern this will continue as an outcome from the pandemic (UNICEF, 2022). Today, it remains a major issue that in Zambia, it is estimated that a mother dies every 12 hours and newborn dies every 30 minutes (UNICEF, 2025).

For long term conditions such as cancer, across the region it was identified that cancer services significantly decreased during the pandemic in Sub-Saharan Africa (Rine et al., 2023). While there was limited specific data from Zambia, Lombe et al (2020) identified during the early stages of the pandemic, Zambia was not able to import radioactive isotopes for High Dose Rate (HDR) brachytherapy, Iridium 192 (I192), which resulted in the suspension of treatment. In consequence, undiagnosed or poorly treated patients, may present to acute hospitals and require urgent treatment. In consequence, this places an additional strain on already overstretched resources in emergency and critical care services.

Zambia has a high burden of trauma and in particular Traumatic Brain Injuries. However, restrictions including curfews for bars and restaurants and lockdowns showed a reduction in

road traffic injuries (Road Traffic and Safety Agency, 2020). However, it is a cause for concern that Kasongo et al (2023) reported increased alcohol and substance misuse and gender-based violence during the Covid-19 pandemic. This is supported by Paichadze et al (2023) which reported injuries in Zambia remains a common cause of premature death, accounting for 1 in 5 deaths - 7% annually.

The Covid-19 pandemic demonstrated the acute shortage of critical services and workforce within Sub-Saharan Africa (African Covid-19 Critical Care Outcomes Study Investigators, 2021). While many countries in the region had not invested in educating critical care nurses, Zambia was better placed. As this study had contributed to the revision and introduction of additional Colleges and prepared the way for BSc and MSc programmes, which commenced during the pandemic. Zambia was recognised for its established education programmes, and is now a beacon within the region, with nurses from Botswana, Malawi, Lesotho and Zimbabwe now attending courses. Through the pandemic critical care nurse education providers in Zambia continued to operate, with the opening of a third College of Nursing offering critical care in July 2021. Also, in 2022, the first cohort of BSc and MSc level critical care nurses commenced, operationalising the findings from this study. However, there was an impact on these programmes, as initially, clinical placements were suspended, face-to-face education was stopped and the uncertainty as to whether programmes would be suspended to allow nurses to return to their hospitals and if teaching staff would re-deployed support the Covid-19 response.

The rapid move to virtual learning to reduce the risk of transmission was seen as an appropriate step. However, there was minimal acknowledgement that many nurses, they did not have access to laptops and IT literacy was variable. Prior to the pandemic, it was acknowledged that IT skills and access to computers for nurses in Africa was limited (Harerimana et al., 2021). Students previously relied on computer laboratories within colleges to access information and complete online learning, however, this was not possible in a pandemic situation. However, like many other LIC's access to online and e-learning has been a significant challenge in terms of infrastructure, resource availability, communication and social barriers (Barteit et al., 2019). Whilst some students had access to mobile phones, completing a specialist programme via a mobile phone was not sustainable and a significant cause of concern regarding the quality of education, as this could have prevented students engaging with learning activities.

During this study, Zambia was re-classified from a LMIC to a LIC due to a reduction in the per capita income to $1,040, which was the first time since 2011 (Hambuba, 2022). Prior to the pandemic, Zambia was identified as having a low level of diversification, which was based

around mining, agriculture, trade and construction and low rates of employment (International Monetary Fund, 2023). Rising food prices, loss of jobs and high young population, has exacerbated food insecurity, dietary diversity and housing insecurity within communities (Sridhar et al., 2024; Hearst et al., 2021). In addition, the immediate cessation of US Aid and the reduction of UK Aid will further impact the economy and healthcare services (O'Sullivan & Puri, 2025). These factors will impact on the future of critical care nurse education and practice. However, it is important to accept that this study has had a positive contribution to critical care nurse education and practice. It is a testament to the MOH that during the Covid-19 pandemic they successfully launched the BSc in Critical Care Nursing and an Emergency and Trauma Nursing programme. This demonstrates their commitment to developing the healthcare workforce and improving patient care, albeit in the light of the ongoing challenges.

10.5 Conclusion

Looking back at the reflections it has been a challenge studying part time and balancing a complex UK and international workload. During the study, I left the British Army and had to re-establish myself as a 'civilian'. Also, the unforeseen impact on Covid-19, had both a positive and negative impact on the study as outlined above. The pandemic raised the importance of critical care nursing in Southern Africa and demonstrated that the activities taken in the early stages of study provided sustainability and this has strengthened the Ministry of Health support for critical care. However, it is important to note, that this was a difficult period being seconded from my university role to a Critical Care Matron in a London Teaching Hospital, plus balancing international projects was a challenge. Also, I saw first had the impact of Covid-19 in hospitals in Zambia, the loss of colleagues and their family members and for Covid-19 survivors the ongoing effects of Long Covid and the lack on specialist support.

This study used a participatory co-operative inquiry approach where, initially, I was seen as the 'face' and driving force behind this study. Having been fully accepted as a member of the group, I was then able to share my own knowledge and expertise with both study participants and members of the wider community of critical care, as we worked together to move the critical care nursing agenda forward. Over the lifetime of the project, as recognition of their role and expertise grew, I have watched them gain in confidence and take on the roles of educators and researchers. They have learned to share their knowledge views and perceptions on a wider basis and start to take the lead in further enhancing critical care in Zambia and beyond. Throughout my studies to date, I have made every effort to disseminate the steps involving local researchers, educators and nurses. This has included presentations at the international conferences and peer reviewed publication. Examples are listed in appendix ten.

The final element for this study, was the sharing and dissemination of the findings by and with the participants. This allowed for ownership of the study outcomes but will ultimately promote sustainability and independence as Zambian nurses today continue to develop critical care nursing within the context of the Zambian healthcare system. This has been achieved in several ways including the development of a national association for critical care nursing, this has resulted in two successful international conferences in 2023 and 2024. This has allowed for critical care nurses to discuss, share experiences and share evidence and quality improvement projects. At the first ever Critical Care Conference in Zambia, I had the opportunity to start to stand back and allow the first generation of expert critical care nurses start to take the lead

The ramifications for this study, what seemed to the researcher and the MOH as a straightforward request, proved to be a major journey with a life of its own. However, several years on, the MOH and other stakeholders have approved the methods used, the datasets and conceptual model, as outlined in this thesis. The timing was right for this study as Zambia is beginning to move towards higher level nursing practice and needed a model they could accept as culturally and context appropriate. The MOH have taken the lead and want to use the model to develop other specialist practice programmes (Emergency and Trauma, Paediatrics and Public Health) and are now planning for other programmes. Specifically for this study, the challenge was therefore, when to stop. Having had delays beyond my control, the challenge is that the documentation does not enable all work carried out to be included or greater detail on the data analysis to be given. This study has had huge personal impact on the researcher, which included a career change, and had it not been a partnership project it probably would not have continued. However, the commitment to the partners and their trust and support made it possible to continue. In effect researcher and partners carried each other throughout the process.

It was a challenge having to navigate two roles as a PI and the PhD student. At times partners looked to me as through I was the expert given my professional background, but I was also conscious that I was a student. Therefore, supervision with my Director of Studies was critical to explore the realities of navigating these two roles as well as maintaining a reflexive diary to guide decisions. Over the years, I have seen that my role has changed, I am still regarded as an expert however, I have now become a mentor and a guide to local participants. This has embedded a culture of sustainability and is part of the exit strategy. It also demonstrates that change cannot be undertaken in a short period of time, instead there needs to be sustained support to go through both the good times and the challenges.

At times it was a challenge using participatory facilitation and being clinical nurse and educator (and the Army Major), as the solution was often evident however, it took time for participants and stakeholders to see the solution. However, it was important not to take a unilateral decision or 'railroad' decisions as this would not have supported sustainability or partnership working, or reflect the chosen methods used within the study. It is important to note that throughout this experience I have gained increasing awareness of being in and working as a 'minority' but also on being accepted as a minority and becoming part of the norm. This important insight has allowed me to understand the diversity within the UK which is seen within our students, patients and staff groups.

As the study has progressed, I have been recognised and accepted as an expert in the region on capacity strengthen workforce and critical care. This has resulted in links being established with Malawi with requests on how to develop a critical care project. Educational resources that I developed before and during the early stages of this study, have been used in Ethiopia, Rwanda and Tanzania and links with a US project and an US university who have asked for advice on how to implement projects. Throughout this study I have grown in terms of research, knowledge and project management and I have taken an increasing role in project leading activities. One area that I did find difficult was knowing when to stop with this study, however, it was important that as new opportunities arose, they were explored as this has resulted in the findings from the initial part of the study in 2019 to be operationalised and for greater impact.

This project has involved de-stabilising and re-stabilising the 'norm' at strategic level. The introduction of new Association for Critical Care nurses, higher level education opportunities and increased numbers of Colleges and Universities offering critical care, has resulted in a focus on the profession. While other professional groups such as Physician Anaesthetists and Clinical Officer Anaesthetists continue to retain power and 'lead of critical care nursing matters' a new generation of specialist nurse leaders are starting to take their seat at the table. It has not been an easy journey and there is still much more to do, with critical care nurses often having to drag their chair to the table and take a seat. During a UK Intensivist visit to Zambia, it became increasing becoming apparent that doctors are no longer the 'expert' and there is a need for anaesthesia to break from critical care and critical care to become a speciality.

A challenge was that often projects are short term and rely on an individual. At the start of the project there was a risk that when the project completed, and I left there would be no sustainability. It was also important to have a vision to work towards and taking steps together, so that they became embedded and accepted. Using the participatory co-operative inquiry approach has resulted in local ownership and sustainability. This has included increased

access to education programmes at both Advanced Diploma, BSc and MSc level, development of a professional organisation for critical care nurses with scientific conferences to share evidence and for representation at strategic level. This has had a ripple effect and work has now commenced with partners in Malawi to capacity strengthen critical care nursing and introduce a professional membership organisation.

It is important to acknowledge, that the move away from Western philosophies governing African research and nurse education is possible. It will take time, however, this study has shown it is possible and this fits with the now steadily growing of research and debate into the application of ubuntu as an acceptable and credible philosophy. In conclusion, this was not just a PhD that clearly achieved the set outcomes but a study that, through the underpinning philosophy and methods used has provided a sustainable way forward for a LIC to use the learning derived from the study to develop a well-educated and sustainable workforce in other areas of specialist practice in Zambia and beyond.

10.6 Recommendations

As a result of this study and its outcomes, it has been possible to develop the following recommendations.

10.6.1 General Points for International Nursing Research Projects:

- It is crucial that research projects with international partners use true participatory approaches. The use of ubuntu as an underpinning philosophy for African studies involving critical care nursing has advantages and should be considered for future such projects.
- It is essential that appropriate goals are set and agreed with partners with activities cumulative leading to the achievement of aims and objectives.
- All such studies should have measurable outputs for both researcher and participants.
- Nurses need to be empowered through education and support to take responsibility for the development of evidence-based practice and ultimately robust research to inform practice.
- International partnerships should be developed using ethical principles which include positive outcomes, sustainability and an exit plan.

10.6.2 Specialist nursing practice

- The hidden complexity of specialist nursing practice needs be recognised and strategies developed to make the invisible visible.
- When embedding patient safety strategies into nurse education and practice, there needs to be recognition that safety includes patient, professional and organisational factors.

- Nursing work should not be seen as additional ‘tasks’ from doctors, and must be evidence based, with terms such as ‘task-shifting’ avoided. Nurses must develop strategies that enable them to have access to the consummate level of training and education offered to a doctor if they are to take on that role.
- There is an urgent need to recognise the importance of critical care nursing which cross-cuts all specialities and that critical care nurses’ roles are not solely the domain of the intensive care unit.
- It is important that practice is linked to education and vice versa.
- It is important to understand what higher-level practice means as it may not be skill acquisition but rather education and leadership roles.
- Importance of developing a career structure from the point of registration until higher degree, including PhD, is essential to enable policy makers, stakeholders and nurses to identify their own career pathway and be supported to reach their goals.

In summary, this study has exceeded all expectations as indicated throughout it grew exponentially as it evolved becoming more complex and encompassing more activities than originally envisaged. However, it was important to accept each new challenge as presented and to identify how this could contribute to the overall study. While I could have taken the easy option to use a HIC / Western philosophy, this would not have moved the nursing agenda forwards. Therefore, perhaps the most challenging aspect was having to learn, apply and integrate the theories of ubuntu with established models of education and nursing to create a new conceptual framework in Zambia. At the start of the study there was minimal published evidence on the use of ubuntu and ubuntugogy. Therefore, this study has contributed to growing the body of knowledge in this area and is one of the first studies in Zambia to use this approach. The acceptance and application of established theories and blending them with African traditional philosophies within the Zambian context, has resulted in a new scope of practice, career structure and conceptual framework for critical care nursing. Also, recognition by the MOH that the template developed can apply to other specialist areas of nursing practice, and they are now considering its wider use.

This is one of the first studies by critical care nurses, for critical care nurses with critical care nurses and the interest generated from this study, has continued to grow and now part of my post-doctoral work. This includes the development of other specialist nursing groups such as cardiovascular nursing, all of which are based on the philosophy used in this study. Work has also commenced on responding to interest from other countries within the region to assist in the development of context specific critical care nursing and mentoring the first generation of higher-degree critical care nurses as they take their place at strategic level. This includes

supporting them to start to influence the development of their own speciality, including their own Critical Care Nursing Associations. The scope of practice, mentorship model, career structure and conceptual framework have all been operationalised and utilised into practice, this has provided critical care nurses in Zambia with the firm professional foundation in specialist practice, and it is now for them to take the lead and start the next chapter.

References

Aamodt, IT., Stubberud, DG., Eikeland, A. et al. (2025). Critical care nurses role and scope of practice during a global crisis: a qualitative study. *BMC Nurs*. 24, 242. https://doi.org/10.1186/s12912-025-02872-w

Abdoola F., Adu-Amoah HG., Addo BK et al. (2025). The critical care nutrition landscape in sub-Saharan Africa: Field insights and clinical commentary from resource-limited clinical settings. *Nutrition.* 134: 112740. https://doi.org/10.1016/j.nut.2025.112740.

Adams, NE. (2015). Bloom's taxonomy of cognitive learning objectives. *J Med Libr Assoc*. 103(3):152-3. doi: 10.3163/1536-5050.103.3.010.

Adam F., Nelson S., Salami BO. et al. (2025). African nurses on the move: decisions, destinations and recruitment practices - a scoping review. *BMC Health Serv Res.* 25: 419 https://doi.org/10.1186/s12913-025-12531-0

African History. (2024). Mfecane. https://www.britannica.com/event/Mfecane

African COVID-19 Critical Care Outcomes Study (ACCCOS) Investigators. (2021). Patient care and clinical outcomes for patients with COVID-19 infection admitted to African high-care or intensive care units (ACCCOS): a multicentre, prospective, observational cohort study. *Lancet*. 397(10288):1885-1894. doi: 10.1016/S0140-6736(21)00441-4.

African Federation of Emergency Medicine. (2016). African Emergency Nursing Curriculum. November 2016. https://afem.co.za/wp-content/uploads/2017/10/AFEM-African-Emergency-Nursing-Curriculum.pdf [Accessed 22/04/2025]

Ahmed, SK. (2024). The pillars of trustworthiness in qualitative research. *Journal of Medicine, Surgery & Public Health*. 2: 100051. https://doi.org/10.1016/j.glmedi.2024.100051

Aiken, LH., Sloane, D., Griffiths, P., Rafferty, AM., Bruyneel, L., McHugh, M., Maier, CB., Moreno-Casbas, T., Ball, JE., Ausserhofer, D., Sermeus, W. (2017). RN4CAST Consortium Nursing skill mix in European hospitals: Cross-sectional study of the association with mortality, patient ratings, and quality of care. *BMJ Quality & Safety*. 26 (7): 559-568, 10.1136/bmjqs-2016-005567

Aitken, LH. Et al (2014). Nurse staffing and education and hospital mortality in nine European countries: a retrospective observational study. *The Lancet*. 383 (9931): 1824 – 1830. https://doi.org/10.1016/S0140-6736(13)62631-8

Aiken, LH., Cerón, C., Simonetti M., Lake, ET., Galiano, Al., Garbarini, A., Soto, P., Bravo, D., Smith, HL. (2018). Hospital Nurse Staffing and Patient Outcomes. *Revista Médica Clínica Las Condes.* 29 (3): 322-327. https://doi.org/10.1016/j.rmclc.2018.04.011

Ajitoni, BD. (2024) Ubuntu and the philosophy of community in African thought: An exploration of collective identity and social harmony. Journal of African Studies and Sustainable Development. 7(3). https://www.ajol.info/index.php/ajsw/article/view/127543

Ake, C. (1974). Modernization and political instability: A theoretical exploration. World Politics. 26(4): 576–591.

Ake, C. (1982). Social science as imperialism: The theory of political development. Ibadan University Press.

Alam, N., Hoblelink, EL., vanTienhoven, AJ. (2014). The impact of the use of the Early Warning Score (EWS) on patient outcomes: A systematic review. *Resuscitation*. 85. 5. 587-594. doi: 10.1016/j.resuscitation.2014.01.013

Alanzi, A. (2016). A Critical Review of Constructivist Theory and the Emergence of Constructionism. American Research Journal of Humanities and Social Sciences. 2: 1-8. DOI: 10.21694/2378-7031.16018

Amin, MEK., Nørgaard, LS., Cavaco, AM., Witry, MJ., Hillman, L., Cernasev, A., Desselle, SP. (2020). Establishing trustworthiness and authenticity in qualitative pharmacy research. Res *Social Adm Pharm*. 16(10):1472-1482. doi: 10.1016/j.sapharm.2020.02.005

Amoo, SA., Menlah, A., Garti, I., Appiah, EO. (2021). Bullying in the clinical setting: Lived experiences of nursing students in the Central Region of Ghana. *PLoS One.* 16(9):e0257620. doi: 10.1371/journal.pone.0257620]

Amukele, T., Spence, RN. (2021). African countries established COVID-19 testing in one month: Here's how they did it. *Afr J Lab Med*. 10(1): 1457. doi: 10.4102/ajlm.v10i1.1457.

Andrews, B., Semler, MW., Muchemwa. L, et. al. (2017). Effect of an Early Resuscitation Protocol on In-hospital Mortality Among Adults with Sepsis and Hypotension: A Randomized Clinical Trial. *JAMA*. 318 (13): 1233-1240. doi: 10.1186/s13054-020-2819-5.

Angole, YE. (1977) Intensive care unit in the University Teaching Hospital, Lusaka. A retrospective study for the year 1975. *Medical Journal of Zambia.* 11(5):146-148

Ankers, M., Barton, C., Parry, Y. (2017). A phenomenological exploration of graduate nurse transition to professional practice within a transition to practice program. *Collegian.* 25 (3): 319–325. https://doi.org/10.1016/j.colegn.2017.09.002

Anyon, J. (1983). Social Class and the Hidden Curriculum of Work. In Giroux, J., Purpel, D. (Eds.). (1983). The Hidden Curriculum and Moral Education: Deception or Discovery? Berkeley, CA: McCutchan Publishing.

Arifin, Z., Nirwanto, N., Manan, A. (2019). Improving the effect of work satisfaction on job performance through employee engagement. *International Journal of Multi-discipline Science*. 2(1): 1. DOI:10.26737/ij-mds.v2i1.948

Ashgar J. (2013). Critical paradigm: a preamble for novice researchers. Life Sciences. 10(4): 3121-3127

Asimah Ackah, V., Adzo Kwashie, A. (2023). Exploring the sources of stress among operating theatre nurses in a Ghanaian teaching hospital. *International Journal of Africa Nursing Sciences.* 18: 100540. https://doi.org/10.1016/j.ijans.2023.100540

Asingei, J., O'Flynn, EP., O'Donovan, DT., Masuka, SC., Mashava, D., Akello, FV., Ulisubisya, MM. (2023). The Specialist Anesthesiology Workforce in East, Central, and Southern Africa: A Cross-Sectional Study. *Anesth Analg.* 136(2):230-237. doi: 10.1213/ANE.0000000000006134.

Asghar, J. (2013). Critical paradigm: a preamble for novice researchers. *Life Sciences*. 10(4): 3121-3127.

Awoniyi, S. (2015). African cultural values: the past, present and future. *Journal of Sustainable Development in Africa*. 17(1): 1-13. https://doi.org/10.36303/SAJAA.2020.26.3.2431

Ayebale, ET., Kassebaum, NJ., Roche, AM., Biccard, BM. (2020). Africa's critical care capacity before Covid-19. *South Afr J Anaesth Analg*. 26(3): 162-164.

Babikian, C. (2021). "Partnership Not Prejudice": British Nurses, Colonial Students, and the National Health Service, 1948–1962. 60(1): 140-168. DOI: https://doi.org/10.1017/jbr.2020.188

Bain, LE., Mbouamba Yankam, B., et al. (2023). Global health mentorship: challenges and opportunities for equitable partnership. *BMJ Glob Health*. 8(11):e013751. https://doi.org/10.1136/bmjgh-2023-013751

Baker T, Blixt J, Lugazia E, et al. (2015). Single deranged physiologic parameters are associated with mortality in a low-income country. Crit Care Med. 1(23): pe0067

Baker T., et al., (2025). The African Critical Illness Outcomes Study (ACIOS): a point prevalence study of critical illness in 22 nations in Africa. The Lancet, Volume 405, Issue 10480: 715 – 724. DOI: 10.1016/S0140-6736(24)02846-0

Baloyi, OB., Jarvis, MA. (2020). Continuing Professional Development status in the World Health Organisation, Afro-region member states. *International Journal of Africa Nursing Sciences*. 13: 100258. https://doi.org/10.1016/j.ijans.2020.100258

Banda, M., Chitungu, V., Muponda, S. (2019). Responses to letter to my Children. Sotrane Publishers.

Banda, J., Chenga, N., Nambaya, S., Bulaya, T., Siziya, S. (2020). Predictors of Acute Kidney Injury and Mortality in Intensive Care Unit at a Teaching Tertiary Hospital. Indian J Crit Care Med. 24(2):116-121. doi: 10.5005/jp-journals-10071-23352.

Banda, CH., N'gambi, C. (2019). Necrotizing fasciitis with mediastinitis following snakebite envenomation. SAGE Open Medical Case Reports. 7: :2050313X18823090. doi: 10.1177/2050313X18823090.

Bangura, AK. (2005). Ubuntugogy: An African educational paradigm that transcends pedagogy, andragogy, ergonagy and heutagogy. Journal of Third World Studies. XXII(2): 13–53. https://www.jstor.org/stable/45198556

Bansal, A., Jain, S., Sharma, L., Sharma, N., Jain, C., Madaan, M. (2020). Students' perception regarding pedagogy, andragogy, and heutagogy as teaching-learning methods in undergraduate medical education. J Educ Health Promot. 9:301. doi: 10.4103/jehp.jehp_221_20

Barrett, D. (2021). Navigating through the storm: the role of healthcare leaders during COVID-19. *Public Sector Focus.* 33:44.

Barteit, S., Jahn, A., Banda, SS., Bärnighausen, T., Bowa, A., Chileshe, G., et al. (2019). E-Learning for Medical Education in Sub-Saharan Africa and Low-Resource Settings: Viewpoint. *J Med Internet Res.* 21(1): e12449. doi: 10.2196/12449.

Bashir, AM., Osman, MM., Mohamed, HN., Hilowle, IA., Ahmed, HA., Osman, AA., Fiidow, OA. (2023). ICU-Managed Patients' Epidemiology, Characteristics, and Outcomes: A Retrospective Single-Center Study. *Anesthesiol Res Pract.* 9388449. doi: 10.1155/2023/9388449.

Barker K., Omoni G., Wakasiaka S., Watiti J., Mathai M. & Lavender T. (2013). „Moving with the times" taking a global approach: A qualitative study of African student nurse views of e learning. *Nurse Education Today.* 33(4):407-12. doi: 10.1016/j.nedt.2013.01.001

Barnes, J., Paterson-Brown, L. (2017). Improving Care of Critically Unwell Patients through Development of a Simulation Programme in a Malawian Hospital. *Journal of Education and Training Studies.* 5(6): https://doi.org/10.11114/jets.v5i6.2366

Basnet, S., Adhikari, N., Koirala, J. (2011). Challenges in setting up paediatric and neonatal intensive care units in a resource-limited country. *Paediatrics*. 128(4): e986-92. doi: 10.1542/peds.2010-3657.

Bates B. (2019). Learning Theories Simplified. 2nd Edition. Sage.

Baumann A., Hunsberger M., Crea-Arsenio M., Akhtar-Danesh N. (2018). Policy to practice: investment in transitioning new graduate nurses to the workplace. *J Nurs Manag*. 26: 373-381. DOI: 10.1111/jonm.12540

Baxter, S., Franklin, M., Haywood, A. et al. (2023). Sharing real-world data for public benefit: a qualitative exploration of stakeholder views and perceptions. *BMC Public Health.* 23: 133. https://doi.org/10.1186/s12889-023-15035-w

Bayuo, J., Abboah-Offei, M., Duodu, P.A. et al. (2023). A meta-synthesis of the transitioning experiences and career progression of migrant African nurses. *BMC Nurs*. 22: 104. https://doi.org/10.1186/s12912-023-01273-1

Beane, A., De Silva, AP., De Silva, N., Sujeewa, JA., Rathnayake, RMD., Sigera, PC., Athapattu, PL et al. (2018). Evaluation of the feasibility and performance of early warning scores to identify patients at risk of adverse outcomes in a low-middle income country setting. *BMJ Open*. 8(4):e019387. doi: 10.1136/bmjopen-2017-019387.

Benner, P. (1984). From novice to expert: excellence and power in clinical nursing practice. Menlo Park: Addison-Wesley.

Bell, J. Waters, S. (2018). Doing your research project: a guide for first-time researchers. 7th edition. McGraw Hill education

Best, S., & Williams, S. J. (2024). Improving the way we do action research in quality improvement. Production *Planning & Control*. 1–12. https://doi.org/10.1080/09537287.2024.2315154

Biccard, BM., Madiba, TE., Kluyts, HL., Munlemvo, DM., Madzimbamuto, FD., Basenero, A. et al. (2018). African Surgical Outcomes Study (ASOS) investigators. Perioperative patient outcomes in the African Surgical Outcomes Study: a 7-day prospective observational cohort study. *Lancet.* 21; 391(10130): 1589-1598. oi: 10.1016/S0140-6736(18)30001-1.

Bigna, JJ., Noubiap, JJ. (2019). The rising burden of non-communicable diseases in sub-Saharan Africa. *Lancet Global Health*. 7(10): E1295-E1296. DOI: 10.1016/S2214-109X(19)30370-5

Bishop, D., Dyer, RA., Maswime, S., Rodseth, RN., Van Dyke, D, et al. (2019). Maternal and neonatal outcomes after caesarean delivery in the African Surgical Outcomes Study: a 7-day prospective observational cohort study. *Lancet Glob Health.* 7(4): e513-e522. doi: 10.1016/S2214-109X(19)30036-1

Blaschke, LM. (2012). Heutagogy and lifelong learning: A review of heutagogical practice and self-determined learning. *Int Rev Res Open Distrib Learn.* 13:56-71. DOI:10.19173/irrodl.v13i1.1076

Bloom BS. (1968). Chicago Univ., ID of E., & Regional Educational Laboratory for the Carolinas and Virginia, DN Learning for Mastery. Instruction and Curriculum. *Topical Papers and Reprints*. 1(2).

Bloom, BS., Engelhart, MD., Furst, EJ., Hill, WH., Krathwohl, D.R. (1956). Taxonomy of educational objectives, handbook I: The cognitive domain. New York, NY: David McKay Co., Inc.

Bock P, Cox H. (2017). Acute care – an importance component of the continuum of care for HIV and tuberculosis in developing countries. *Anaesthesia*. 72. 143-155. doi: 10.1111/anae.13604.

Bordage, G. (2009). Conceptual frameworks to illuminate and magnify. *Med Educ*. 43(4):312-9. doi: 10.1111/j.1365-2923.2009.03295.x.

Bordage, G., Lineberry, M., Yudkowsky, R. (2016). Conceptual Frameworks to Guide Research and Development (R&D) in Health Professions Education. *Acad Med*. 91(12):e2. doi: 10.1097/ACM.0000000000001409.

Borghmans, F., Laletas, S., Fernandes, V., Newnham, H. (2024). Finding meaning in complex care nursing in a hospital setting. *Nurs Inq.* 31(3):e12633. doi: 10.1111/nin.12633.

Borti, AM., Maurya, RK., Jones-Mensah, IS., Wickramaarachchi, TI. (2024). Using Ubuntu as a Research Paradigm to Unpack How Ghanaian Novice Teachers and Their Collaborators Engaged *Virtually in Collaborative International Qualitative Research*. *International Journal of Qualitative Methods.* 23: 1-12. https://doi.org/10.1177/16094069241241149

Bortolussi-Courval, É., Stake-Doucet, N., Umaigba, B. (2023). Incentivizing an exodus: The implications of recruiting nurses from low-middle income countries to high-income countries. *PLOS Glob Public Health.* 3(9):e0002355. doi: 10.1371/journal.pgph.0002355.

Bourdieu, P. (1990). The logic of practice. Cambridge: Polity Press.

Bourdieu, P., Passeron, J. (1990). Reproduction in Education, Society and Culture. Sage Publications.

Bourdieu, P., Wacquant, LJD. (1992). An Invitation to Reflexive Sociology. Chicago, IL: University of Chicago Press.

Bowen, L., Zymabo, M., Snell, D., Kinnear, J., Bould, MD. (2017). Evaluation of the accuracy of common weight estimation formulae in a Zambian paediatric surgical population. *Anaesthesia*. 72. 470-478. doi: 10.1111/anae.13780.

Bonner, A. Tolhurst, G. (2002). Insider-Outsider Perspectives of Participant Observation. *Nurse Researcher*. 9(4): 7–19. Doi: 10.7748/nr2002.07.9.4.7.c6194.

Bortolussi-Courval É, Stake-Doucet N, Umaigba B (2023) Incentivizing an exodus: The implications of recruiting nurses from low-middle income countries to high-income countries. *PLOS Glob Public Health*. 3(9): e0002355. https://doi.org/10.1371/journal.pgph.0002355

Bould M. Clarkin CL. Boet S. Pigford AAE. Ismailova F. Measures E. McCarthy AE. Kinnear JA. (2015). Faculty experiences regarding a global partnership for anaesthesia postgraduate training: a qualitative study. *Canadian Journal of Anaesthesia*. 62.11-21

Brereton, S., O'Donovan, K., Ni Chonchubhair, H., Rogers, L. (2025). Postgraduate Critical Care Nursing Students' Experiences of Simulation Working with the same Simulated Participant: A Qualitative Evaluation. *Teaching & Learning in Nursing*. 20(1): e118-e124. https://doi.org/10.1016/j.teln.2024.08.017

British Broadcasting Corporation. (2024). Zambia Country Profile. http://www.bbc.co.uk/news/world-africa-14112449

British Medical Association. (2016). Ethical decision making for doctors in the armed forces: a tool kit. British Medical Association. (2016). Ethical decision making for doctors in the armed forces: a tool kit. www.bma.org.uk [Accessed 20/04/2025]

Brouillette MA. Kaiser SP. Konadu P et al. (2014). Orthopaedic surgery in the developing world: workforce and operative volumes in Ghana compared to those in the United States. *World J Surg*. 38(4):849-57. doi: 10.1007/s00268-013-2314-0.

Brown, MEL, Dueñas, AN. (2019). A Medical Science Educator's Guide to Selecting a Research Paradigm: Building a Basis for Better Research. *Med Sci Educ*. 30(1):545-553. doi: 10.1007/s40670-019-00898-9.

Brownie, SM., Docherty, C., Al-Yateem, N., Gadallah, MH., Rossiter, R. (2018). Developing a national competency-based curriculum for technical nurses in Egypt. *East Mediterr Health J*. 24(9): 922–932. https://doi.org/10.26719/2018.24.9.922

Bruner, JS. (1974). Toward a theory of Instruction. The Belknap Press of Harvard University Press.

Bryman, A. (2012). Social research methods. 4th Edition. Oxford University Press.

Bryman, A. (2016). Social research methods. 5th Edition. Oxford University Press.

Bwire, G., Kisakye, A., Amulen, E., Bwanika, JB., Badebye, J., Aanyu, C., Nakirya, BD., Okello, A., Okello, SA., Bukenya, JN., Orach, CG. (2023). Cholera and COVID-19 pandemic prevention in multiple hotspot districts of Uganda: vaccine coverage, adverse events following immunization and WASH conditions survey. *BMC Infect Dis*. 23(1):487. doi: 10.1186/s12879-023-08462-y.

Byrne-Davis, L., Slattery, H., Whiteside, S., et al. (2015). Efficacy and acceptability of an acute illness management course delivered to staff and students in Uganda by staff from the UK. *Int Health*. 7: 360–6. doi:10.1093/inthealth/ihu078

Budig, K., Diez, J., Conde, P. et al. (2018). Photovoice and empowerment: evaluating the transformative potential of a participatory action research project. *BMC Public Health*. 18, 432. https://doi.org/10.1186/s12889-018-5335-7

Bukamal, H. (2022). Deconstructing insider-outsider research positionality. *BJSE.* 49(3): 327-349. https://doi.org/10.1111/1467-8578.12426

Bultemeier KI. (2012). Nursing in Malawi: Nursing Theory in the movement to professionalize nursing. *Nursing Science Quarterly.* 25. 2. 184-186. doi: 10.1177/0894318412437953.

Bunduki GK., Masoamphambe E., Fox T., Musaya J., Musicha P., Feasey N. (2024). Prevalence, risk factors, and antimicrobial resistance of endemic healthcare-associated infections in Africa: a systematic review and meta-analysis. *BMC Infect Dis*. 24(1):158. doi: 10.1186/s12879-024-09038-0.

Buser, JM., Cranmer, JN., Dzomeku, VM., et al. (2021). The Call for Global Health Research Mentorship for Doctorally Prepared Nurses in Low- and Middle-Income Countries. *Am J Trop Med Hyg*. 104(5):1932-1935. doi: 10.4269/ajtmh.20-1603.

Bvumbwe, T., Mtshali, N. (2018). Nursing education challenges and solutions in Sub Saharan Africa: an integrative review. *BMC Nurs*. 17:3. doi: 10.1186/s12912-018-0272-4.

Bwalya, C., Stoebenau, K., Muchanga, G. et al. (2025). Hospitalized with HIV in Zambia: individual and system factors driving the high burden of admissions and post-discharge mortality in the era of HIV epidemic control. *AIDS Res Ther*. 22: 22. https://doi.org/10.1186/s12981-024-00689-2

Bwembya, J., Kumar, R., Musonda, V., Chimzizi, R., Kasese-Chanda, N., Goma, L., Kabaso, M. et al. (2024). Mortality among persons with tuberculosis in Zambian hospitals: A retrospective cohort study. *PLOS Glob Public Health*. 4(6):e0003329. doi: 10.1371/journal.pgph.0003329.

Cambaza EM. (2023). Expanding provision of professional education for nurses, Africa. *Bull World Health Organ*. 101(3):163-163A. doi: 10.2471/BLT.23.289628.

Camporota, L., Sanderson, B., Chiumello, D., Terzi, N., Argaud, L., Rimmelé, T. (2022). Prone Position in COVID-19 and -COVID-19 Acute Respiratory Distress Syndrome: An International

Multicenter Observational Comparative Study. *Crit Care Med.* 50(4):633-643. doi: 10.1097/CCM.0000000000005354.

Carcelen, AC., Prosperi, C., Mutembo, S., Chongwe, G., Mwansa, FD., Ndubani, P., Simulundu, E., Chilumba, I., Musukwa, G. et al (2022). COVID-19 vaccine hesitancy in Zambia: a glimpse at the possible challenges ahead for COVID-19 vaccination rollout in sub-Saharan Africa. *Hum Vaccin Immunother*. 31;18(1):1-6. doi: 10.1080/21645515.2021.1948784.

Caretta, MA., Vacchelli, E. (2015). Re-Thinking the Boundaries of the Focus Group: A Reflexive Analysis on the Use and Legitimacy of Group Methodologies in Qualitative Research. *Sociological Research Online*. 20(4), 58-70. https://doi.org/10.5153/sro.3812

Carey, TA., Binagwaho A., Kanyola, J. (2020). Beyond Florence Nightingale: how African nurses have decolonised the profession. https://theconversation.com/beyond-florence-nightingale-how-african-nurses-have-decolonised-the-profession-141900 [Accessed 20/04/25]

Carter, C. (2016). The nurse's role in delivering the Global Safe Surgery Campaign. *Br J Nurs*. 25(16):907. doi: 10.12968/bjon.2016.25.16.907

Carter, C., Viveash, S. (2017). Nursing a critically ill, tetanus patient in an intensive care unit in Zambia. *Br J Nurs.* 11(26): 489-496. doi: 10.12968/bjon.2017.26.9.489.

Carter, C., Mukonka, PS., Sitwala, LJ., Howard-Hunt, B., Notter, J. (2020). The development of critical care nursing education in Zambia. *Br J Nurs.* 14;29(9):499-505. doi: 10.12968/bjon.2020.29.9.499.

Carter, C., Mukonka, PS., Sitwala, LJ., Mulawisha, G., Notter, J. (2021). The 'sleeping elephant': The role of mentorship of critical care nurses in Zambia. *Int Nurs Rev.* 68(4):543-550. doi: 10.1111/inr.12717

Carter, C., Notter, J. (2021). Covid-19 1 year on: The challenge for low-middle income countries. *Nurs Crit Care.* 26(5): 410-411. https://doi.org/10.1111/nicc.12632

Carter, C., Notter, J. (2023). Evaluation of an international health partnership to capacity build emergency, trauma and critical care nurse education and practice in Zambia: An experience from the field. *Int Nurs Rev*. 70(3):266-272. doi: 10.1111/inr.12813

Carter, C., Mwape, L., Maphenduka, S., Notter, J. (2025). Aid cuts pose a threat to international partnerships and health security. *Br J Nurs.* 34(10):500-501. doi: 10.12968/bjon.2025.0236. PMID: 40396958.

Canning, N. (2010). Playing with heutagogy: exploring strategies to empower mature learners in higher education. *Journal of Further and Higher Education*. 34(1), 59–71. https://doi.org/10.1080/03098770903477102

Cervantes Barron K., Clube RKM., Chabala R., Matokwani M., Chikwamo MJ. (2024). Value addition for who? Challenges to local participation in downstream critical mineral ventures in Zambia. *The Extractive Industries and Society*. 20: 101554. doi.org/10.1016/j.exis.2024.101554.

Chabert, G., Gregory, R., Pierre, G. (2021). Funding the Recovery of Low-income Countries After COVID. https://www.imf.org/en/Blogs/Articles/2021/04/05/blog-funding-the-recovery-of-low-income-countries-after-covid [accessed 21/04/2025]

Chafe, R. (2023). Rejecting Choices: The Problematic Origins of Researcher-Defined Paradigms within Qualitative Research. *International Journal of Qualitative Methods*. 22. https://doi.org/10.1177/16094069231165951

Chambers, D., Thiekötter, A., Chambers, L. (2013). Preparing student nurses for ontemporary practice: The case for discovery learning. *J Nurs Educ Pract.* 3(9):106–13. https://doi.org/10.5430/jnep.v3n9p106

Chiew-Jiat RS., Chi-Ming H., Yuan SRP., Siew-Lin SK. (2022). Nursing students' perceptions of online learning and its impact on knowledge level. *Nurse Education Today.* 112: 105327. https://doi.org/10.1016/j.nedt.2022.105327

Chilisa, B., Major, TE., Khudu-Petersen, K. (2017). Community engagement with a postcolonial, African-based relational paradigm. *Qual Res.* 17(3):326–39. https://doi.org/10.1177/1468794117696176

Chisembele S. (2016). Zambia: the freedom struggle and the aftermath. The personal story of freedom fighter and leader Sylvester Mwamba Chisembele. New Contree.

Chitonge, H. (2016). Zambia at 50: The persisting challenges of economic structural transformation. *Development Southern Africa*. 33(6): 790–805. https://doi.org/10.1080/0376835X.2016.1231053

Clark, T., Foster, L., Sloan, L., Bryman, A. (2021). Bryman's Social Research Methods. 6th Edition. Oxford University Press.

Commonwealth. (2025). Zambia. https://thecommonwealth.org/our-member-countries/zambia [Accessed 20/04/2025]

Cooksey, RW. (2020). Descriptive Statistics for Summarising Data. In Cooksey, RW. (2018). Illustrating Statistical Procedures: Finding Meaning in Quantitative Data. 61–139. doi: 10.1007/978-981-15-2537-7_5.

Crawford, MA., Mohammed AD., Ntambwe P. (2020). Barriers to effective transfusion practices in limited-resource settings; from infrastructure to cultural beliefs. *World J Surg*. 44: 2094-2099. doi: 10.1007/s00268-020-05461-x.

Credland., N. (2023). Reflections on, and priorities for, critical care nursing. *Nurs Crit Care.* 28(5): 627-628. https://doi.org/10.1111/nicc.12950

Credland, N., Griffin, M., Hamilton, P., Harness, O., McMurray, R. (2024). The impact of COVID-19 on mental health and well-being in critical care nurses - a longitudinal, qualitative study. *Nurs Crit Care.* 29(1):32-39. doi: 10.1111/nicc.12930.

Creswell, JW, Creswell, JD. (2022). Research Design: qualitative, quantitative and mixed methods approaches. 6th Edition. Sage.

Crowley, T., Daniels, F. (2023). Nursing education reform in South Africa: Implications for postgraduate nursing programmes. *International Journal of Africa Nursing Sciences.* 18: 100528. https://doi.org/10.1016/j.ijans.2023.100528

Dabney, BW., Eid, F. (2024). Comparing educational frameworks: unpacking differences between fink's and bloom's taxonomies in nursing education. *Teaching and Learning in Nursing.* 19(4): 347-350. https://doi.org/10.1016/j.teln.2024.05.012

Daka, V., Mubanga, M., Mukanga, B., Mfune, RL., Chileshe, M., Machiko, A., Mudenda, S., Chikwanda, E., Mudenda, T., Simusika, P., Mwale, S., Musalula, S. (2021). Challenges that may impact achieving and maintaining accreditation in clinical laboratories in Zambia during the COVID-19 pandemic. *Pan Afr Med J*. 38:290. doi: 10.11604/pamj.2021.38.290.27836.

Dalglish, SL., Khalid, H., McMahon, SA. (2020). Document analysis in health policy research: the READ approach. *Health Policy and Planning*. 35(10): 1424–1431. https://doi.org/10.1093/heapol/czaa064

Dart PJ, Kinnear J, Bould MD, Mwansa SL, Rakhda Z, Snell D. (2017). An evaluation of inpatient morbidity and critical care provision in Zambia. *Anaesthesia.* 72(2); 172-180. doi: 10.1111/anae.13709.

da Silva, RC., Ferreira Mde, A., Apostolidis, T., Brandão, MA. (2015). A conceptual framework of clinical nursing care in intensive care. *Rev Lat Am Enfermagem.* 23(5):837-45. doi: 10.1590/0104-1169.0501.2622.

David, SA. (2023). Towards a dialogical and progressive educational policy framework: Manoeuvring a middle way among the polarised constructs. *F1000Research*. 12:74 https://doi.org/10.12688/f1000research.127762.2

De Beer, J. (Edt). (2019). The affordances of indigenous knowledge for self-directed learning. NWU Self-Directed Learning Series. Volume 2. South Africa.

De Caro, W., Marucci, AR., Lancia, L., Sansoni, J. (2016). Case study in nursing. In: Biondi-Zoccai G (Editor). Umbrella Reviews: Evidence Synthesis with Overviews of Reviews and Meta-Epidemiologic Studies. Cham, Switzerland: Springer International Publishing.

Denzin, NK. (1970). The research act: A theoretical introduction to sociological methods. New Jersey: Transaction Publishers.

Denzin, NK., Lincoln, YS. (2017). The SAGE Handbook of Qualitative Research. Fifth Edition. Sage.

Derbew, M., Laytin, AD. Dicker, RA. (2016). The surgical workforce shortage and successes in retaining surgical trainees in Ethiopia: a professional survey. *Hum Resour Health.* 14: (Suppl 1): 29. https://doi.org/10.1186/s12960-016-0126-7

Dewan, P., Khalil, S. & Gupta, P. (2024). 'Objective structured clinical examination for teaching and assessment: Evidence-based critique'. *Clinical Epidemiology and Global Health*. 25, 101477. DOI: 10.1016/j.cegh.2023.101477

Dewey, J. (1963) Experience and Education. New York: Collier Books.

Dewey, J. (1966) Democracy and Education: An Introduction to the Philosophy of Education. New York: Free Press

Doria, N., Condran, B., Boulos, L. et al. (2018). Sharpening the focus: differentiating between focus groups for patient engagement vs. qualitative research. *Res Involv Engagem*. 4 (19). https://doi.org/10.1186/s40900-018-0102-6

Dramowski A., Whitelaw A., Cotton MF. (2016). Burden, spectrum, and impact of healthcare-associated infection at a South African children's hospital. J Hosp Infect. 94(4):364-372. doi: 10.1016/j.jhin.2016.08.022.

Dubale BW, Friedman LE, Chemali Z, Denninger JW, Mehta DH, Alem A, Fricchione GL, Dossett ML, Gelaye B. Systematic review of burnout among healthcare providers in sub-Saharan Africa. *BMC Public Health*. 19(1):1247. doi: 10.1186/s12889-019-7566-7

Ébalé S., Mulemi, BA., (2023). The Ubuntu and African Identity in the 21st Century. *The Dubale, BW., Friedman, LE., Chemali, Z., Denninger, JW., Mehta, DH., Alem, A., Fricchione, GL., Dossett, ML., Gelaye, B. (2019). Systematic review of burnout among healthcare providers International Journal of Humanities & Social Studies*. 11(7). https://doi.org/10.24940/theijhss/2023/v11/i7/HS2307-006

Edwards, SL. (1992). Using the Mead model as a framework for nursing care. *Intensive Crit Care Nurs.* 8(4):203-11. doi: 10.1016/0964-3397(92)90051-k. PMID: 1483020.

Elliott, M., Baird, J. (2019). Pulse oximetry and the enduring neglect of respiratory rate assessment: a commentary on patient surveillance. *Br J Nurs*. 28(19):1256-1259. doi: 10.12968/bjon.2019.28.19.1256.

English, AR., Heilbronn, R. (2024). Decolonizing the curriculum: philosophical perspectives—an introduction. *Journal of Philosophy of Education*. 58 (2-3): 155–165, https://doi.org/10.1093/jopedu/qhae043

Epp, S., Reekie, M., Denison, J., de Bosch Kemper, N., Willson, M., Marck P. (2021). Radical transformation: Embracing constructivism and pedagogy for an innovative nursing curriculum. *Journal of Professional Nursing.* 37(5): 804-809. https://doi.org/10.1016/j.profnurs.2021.06.007

Esper, AM., Arabi, YM., Cecconi, M. et al. (2022). Systematized and efficient: organization of critical care in the future. *Crit Care*. 26, 366. https://doi.org/10.1186/s13054-022-04244-1

Estacio, EV., Karic, T. (2016). The world café: An innovative method to facilitate reflections on internationalisation in higher education. *Journal of Further and Higher Education*. 40(6): 731–745. DOI:10.1080/0309877X.2015.1014315

Estenssoro, E., Loudet, CI., Rios, FG., et al. (2021). Clinical characteristics and outcomes of invasively ventilated patients with COVID-19 in Argentina (SATICOVID): a prospective, multicentre cohort study. *Lancet Respir Med.* 9(9): 989–998. doi: 10.1016/S2213-2600(21)00229-0

Ezeonwu, M. (2021). The Role of African Nurse Diaspora in Addressing Public Health Priorities in Africa. *Glob Qual Nurs Res*. 12 (8):23333936211031501. doi: 10.1177/23333936211031501.

Fareed, MZ., Su, Q., Aslam, MU. (2023). Transformational Leadership and Project Success: The Mediating Role of Psychological Empowerment. *SAGE Open*. 13(1). https://doi.org/10.1177/21582440231154796

Firth, P., Ttendo, S. (2012). Intensive care in low-income countries—a critical need. *N Engl J Med*. 367 (21): 1974-6. doi: 10.1056/NEJMp1204957.

Flannery, M. (2016). Explicit Assumptions About Knowing. *Oncol Nurs Forum*. 43(2):245-7. doi: 10.1188/16.ONF.245-247.

Flick, U. (2015). Chapter 3: Ethical issues in social research. In Introducing research methodology. 2nd edition. Sage Publishing.

Forero, DA., Adan, A., Perry, G. (2022). Global perspectives and recommendations for curriculum design in academic programs in the health sciences. *Educación Médica*. 23(2): 100728. https://doi.org/10.1016/j.edumed.2022.100728

Fraser, S., Wright, AD., Van Donkelaar, P., Smirl, JD. (2019). Cross-sectional comparison of spiral versus block integrated curriculums in preparing medical students to diagnose and manage concussions. BMC Medical Education. 19(1): 17. https://doi.org/10.1186/s12909-018-1439-0

Fredericks, JP., Visagie, S., van Niekerk, L., Pharaoh, HG. (2024). Empowering marginalised groups through co-operative inquiry: Illustrated by a practical example. *Afr J Disabil*. 13:1205. doi: 10.4102/ajod.v13i0.1205.

Freire, P. (1970). Pedagogy of the oppressed. Harmondsworth: Penguin

Freire, P. (1996). Pedagogy of the oppressed (revised). New York: Continuum.

Freire Institute. (2025). Global Social Theory. https://globalsocialtheory.org/thinkers/freire-paulo/ [Accessed 17/04/25]

Fresta, M., Fronteira, I., Luacute, J., Ferrinho, P. (2023). Transforming nursing education to support health workforce and nursing education development in Angola: An integrative review. *International Journal of Africa Nursing Studies.* 18: 100535. https://doi.org/10.1016/j.ijans.2023.100535

Frey, B. (Edt). (2018). Document Analysis. In: The SAGE Encyclopaedia of Educational Research, Measurement, and Evaluation. DOI: https://dx.doi.org/10.4135/9781506326139.n209

Frost, R. (1923). “Stopping by Woods on a Snowy Evening” from The Poetry of Robert Frost, edited by Edward Connery Lathem.

Gale, NK., Heath, G., Cameron, E. et al. (2013). Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Med Res Methodol*. 13, 117. https://doi.org/10.1186/1471-2288-13-117

Garde, L., Greinke, L. (2022). Using Participatory Visual Methods to Explore Multi-Local Living Arrangements - The Example of Work-Life Biographies and Reflexive Photography. *International Journal of Qualitative Methods*. 21. https://doi.org/10.1177/16094069221121242

Gear, HS. (1960). Some problems of the medical services of the Federation of Rhodesia and Nyasaland. British Medical Journal. 525-531.

General Nursing Council for England and Wales. (1956). Letter to GNC Registrar from Northern Rhodesia Nurses Association. Dated 11th November 1956. National Archives

General Nursing council for England and Wales. (1963). Correspondence form Ministry of Health (Northern Rhodesia) to GNC. Dated 9th December 1963 and 15th January 1964. National Archives.

General Nursing Council for England and Wales. (1964). Letter agreeing to send an Education Officer to Zambia to support examinations. Dated 3rd November 1964. National Archives.

General Nursing Council for England and Wales. (1968). File note regarding Miss Rafferty, Matron-in-Chief visit to the GNC HQ in London. Dated 20th November 1968. National Archives.

General Nursing Council for England and Wales. (1968b). Statement on decision from the Registration Committee regarding the Government School of Nursing, Kitwe to the Ministry of Health, Zambia. Dated: 12th September 1968. National Archives.

General Nursing Council for England and Wales. (1976). Letter from Registrar of General Nurses Council Zambia to Registrar General Nursing Council England and Wales. Dated 15th January 1976. National Archives.

General Nursing Council for Zambia. (1976b). Letter to Registrar of the GNCZ. Dated: 27th April 1976. National Archives.

General Nursing Council for England and Wales. (1976). Correspondence from Registrars. Dated 5th April 1976. National Archives.

General Nursing Council of Zambia. (2012). Advanced Diploma in Critical Care Nursing Curriculum. Zambia.

General Nursing Council of Zambia. (2012). Advanced Diploma in Critical Care Nursing Procedures Manual. Zambia.

General Nursing Council of Zambia. (2012). Advanced Diploma in Critical Care Nursing Evaluation Manual. Zambia

General Nursing Council of Zambia. (2018). Advanced Diploma in Critical Care Nursing Curriculum. Zambia

Germain, N., Langlois, R., Song, Y. (2021). Zambia: Under Chinese influence. https://www.france24.com/en/tv-shows/reporters/20210326-zambia-under-chinese-influence [Accessed 20/04/25]

Gohery, P., Meaney, T. (2013). Nurses' role transition from the clinical ward environment to the critical care environment. *Int Crit Care Nurs*. 29. 6. 321-328. DOI.10.1016/j.iccn.2013.06.002

Gomersall, CD. (2010). Critical care in the developing world – a challenge for us all. Crit Care. 14(2): 131. doi: 10.1186/cc8871.

Gooding, HC., Mann, K., Armstrong E. (2017). Twelve tips for applying the science of learning to health professions education. *Med Teach.* 39 (1): 26-31. doi: 10.1080/0142159X.2016.1231913.

Government of Republic of Zambia. (1997). Nurses and Midwives Act. Zambia

Government of Republic of Zambia. (2002). Nurses and Midwives (Professional Practice) Act. Section 22.

Government of Republic of Zambia. (2019). Nurses and Midwives Act. Zambia

Government of Republic of Zambia. (2019b). Prevention and control of non-communicable diseases in Zambia: the case for investment. https://uniatf.who.int/docs/librariesprovider22/default-document-library/zambia-ncd-report.pdf?sfvrsn=fb023c4d_1 [Accessed 20/04/2025]

Government of Republic of Zambia. (2020). Code of Ethics for the Public Service and the Local Government. Zambia

Government of Republic of Zambia. (2021). Terms and conditions of Service (Issued by the Secretary to the Cabinet. Zambia

Government of the Republic of Zambia. (2023). The Witch Craft Act. https://www.parliament.gov.zm/sites/default/files/documents/acts/Witchcraft%20Act.pdf [Accessed 28/04/2025]

Green, HE. (2014). Use of theoretical and conceptual frameworks in qualitative research. *Nurse Res.* 21(6):34-8. doi: 10.7748/nr.21.6.34.e1252

Guttormson, JL., Calkins, K., McAndrew, N., Fitzgerald, J., Losurdo, H., Loonsfoot, D. (2022). Critical Care Nurse Burnout, Moral Distress, and Mental Health During the COVID-19 Pandemic: A United States Survey. *Heart Lung.* 55:127-133. doi: 10.1016/j.hrtlng.2022.04.015.

Hagedoorn, NN., Zachariasse, JM., Moll, HA. (2020). Association between hypotension and serious illness in the emergency department: an observational study. *Arch Dis Child*. 105(6):545-551. doi: 10.1136/archdischild-2018-316231

Hambuba, C. (2022). World Bank Welcomes the Common Framework Statement by Zambia's Creditors. https://www.worldbank.org/en/news/statement/2022/07/30/world-bank-welcomes-the-common-framework-statement-by-zambia-s-creditors [Accessed 21/04/2025]

Harerimana, A., Wicking, K., Biedermann, N., Yates, K. (2021). Integrating nursing informatics into undergraduate nurse education in Africa: A scoping review. *Int Nurs Rev*. 68(3): 420–433. doi: 10.1111/inr.12618.

Harris J., Wihak, C. (2017). To what extent do discipline, knowledge domain and curriculum affect the feasibility of the recognition of prior learning (RPL) in higher education? *Int. J. Lifelong Educ.* 36 (6): 696-712. DOI:10.1080/02601370.2017.1379564

Hase, S., Kenyon, C. (2000). From Andragogy to Heutagogy. Ulti-BASE In-Site; https://epubs.scu.edu.au/gcm_pubs/99/ [Accessed 24/04/2025]

Hassan, MA., Aliyu, S. (2022). Delayed Access to COVID-19 Vaccines: A Perspective on Low-income Countries in Africa. Int J Health Serv. 52(3):323-329. doi: 10.1177/00207314221096365.

Hearst, MO., Hughey, L., Magoon, J., Mubukwanu, E., Ndonji, M., Ngulube, E, et al. (2021) Rapid health impact assessment of COVID-19 on families with children with disabilities living in low-income communities in Lusaka, Zambia. *PLoS ONE.* 16(12): e0260486. https://doi.org/10.1371/journal.pone.0260486

Henriksen, KF., Hansen, BS., Wøien, H., Tønnessen, S. (2021). The core qualities and competencies of the intensive and critical care nurse, a meta-ethnography. *J Ad Nurs*. 77(12): 4693-4710. https://doi.org/10.1111/jan.15044

Hersh, AM., Beesley, SJ. (2018). The Difficulty of Predicting Intensive Care Unit Mortality in Resource-limited Settings. *Ann Am Thorac Soc*. 15(11):1282-1284. doi: 10.1513/AnnalsATS.201808-580ED

Heron J. (1996). Co-operative inquiry: research into the human condition. Sage Publishing.

Hertzberg, CK., Magelssen, M. Heggestad, AKT. (2024). Putting patients first: when home-based care staff prioritise loyalty to patients above the system and themselves. An ethnographic study. BMC Med Ethics. 25: 95 https://doi.org/10.1186/s12910-024-01094-0

HM Government. (1926). Northern Rhodesia Report for 1924-25. Colonial Annual Report No. 1292. HMSO

Hughes DA., Farinosi F. (2020). Assessing development and climate variability impacts on water resources in the Zambezi River basin. Simulating future scenarios of climate and development. *Journal of Hydrology: Regional Studies*. 32. 100763. doi.org/10.1016/j.ejrh.2020.100763.

Hutchinson, E., Kiwanuk, S., Muhindo, R., Nimwesiga, C., Balabanova, D., McKee, M., Kitutu, FE. (2024). The paradoxical surplus of healthcare workers in Africa: the need for research and policy engagement. *Eur J Public Health*. 34, (Suppl 3): ckae144.269. doi: 10.1093/eurpub/ckae144.269.

Hoaas, H., Andreassen, HK., Lien, LA., Hjalmarsen, A., Zanaboni, P. (2016). Adherence and factors affecting satisfaction in long-term telerehabilitation for patients with chronic obstructive pulmonary disease: a mixed methods study. *BMC Med Inform Decis Mak.* 16:26. doi: 10.1186/s12911-016-0264-9.

Holmes, AGD. (2020). Researcher Positionality – A Consideration of Its Influence and Place in Qualitative Research - A New Researcher Guide. *Int J Ed*. 8 (4): 1-10. DOI: https://doi.org/10.34293/education.v8i4.3232

Holmes, AGD. (2020). Researcher Positionality - A Consideration of Its Influence and Place in Qualitative Research - A New Researcher Guide. *International Journal of Education*. 8(4): 1-10. https://doi.org/10.34293/education.v8i4.3232

Hopman, J., Allegranzi, B., Mehtar, S. (2020). Managing COVID-19 in Low- and Middle-Income Countries. *JAMA*. 323(16):1549–1550. doi:10.1001/jama.2020.4169

Horkeimer M. (1982). Critical Theory. New York: Seabury Press.

Iheduru-Anderson, K., Foley, JA. (2021). Transitioning to Full Online Teaching During Covid-19 Crisis: The associate degree Nurse Faculty Experience. *Glob Qual Nurs Res*. 8:23333936211057545. doi: 10.1177/23333936211057545.

International Council of Nurses. (2019). International career mobility and ethical nurse recruitment.https://www.icn.ch/system/files/documents/2019-11/PS_C_International%20career%20mobility%20and%20ethical%20nurse%20recruitment_En.pdf [Accessed 20/04/2025]

International Council of Nurses. (2020). Guidelines on Advanced Practice Nursing. https://www.icn.ch/system/files/documents/2020-04/ICN_APN%20Report_EN_WEB.pdf [Accessed 20/04/25]

International Council of Nurses. (2021). The ICN Code of Ethics for Nurses. https://www.icn.ch/sites/default/files/2023-06/ICN_Code-of-Ethics_EN_Web.pdf [Accessed 20/04/2025]

International Council of Nurses. (2021b). Eastern, Central and Southern African Region: Labour Markets for Nurses: Challenges and Opportunities. https://www.icn.ch/resources/publications-and-reports/ecsa-report-education-and-labor-markets-nurses [Accessed 21/04/2025]

Institute for Health Metrics and Evaluation. (2025). Zambia. https://www.healthdata.org/research-analysis/health-by-location/profiles/zambia [Accessed 17/04/25]

International Monetary Fund. (2023). Zambia. IMF Country Report 23/257. https://www.imf.org/en/Publications/CR/Issues/2023/07/13/Zambia-Selected-Issues-536343 [Accessed 21/04/2025]

Ireland, J., & Mouthaan, M. (2020). Perspectives on curriculum design: comparing the spiral and the network models. *Research* Matters. 30: 1-7. https://doi.org/10.17863/CAM.100405

Ivey, J. (2015). How Important Is a Conceptual Framework? *Pediatr Nurs*. 41(3):145, 153.

Jackson, J., Anderson, JE., Maben, J. (2021). What is nursing work? A meta-narrative review and integrated framework. *International Journal of Nursing Studies*. 122. 103944. doi.org/10.1016/j.ijnurstu.2021.103944.

Janowicz, A., Kasole, T., Measures, E. (2017). Development of Education and Research in Anaesthesia and Intensive Care Medicine at the University Teaching Hospital in Lusaka, Zambia: A Descriptive Observational Study. *Anaesthesia & Analgesia*. 125. 1. 287-293. DOI: 10.1213/ANE.0000000000002048

Jecker, NS., Atuire, CA., Kenworthy, N. (2022). Realizing Ubuntu in global health: An African approach to global health justice. *Public Health Ethics*. 15: 256–267. https://doi.org/10.1093/phe/phac022

Jochberger, S., Ismailova, F., Banda, D., et al. (2010). A survey of the status of education and research in anaesthesia and intensive care medicine at the University Teaching Hospital in Lusaka, Zambia. *Arch Iran Med.* 13: 5-12.

Josephson, A., Kilic, T. & Michler, J.D. (2021). Socioeconomic impacts of COVID-19 in low-income countries. Nat Hum Behav. 5: 557–565. https://doi.org/10.1038/s41562-021-01096-7

Kapp, A. (1833). Platon's Erziehungslehre, Als Pädagogik Für Die Einzelnen Als Staatspädagogik. Ober Dessen Praktische Philosophie. Minden, Germany: Verlag von Ferdinand Essmann.

Karydi, KI., Kabaghe, S., Blamey, H., et al. (2024). Non-physician anaesthesia providers' perspectives on task sharing practices in Zambia and Somaliland: a qualitative study. *BMJ Open*. 14:e078939. doi: 10.1136/bmjopen-2023-078939

Karlsaune, H., Antonsen, T., Haugan, G. (2023). Simulation: A Historical and Pedagogical Perspective. In: Akselbo, I., Aune, I. (eds) How Can we Use Simulation to Improve Competencies in Nursing? Springer, Cham. https://doi.org/10.1007/978-3-031-10399-5_1

Kasongo, A., Mudenda, S., Ravi, P., Akakandelwa, A., Chabalenge, B., Kasanga, M., Kasongo, L., et al. (2023). Prevalence of Substance Use Disorders During the Covid-19 Pandemic: A Cross-Sectional Study in Kanyama Township of Lusaka District, Zambia. *Texilla International Journal of Public Health*. DOI: 10.21522/TIJPH.2013.11.03.Art010

Katowa-Mukwato, P., Mwape, L., Kabinga-Makukula, M., Ngoma, C. (2023). Nursing and Midwifery Education at the University of Zambia: A Four Decade Trajectory and Future Focus. *Africa Health*. October: 29-31

Katowa-Mukwato, P., Mwape, L., Kabinga-Makukula, M., Mweemba, P., Maimbolwa, MC. (2013). Implementation of Objective Structured Clinical Examination for Assessing Nursing Students' Clinical Competencies: Lessons and Implications. *Creative Education*. 4(10A): 48-53. http://dx.doi.org/10.4236/ce.2013.410A008

Kaunda, K. (1962). Zambia shall be free. African Writers Series. Heinemann Educational Books.

Kemp, KJ., Shaw, E. Musoke, MG. (2018) Developing a model of midwifery mentorship for Uganda: The MOMENTUM project 2015–2017. *Midwifery*. 59: 127–129. http://doi.org.10.1016/j.midw.2018.01.013

Khalil, MK., Elkhider, IA. (2016). Applying learning theories and instructional design models for effective instruction. *Adv Physiol Educ*. 40(2):147-56. https://doi.org/10.1152/advan.00138.2015

Khan, S., Ntakana, MN. (2023). Theorising a theory of Ubuntu – the divide between individualism compared to a socialistic understanding of African society. *African Journal of Social Work*. 13(4): 217-223. https://dx.doi.org/10.4314/ajsw.v13i4.5

Kelly, FE., Fong, K., Hirsch, N., Nolan, JP. (2014). Intensive care medicine is 60 years old: the history and future of the intensive care unit. *Clinical Medicine*. 14 (4): 376–9. DOI: 10.7861/clinmedicine.14-4-376

Kelly LM. Cordeiro M. (2020). Three principles of pragmatism for research on organizational processes. *Methodological Innovations*. 1–10. https://doi.org/10.1177/2059799120937242

Kemp G., Nortje W. (2023). Prosecuting the Crime against Humanity of Apartheid: The Historic First Indictment in South Africa and the Application of Customary International Law. *Journal of International Criminal Justice*. 21 (2): 405–430, https://doi.org/10.1093/jicj/mqad023

Kifle, F., Boru, Y., Tamiru, HD., Sultan, M., Walelign, Y., Demelash, A., Beane, A., Haniffa, R., Gebreyesus, A., Moore, J. (2022). Intensive Care in Sub-Saharan Africa: A National Review of the Service Status in Ethiopia. *Anesth Analg*. 134(5):930-937. doi: 10.1213/ANE.0000000000005799.

Killen R., O'Toole M. (2023). Effective Teaching Strategies. 8th Edition. Cengage.

Kim, JH., Park, H. (2019). Effects of Smartphone-Based Mobile Learning in Nursing Education: A Systematic Review and Meta-analysis. *Asian Nursing Research.* 13(1) 20-29. DOI: 10.1016/j.anr.2019.01.005

Kimani, RW. (2023). Racism, colonialism and the implications for nursing scholarship: A discussion paper. *Journal of Advanced Nursing.* 79(5): 1745-1753. https://doi.org/10.1111/jan.15634

King, J., O'Neill, B., Ramsay, P. et al. (2019). Identifying patients' support needs following critical illness: a scoping review of the qualitative literature. Crit Care 23, 187. https://doi.org/10.1186/s13054-019-2441-6

Kinnear, J., Bould, M., Measures, E. (2013). A new partnership for anaesthesia training in Zambia, reflections on the first year. *Can J Anaest*. 60. 484-491. doi: 10.1007/s12630-013-9905-y.

Klingberg, S., Stalmeijer, R. E., & Varpio, L. (2023). Using framework analysis methods for qualitative research: AMEE Guide No. 164. *Medical Teacher*. 46(5), 603–610. https://doi.org/10.1080/0142159X.2023.2259073

Klopper, HC., Coetzee, SK., Pretorus, R., Bester, P. (2012). Practice environment, job satisfaction and burnout of critical care nurses in South Africa. *J Nurs Manag*. 20. 685–695. doi: 10.1111/j.1365-2834.2011.01350.x.

Konlan, KD., Lee, TW., Damiran, D. (2023). The factors that are associated with nurse immigration in lower- and middle-income countries: An integrative review. *Nurs Open*. 10(12):7454-7466. doi: 10.1002/nop2.2003.

Korstjens, I., Moser, A. (2018). Series: Practical guidance to qualitative research. Part 4: Trustworthiness and publishing. *Eur J Gen Pract.* 24(1):120-124. doi: 10.1080/13814788.2017.1375092.

Kousoulis, AA., Grant, IF., Duncan, JA., Larson, HJ. (2023). Revisiting the Ebola epidemic in West Africa: the role of emotional determinants in public responses. *Afr J Infect Dis*. 17(2):14–22. doi: 10.21010/Ajidv17i2.3

Knapke, JM., Hildreth, L., Molano, JR., Schuckman, SM., Blackard, JT., Johnstone, M., et al. (2024). Andragogy in practice: applying a theoretical framework to team science training in biomedical research. *Br J Biomed Sci*. 81: 12651 https://doi.org/10.3389/bjbs.2024.12651

Knowles, MS., Elwood, FH., Swanson, RA. (2014). The Adult Learner: The definitive classic in adult education and human resource development. 8th Edition. DOI https://doi.org/10.4324/9781315816951

Knowles, MS., Holton, EF., Swanson, RA. (2012). Adult Learner. 7th Edition. Taylor & Francis Group.

Knowles, MS., Holton, EF., Swanson, RA. (2005). The Adult Learner: The Definitive Classic in Adult Education and Human Resource Development. Elsevier.

Krishnamoorthy, V., Vavilala, MS., Mock, CN. (2014). The need for ventilators in the developing world: an opportunity to improve care and save lives. Journal of Global Health. JOGH. 4(1): 010303.

Kruisselbrink, R., Kwizera, AM., Crowther, M., For-Robichaud, A., O'Shea, T., Nakibuuka, J., Ssinabulya, I. et al. (2016). Modified Early Warning Score (MEWS) Identifies Critical Illness among Ward Patients in a Resource Restricted Setting in Kampala, Uganda: A Prospective Observational Study. *Plos one.* 11(3): e0151408. doi: 10.1371/journal.pone.0151408.

Kulik, CM., Nguyen, VNB. (2017). Virtual mentoring for early career nurses, educators, and researchers. *Convention*. 131. https://www.sigmarepository.org/convention/2017/presentations_2017/131

Kwizera, A., Dünser, M., Nakibuuka, J. (2012). National intensive care unit bed capacity and ICU patient characteristics in a low-income country. *BMC Res Notes*. 1(5) :475. doi: 10.1186/1756-0500-5-475

Kwizera, A., Sendgaire, C., Kamuntu, Y., Rutayisire, M., Nakibuuka, J., et al. (2022). Building critical care capacity in a low-income country. *Crit Care Clin*. 38: 747-759. doi: 10.1016/j.ccc.2022.07.003.

Laakso, L. Adu, KH. (2024). 'The unofficial curriculum is where the real teaching takes place': faculty experiences of decolonising the curriculum in Africa. Higher Education. 87:185–200. https://doi.org/10.1007/s10734-023-01000-4

Laher, AE., Van Rooyen, LR., Gerber, L., Richards, GA. (2020). Compliance with hygiene practices among healthcare workers in the intensive care unit. *S Afr Med J.* 110(8):791-795. doi: 10.7196/SAMJ.2020.v110i8.14512.

Lai, J., Ma, S., Wang, Y., et al. (2020). Factors Associated with Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease. *JAMA Network Open*. 3(3) doi: 10.1001/jamanetworkopen.2020.3976.

Lamb, A., Fry, M., & Sheppard-Law, S. (2024). How a critical care environment influences nurses' health and working capacity: a scoping review. *Contemporary Nurse*. 60(5), 555–575. https://doi.org/10.1080/10376178.2024.2367663

Langenegger, EJ., Theron, GB., Hall, DR., Bello, C., Vidarte, MFE. (2019). A blueprint to establish a four-bed obstetric critical care unit in the labour ward of a central hospital. *Int J Gynaecol Obstet*. 146: 29-35. doi: 10.1002/ijgo.12828.

Lartey, S., Cummings, G., Profetto-McGrath, J. (2014). Interventions that promote retention of experienced registered nurses in health care settings: a systematic review. *Journal of Nursing Management*. 22: 1027–41. doi:10.1111/jonm.12105

Lat, TI., McGraw, MK., White, HD. (2021). Gender Differences in Critical Illness and Critical Care Research. *Clin Chest Med.* 42(3):543-555. doi: 10.1016/j.ccm.2021.04.012.

Latour, JM., Kentish-Barnes, N., Jacques, T., Wysocki, M., Azoulay, E., Metaxa, V. (2022). Improving the intensive care experience from the perspectives of different stakeholders. *Crit Care*. 26(1):218. doi: 10.1186/s13054-022-04094-x.

Law, TJ., Bulamba, F., Ochieng, JP., et al. (2019). Anesthesia provider training and practice models: a survey of Africa. *Anesth Analg*. 129:839–46. doi:10.1213/ANE.0000000000004302

Leligdowicz, A., Fischer, WA.,Uyeki, TM., Fletcher, TE., Adhikari, NJK., Portella G., et al. (2016). Ebola virus disease and critical illness. Critical Care. 20(1): 217. doi: 10.1186/s13054-016-1325-2.

Levy Mwanawasa Medical University. (2025). Ms. Kapelwa Sikota Lecture Theater. https://lmmu.ac.zm/room2.html [Accessed 20/04/25]

Li, PKT., Burdmann, EA., Mehta, RL for World Kidney Day Steering Committee. (2013). Acute kidney injury: global health alert. *Adv Chronic Kidney Dis.* 20. 2 114-7. DOI: 10.1053/j.ackd.2012.12.003

Li, H., Nie, W., Li, J. (2014). The benefits and caveats of international nurse migration. *International* Journal of Nursing Sciences. 1(3): 314-317. https://doi.org/10.1016/j.ijnss.2014.07.006

Li, Y., Wang, C., Tan, W., Jiang, Y. (2023). The transition to advanced practice nursing: A systematic review of qualitative studies. *International Journal of Nursing Studies.* 144: 104525. https://doi.org/10.1016/j.ijnurstu.2023.104525

Lillie, EMMA., Homes, CJ., Odonohue, EA., Bowen, L., Ngwisha, CLT., Ahmed, Y., Snell, DM., Kinnear, JA., Bould, MD. (2015). Avoidable perioperative mortality at the University Teaching Hospital, Lusaka, Zambia: a retrospective cohort study. *Canadian Journal of Anaesthesia*. 62. 1259-67. doi: 10.1007/s12630-015-0483-z

Lima, MS., Alzyood, M. (2024). The impact of preceptorship on the newly qualified nurse and preceptors working in a critical care environment: An integrative literature review. *Nurs in Crit Care.* 29(5): 1178-1189. https://doi.org/10.1111/nicc.13061

Lingreen A, Di Benedetto CA. Brodie RJ. Jaakkola E. (2021). How to develop great conceptual frameworks for business-to-business marketing. *Industrial Marketing Management.* 94: A2-A10. https://doi.org/10.1016/j.indmarman.2020.04.005

LoBiondo-Wood, G., Haber, J. (2017). Nursing Research. Elsevier Health Sciences.

Lockey, A., Conagham, P., Bland, A., Astin, F. (2021). Educational theory and its application to advanced life support courses: a narrative review. *Resuscitation Plus*. 5. 100053. https://doi.org/10.1016/j.resplu.2020.100053

Lombe, D., Phiri, M., Msadabwe, S. (2020). Negative impact of the COVID-19 pandemic on the management of cervical cancer patients in Zambia. *E-cancer Medical Science.* 14 (103): 1-3. https://doi.org/10.3332/ecancer.2020.ed103

Losonczy, LI., Papali, A., Kivlehan, S., Calvello Hynes, EJ., Calderon, G., Laytin, A., Moll, V., Al Hazmi, A., Alsabri, M., et al. (2021). White Paper on Early Critical Care Services in Low Resource Settings. *Ann Glob Health*. 87(1):105. doi: 10.5334/aogh.3377.

Lowe, G. (2017). Nurse practitioners: Framing their professional identity. *The Journal for Nurse Practitioners.* 13(2): 175. 10.1016/j.nurpra.2016.12.021

Luft, JA., Jeong, S., Idsardi, R., Gardner, G. (2022). Literature Reviews, Theoretical Frameworks, and Conceptual Frameworks: An Introduction for New Biology Education Researchers. *CBE Life Sci Educ.* 21(3):rm33. doi: 10.1187/cbe.21-05-0134.

Luke, M., Goodrich, K. M. (2019). Focus Group Research: An Intentional Strategy for Applied Group Research? *The Journal for Specialists in Group Work*. 44(2): 77–81. https://doi.org/10.1080/01933922.2019.1603741

Lyu, X., Siovong, P., Akkadechanunt, T., Juntasopeepun, P. (2022). Factors influencing intention to stay of male nurses: A descriptive predictive study. *Nursing & Health Sciences*. 24: 322–329. https://doi.org/10.1111/nhs.12928

Maarouf H. (2019). Pragmatism as a supportive paradigm for the mixed methods approach: conceptualising the ontological, epistemological and axiological stances of pragmatism. *Int Bus Res.* 12. 9. DOI:10.5539/ibr.v12n9p1

Macey, A., O'Reilly, G., Williams, G., et al. (2022). Critical care nursing role in low and lower middle-income settings: a scoping review. *BMJ Open*. 12: e055585. doi:10.1136/bmjopen-2021-055585

Maekawa, I. (2022). Cold War and Decolonisation: The British Response to Soviet Union Anti-colonialism in Sub-Saharan Africa. *The Journal of Imperial and Commonwealth History*. 51(1): 182–210. https://doi.org/10.1080/03086534.2022.2116149

Mahfuz Al-Hasam, S., Saulam, J., Mikami, F., Kanda, K., Yokoi, H., Hirao, T. (2022). COVID-19 outbreak trends in South Africa: A comparison of Omicron (B.1.1.529), Delta (B.1.617.2), and Beta (B.1.351) variants outbreak periods. *Journal of Infection & Public Health.* 15(7): 726-733. https://doi.org/10.1016/j.jiph.2022.05.011

Makhene A. (2023). Decolonisation of the nursing education curriculum in Gauteng province, South Africa: A concept analysis. *Health SA.* 28:2449. doi: 10.4102/hsag.v28i0.2449.

Mkandawire, SB., Simooya, SM., Monde, PN. (2019). Zambian Culture: Harnessing Cultural Literacy with a Focus on Selected Myths and Taboos. 2nd Edition. UNZA Press. ISBN: 978-9982-03-105-9

Malya, RM., Mahande, MJ., Urstad, KH. et al. (2025). Perception of simulation-based education among nursing and midwifery students in Tanzania: a qualitative study. *Adv Simul*. 10: 8. https://doi.org/10.1186/s41077-025-00339-1

Malik, SA. (2017). Revisiting and re-representing scaffolding: The two-gradient model. *Cogent Education.* 4(1). https://doi.org/10.1080/2331186X.2017.1331533

Mandlelize, PN., Sepeng, MS. (2024). Exploring challenges of adult learning in selected adult education and training centres in South Africa: An analysis of Knowles' Theory of Andragogy. *Social Sciences and Education Research Review*. 11(1): 152-160. https://doi.org/10.5281/zenodo.#

Manpula, RW., Laher, AE., Richards, GA. (2020). Patterns of presentation and survival of HIV-infected patients admitted to a tertiary-level intensive care unit. *HIV Medicine*. 21: 334-341. doi: 10.1111/hiv.12834.

Manzi, A., Hirschhorn, LR., Sherr, K., Chirwa, C., Baynes, C., Awoonor-Williams, JK. (2017). AHI PHIT Partnership Collaborative. Mentorship and coaching to support strengthening healthcare systems: lessons learned across the five Population Health Implementation and Training partnership projects in sub-Saharan Africa. *BMC Health Serv Res*. 17(Suppl 3):831. doi: 10.1186/s12913-017-2656-7.

Marks, IH., Thomas, H., Bakhet, M., et al. (2019). Medical equipment donation in low-resource settings: a review of the literature and guidelines for surgery and anaesthesia in low-income and middle-income countries. BMJ Global Health. 4: e001785. https://doi.org/10.1136/bmjgh-2019-001785

Marshall, JC., Bosco, L., Adhikari, NK., Connolly, B., Diaz, JV., Dorman, T. et al. (2017). What is an intensive care unit? A report of the task force of the World Federation of Societies of Intensive and Critical Care Medicine. *J Crit Care*. 37:270-276. doi: 10.1016/j.jcrc.2016.07.015.

Maslow, AH. (1943). A theory of human motivation. *Psychol Rev*. 50(4):370–96

Matahela, VE., et Phil, D. (2025). Ubuntu philosophy as a transformative pedagogical approach for advancing planetary health in nursing education in the Anthropocene era. *Teaching and Learning in Nursing.* 20: 164-173. https://doi.org/10.1016/j.teln.2025.01.011

Matahela, VE. Ngwenya, N. (2025). 'A meta-synthesis of studies on ubuntu philosophy in nursing: Implications for nursing education'. *Curationis*. 48(1): a2652. https://doi.org/10.4102/curationis.v48i1.2652

Maxwell, J. (2017). Qualitative research design: an interactive approach. 3rd Edition. Sage.

Mbombi, MO., Mothiba, TM. (2020). Exploring barriers that nurses experience to enrolment for a postgraduate nursing qualification at a higher education institution in South Africa. *AJHPE.* 12(1):41-45. https://doi.org/10.7196/AJHPE.2020.v12i1.1126

Mbewe, M., Mbewe, N., Ngoma, C. (2020). Factors contributing to students' satisfaction with direct observation of procedural skills in the school of nursing sciences at the University of Zambia. *Journal of Nursing Education and Practice*. 10 (9): 47-56. https://doi.org/10.5430/jnep.v10n9p47

Mbuthia, N., Kagwanja, N., Ngari, M. et al. (2024). General ward nurses detection and response to clinical deterioration in three hospitals at the Kenyan coast: a convergent parallel mixed methods study. *BMC Nurs.* 23:143. https://doi.org/10.1186/s12912-024-01822-2

Mbuthia, D., Brownie, S., Jackson, D., McGivern, G., English, M., Gathara, D., Nzinga, J. (2023). Exploring the complex realities of nursing work in Kenya and how this shapes role enactment and practice-A qualitative study. *Nurs Open*. 10(8):5670-5681. doi: 10.1002/nop2.1812.

McGrath, SP., MacKenzie, T., Perreard, I. et al. (2021). Characterizing rescue performance in a tertiary care medical center: a systems approach to provide management decision support. *BMC Health Serv Res.* 21, 843. https://doi.org/10.1186/s12913-021-06855-w

McKim, CA. (2017). The value of mixed methods research: a mixed methods study. *Journal of Mixed Methods Research*. 11(2): 202-222. https://doi.org/10.1177/1558689815607096

Meara, JG., Leather, AJ., Hagander, L., Alkire, BC., Alonso, N., Ameh, EA., Bickler, SW., Conteh, L., Dare, AJ., et al. (2015). Global Surgery 2030: evidence and solutions for achieving health, welfare, and economic development. *Lancet.* 386(9993):569-624. doi: 10.1016/S0140-6736(15)60160-X.

Mehta, S., Machado, F., Kwizera, A., Papazian, L., Moss, M., Azoulay, E., et al. (2021). Covid-19: a heavy toll on healthcare workers. *Lancet Respiratory Medicine.* 9(3): 226-228. DOI: 10.1016/S2213-2600(21)00068-0 External Link

Mer, M., Aryal, D., Nielsen, ND., Neto, AS., Seth, B., Raees, M., Dünser, MW., Rudd, KE. (2022). Critical Care Pandemic Preparation: Considerations and Lessons Learned from COVID-19. *Crit Care Clin*. 38(4):761-774. doi: 10.1016/j.ccc.2022.07.002.

Mills, D., Schmid, A., Najajreh, M., Al Nasser, A., Awwad, Y., Qattush, K., Monuteaux, MC., Hudgins, J., Salman, Z., Niescierenko, M. (2021). Implementation of a paediatric early warning score tool in a pediatric oncology Ward in Palestine. *BMC Health Serv Res*. 21(1):1159. doi: 10.1186/s12913-021-07157-x.

Ministry of Health. (2017a). Zambia National Health Strategic Plan 2017-2021. https://www.moh.gov.zm/?wpfb_dl=3 [Accessed 20/04/2025]

Ministry of Health. (2017b). The Ministry of Health National Surgical, Obstetric and Anaesthesia Strategic Plan 2017-2021. https://www.medbox.org/document/national-surgical-obstetric-and-anesthesia-strategic-plan-nsoasp-year-2017-2021 [Accessed 20/04/2025]

Ministry of Health. (2018). Zambia National Health Accounts: 2013 – 2016. www.moh.gov.zm

Ministry of Health. (2022). 2022-2026 National Health Strategic Plan. https://www.moh.gov.zm/wp-content/uploads/2023/02/National-Health-Stratergic-Plan-for-Zambia-2022-to-2026-revised-February-2023-lower-resolution.pdf [Accessed 20/04/2025]

middle-income countries: a scoping review. *JBI Evidence Synthesis*. 21(10): 1912-1970. DOI: Mirgissa, K., Birhanu, Z., Villalobos, F., et al. (2023). Health research mentorship in low- and 10.11124/JBIES-22-00260

Mistri, IU., Badge, A., Shahu, S. (2023). Enhancing Patient Safety Culture in Hospitals. *Cureus*. 15(12):e51159. doi: 10.7759/cureus.51159.

Moilanen, T., Sivonen, M., Hipp, K., et al. (2022). Developing a Feasible and Credible Method for Analyzing Healthcare Documents as Written Data. *Global Qualitative Nursing Research*. 9. doi:10.1177/23333936221108706

Monde, MW., Akakandelwa, A., Kanyengo, CW. (2017). Nurses and Use of Research Information in Clinical Practice: a Case Study of the University Teaching Hospital in Zambia" (2017). *Library Philosophy and Practice*. 1560. http://digitalcommons.unl.edu/libphilprac/1560

Money, D., Chansa, C. J. (2024). Sixty Years Since Zambia's Independence: Revisiting Scholarship on the Struggle Against Colonialism. South African Historical Journal. 76(1–2), 228–232. https://doi.org/10.1080/02582473.2024.2441739

Moss, M., Good, VS., Gozal, D., Kleinpell, R., Sessler, CN. (2016). A critical care societies collaborative statement: burnout syndrome in critical care health-care professionals. A call for action. Am J Respir Crit Care Med. 194: 106–13. doi: 10.1164/rccm.201604-0708ST.

Mothokoa, NB., Maritz, J. (2018). Recognition of prior learning candidates' experiences in a nurse training programme. *Health SA*. 23:1080. doi: 10.4102/hsag.v23i0.1080.

Moudi, Z., Tabatabaei, SM., Sargazi-Moakhar, Z., Mollashahi, S., Zaboli, M., Boroojeny, SB. (2019). Empowering midwives to manage postpartum haemorrhage in rural areas of Islamic Republic of Iran: Lessons learnt from cases of maternal death. *Eastern Mediterranean Health Journal*. 25(9): 637–646. DOI: 10.26719/emhj.19.008

Mthiyane GN., Habedi DS. (2018). The experiences of nurse educators in implementing evidence-based practice in teaching and learning. *Health SA Gesondheid.* 23(0): a1177. https://doi.org/10.4102/hsag.v23i0.1177

Mtsoeni, L., Matlala, S., Downing, C. (2023). Newly qualified intensive care nurses' lived experiences of being a shift leader in a private healthcare institution in Gauteng, South Africa. *International Journal of Nursing Studies.* 10(3): 351-358. https://doi.org/10.1016/j.ijnss.2023.06.007

Mugumbate, JR., Chereni, A. (2019). Using African Ubuntu theory in social work with children in Zimbabwe. *African Journal of Social Work*. 9(1), 27–35.

Muhammad-Lawal, AT., Anokwuru, RA., Bhana-Pema, V., Mulaudzi, FM. (2022). Ubuntu as an Instrument to Foster Holistic Nursing: The Views of South African Student Nurses. *Journal of Holistic Nursing*. 41(3):303-309. doi:10.1177/08980101221129721

Mukanu, MM., Zulu, JM., Mweeba, C., Mutale, W. (2017). Responding to non-communicable diseases in Zambia: a policy analysis. *Health Research Policy and Systems*. 15:34 DOI 10.1186/s12961-017-0195-7

Mulaudzi, FM., Cur, M., Phil, DL., Gundo, R. (2024). The views of nurses and healthcare users on the development of Ubuntu community model in nursing in selected provinces in South Africa: A participatory action research. Nursing Outlook. 72(6): 102269. https://doi.org/10.1016/j.outlook.2024.102269

Mulaudzi, FM., Anokwuru, RA., Mogale, R., Moloko-Phiri, SS., DuPlessis, MA. (2022). Perceptions of Retired Nurses on Factors Preventing Younger Professional Nurses from

Applying the Ethos of Ubuntu in Professional Care. *SAGE Open Nurs.* 8:23779608221091072. doi: 10.1177/23779608221091072.

Mulenga, U., Malisawa, P., Muir, N., Bach, S. (2015). Creating a critical care nursing workforce in Zambia. World Federation of Critical Care Nursing Conference.

Mukhalalati, BA., Taylor, A. (2019). Adult Learning Theories in Context: A Quick Guide for Healthcare Professional Educators. *J Med Educ Curric Dev*. 10 (6) :2382120519840332. doi: 10.1177/2382120519840332.

Mulaudzi, F., Gundo, R. (2024). Perspective Chapter: Ubuntu Model of Health Care – Re-Envisioning Nursing Practice in the Digital Era. In David, L. (2024): Nursing Studies: a path to Success. DOI: 10.5772/intechopen.1004440

Munir, F. (2021). Ubuntu in the Engineering Workplace: Paying it forward through Mentoring. *Commonwealth Youth and Development*. 18 (1):17 pages. https://doi.org/10.25159/2663-6549/8379.

Munthali, J., Bowa, K., Odimba BFK. (2008). Stress and harassment among theatre nurses at the University Teaching Hospital in Zambia. *East and Central African Journal of Surgery*. 13(1): 34-36

Murphy, F., Williams, A., Pridmore, JA. (2010) Nursing models and contemporary nursing 1: their development, uses and limitations. *Nurs Times.* 15-21;106(23):18-20.

Murthy, S., Leligdowicz, A., Adhikari, NK. (2015). Intensive care unit capacity in low-income countries: a systematic review. *PLoS One.* 10(1):e0116949. doi: 10.1371/journal.pone.0116949

Mutea, N., Cullen, D. (2012). Kenya and distance education: a model to advance graduate nursing. *Int J Nurs Pract.* 18(4):417-22. doi: 10.1111/j.1440-172X.2012.02043.x.

Mwewa B, Mweemba P (2010) Knowledge and utilisation of ICU admission criteria and guidelines, Lusaka, Zambia. *Medical Journal of Zambia.* 37(3): 143-52

Mweene, MD., Richards, GA., Paget, G., Banda, J., Dickens, C. (2022). Risk factors and outcomes of sepsis-associated acute kidney injury in intensive care units in Johannesburg, South Africa. *SAMJ.* 112(12): 919-923. https://doi.org/10.7196/SAMJ.2022.v112i12.16410

Nakitende I., Nabiryo J., Namujwiga T., Wasingya-Kasereka L., Kellett J. (2020). Do different patient populations need different early warning scores? The performance of nine different early warning scores used on acutely ill patients admitted to a low-resource hospital in sub-Saharan Africa. *Clin Med (Lond).* 20(1):67-73. doi: 10.7861/clinmed.2019-0196.

Na-Mee, L., Singini, D., Janes, CR., Grépin, KA., Liu, JA. (2023). Identifying barriers to the production and use of routine health information in Western Province, Zambia, *Health Policy and Planning*. 38(9): 996–1005. https://doi.org/10.1093/heapol/czad077

Nardi, BA., ENgeström, YA. (1999). Web on the Wind: The Structure of Invisible Work. *CSCW*. 8: 1–8. https://doi.org/10.1023/A:1008694621289

National Archives. (2025). Migration. National Museum, Lusaka, Zambia.

Ngunyulu, RN., Sepeng, N., M,oeta, M., Gambu, S., Mulaudzi, FM., Peu, MD. (2020). The perspectives of nursing students regarding the incorporation of African traditional indigenous knowledge in the curriculum. *African Journal of Primary Health Care & Family Medicine*. 12 (1); a2171. 10.4102/phcfm.v12i1.2171

NHS Employers. (2025). Code of Practice red and amber list of countries. https://www.nhsemployers.org/articles/code-practice-red-and-amber-list-countries [Accessed 20/04/2025]

Noble, H., Heale, R. (2019). Triangulation in research, with examples. *Evidence-Based Nursing*. 22:67-68. doi: 10.1136/ebnurs-2019-103145.

Nolte, A., & Downing, C. (2019). Ubuntu-the essence of caring and being: A concept analysis. *Holistic Nursing Practice.* 33: 9–16. https://doi.org/10.1097/HNP.0000000000000302

Nomalungelo IN., Makua, MJ. (2021). Intersection of Ubuntu pedagogy and social justice: Transforming South African higher education. *Transformation in Higher Education*. 6: a113. DOI: https://doi.org/10.4102/the.v6i0.113

Norman, J. (2024). How can universities harness our influence to be a global force for good? https://wonkhe.com/blogs/how-can-universities-harness-our-influence-to-be-a-global-force-for-good/ [Accessed 28/04/2025]

Notter, J., Carter, C., Muyunda, L., Nakazwe, N. (2024). Virtual mentorship: the opportunities and limitations for nurses in international health partnerships*. Br J Nurs*. 33(9): 408-410. doi: 10.12968/bjon.2024.33.9.408

Notter J. Carter C. Nsonga M. Chongwe M. (2023). The challenge of rehabilitation following critical illness in low-income countries. *Br J Nurs*. 32(21): 1054-1055. doi: 10.12968/bjon.2023.32.21.1054.

Nursing & Midwifery Council of Zambia. (2024). Education and Training Standards. www.gnc.org.zm

Nursing & Midwifery Council of Zambia. (2025). NMCZ Launches Nursing and Midwifery E-Learning Framework. https://gnc.org.zm/Single-News.php?id=13 [Accessed 21/04/2025]

Nursing and Midwifery Council (UK). (2023a). The NMC register mid-year update. https://www.nmc.org.uk/globalassets/sitedocuments/data-reports/sep-2023/0130a-mid-year-data-report-uk-web.pdf [Accessed 20/04/2025]

Nursing and Midwifery Council (UK). (2023b). Record 808,488 nurses, midwives and nursing associates in the UK. https://www.nmc.org.uk/news/news-and-updates/record-808488-nurses-midwives-and-nursing-associates-in-the-uk/ [Accessed 20/04/2025]

Nursing & Midwifery Council. (2022). Understanding practice learning hours in pre-registration nursing programmes outside the EU. https://www.nmc.org.uk/globalassets/sitedocuments/standards/pre-reg-review/nmc-future-programme-standards-overseas-research.pdf [Accessed 21/04/2025]

Nursing & Midwifery Council. (2018). The Code: Professional standards of practice and behaviour for nurses, midwives and nursing associates. London.

Nyandeni, S., Raliphaswa, N.S., Musie, M.R. et al. (2024). Exploring maternal and child healthcare projects in South African communities through Ubuntu lens: an appreciative inquiry. *BMC Nurs.* 23: 619. https://doi.org/10.1186/s12912-024-02267-3

Nyashanu, M., Mtambo, C., Karonga, T., Walker, J. (2023). Exploring the impact of covid-19 lockdown on learning among higher education students on the copperbelt province, Zambia. *Cogent Education*. 10(1). https://doi.org/10.1080/2331186X.2023.2200631

Ødegaard, E.E., Oen, M., Birkeland, J. (2023). Success of and Barriers to Workshop Methodology: Experiences from Exploration and Pedagogical Innovation Laboratories (EX-PED-LAB). In: Wallerstedt, C., Brooks, E., Eriksen Ødegaard, E., Pramling, N. (eds) Methodology for Research with Early Childhood Education and Care Professionals.

International Perspectives on Early Childhood Education and Development. 38. https://doi.org/10.1007/978-3-031-14583-4_5

Ohene Oti, N., de Villiers, M., Adejumo, P., Okumu, R., Biemba M., Nagwa, E., Nazik, H. (2021) Strengthening of oncology nursing education and training in Africa in the year of the nurse and midwife: addressing the challenges to improve cancer control in Africa. *E-cancer*. 15:1209. https://doi.org/10.3332/ecancer.2021.1209

Okereke, M., Ukor, NA., Ngaruiya, LM., Mwansa, C., Alhaj, SM., Ogunkola, IO., Jaber, HM., Isa, MA., Ekpenyong, A., Lucero-Prisno, DE. (2020). COVID-19 Misinformation and Infodemic in Rural Africa. *Am J Trop Med Hyg.* 104(2): 453-456. doi: 10.4269/ajtmh.20-1488.

Okoroafor, SC., Christmal, CD. (2023). Task Shifting and Task Sharing Implementation in Africa: A Scoping Review on Rationale and Scope. *Healthcare (Basel)*. 11(8):1200. doi: 10.3390/healthcare11081200.

Oluwole, V. (2021). A comprehensive list of all the English-speaking countries in Africa. https://africa.businessinsider.com/local/lifestyle/a-comprehensive-list-of-all-the-english-speaking-countries-in-africa/hdp1610 [Accessed 17/04/25]

Omgreen R, Levisen KT. (2017). Workshops as a research methodology. Electronic Journal of e-learning. 15(1): 70-81

Opare, M., Jill, JE. (2000). The evolution of nursing education in a post-independence context: Ghana from 1957 to 1970. *West J Nurs Res*. 22. 8. 936-44

Osei Afriyie D., Masiye F., Tediosi F., Fink G. (2023). Purchasing for high-quality care using National Health Insurance: evidence from Zambia. *Health Policy and Planning*. 38(6): 681–688, https://doi.org/10.1093/heapol/czad022

O'Sullivan O. Puri J. (2025). First USAID closes, then UK cuts aid: what a Western retreat from foreign aid could mean. https://www.chathamhouse.org/2025/03/first-usaid-closes-then-uk-cuts-aid-what-western-retreat-foreign-aid-could-mean [Accessed 17/04/25]

Oyama, Y., Yamase, H., Fujita, K., Tashita, H., Honda, T., Yoshida, K., Nagata, A. (2025). Critically ill patients' experiences of discomfort and comfort in the intensive care unit: A qualitative descriptive study. *Australian Critical Care.* 38(3): 101115. https://doi.org/10.1016/j.aucc.2024.08.011

Paichadze, N., Krisko, P., Michelo, C., Machona, PK., Bari, I., Rosen, HE., Hyder, AA. (2023). The burden on injuries in Zambia: a call to research and action. *Injury.* 54(2):274-279. doi: 10.1016/j.injury.2022.12.022.

Piaget J. (1952). The origin of intelligence in the child. Routledge and Kegan Paul.

Pallangyo, ES., Ndirangu, E., Mwasha, L., Lyimo, M., Namukwaya, C., Premji, S., Squires, A. (2020). Task shifting to attain Sustainable Development Goals and Universal Health Coverage: What are the consequences to the nursing and midwifery profession? *International Journal of Nursing Studies.* 102: 103453. https://doi.org/10.1016/j.ijnurstu.2019.103453

Prager, EM., Chambers, KE., Plotkin, JL., McArthur, DL., Bandrowski, AE., Bansal, N., Martone, ME., Bergstrom, HC., Bespalov, A., Graf, C. (2019). Improving transparency and scientific rigor in academic publishing. *Brain Behav.* 9(1):e01141. doi: 10.1002/brb3.1141.

Pardele, P. (2019). EFT Theory & Practice: Voice of English Education Department UKI. UKI Press. Jakarta.

Park, YS., Konge, L., Artino, AR Jr. (2020). The Positivism Paradigm of Research. *Acad Med*. 95(5):690-694. doi: 10.1097/ACM.0000000000003093.

Parker, RK., Mwachiro, EB., Mwachiro, MM., Pletcher, J., Parker, AS., Many, HR. (2019). Mortality Prediction in Rural Kenya: A Cohort Study of Mechanical Ventilation in Critically Ill Patients. *Critical Care Explorations.* 1(12): e0067. doi: 10.1097/CCE.0000000000000067.

Parkinson, S., Eatough, V., Holmes, J., Stapley, E., & Midgley, N. (2015). Framework analysis: a worked example of a study exploring young people's experiences of depression. *Qualitative Research in Psychology*. 13(2): 109–129. https://doi.org/10.1080/14780887.2015.1119228

Paradis, E., Nimmon, L., Wondimagegn, D., Whitehead, CR. (2020). Critical Theory: Broadening Our Thinking to Explore the Structural Factors at Play in Health Professions Education. *Acad Med*. 95(6):842-845. doi: 10.1097/ACM.0000000000003108.

Pressley, C., Garside, J. (2023). Safeguarding the retention of nurses: A systematic review on determinants of nurse's intentions to stay. *Nurs Open.* 10(5):2842-2858. doi: 10.1002/nop2.1588.

Prin, M., Kadyaydzu, C., Aagaard, K., Charles, A. (2019). Obstetric admissions and outcomes in an intensive care unit in Malawi. *Int J Obstet Anesth*. 39: 99-104. doi: 10.1016/j.ijoa.2019.03.004.

Prin, M., Ruoyu, J., Charles, A. (2020). Associations of day of week and time of day of ICU admission with hospital mortality in Malawi. *Tropical Doctor*. 40(4). 303-311. doi:10.1177/0049475520936011

Prust, ML., Kamanga, A., Ngosa, L. et al. (2019). Assessment of interventions to attract and retain health workers in rural Zambia: a discrete choice experiment. *Hum Resour Health.* 17(1): 26. https://doi.org/10.1186/s12960-019-0359-3

Qin, VM., Hone, T., Millett, C., Moreno-Serra, R., McPake, B., Atun, R., Lee, JT. (2019). The impact of user charges on health outcomes in low-income and middle-income countries: a systematic review. *BMJ Glob Health*. 3(Suppl 3):e001087. doi: 10.1136/bmjgh-2018-001087.

Rababa, M., Al-Rawashdeh, S. (2021). Critical care nurses' critical thinking and decision making related to pain management. *Intensive Crit Care Nurs*. 63:103000. doi:10.1016/j.iccn.2020.103000

Rao, SR., Salins, N., Joshi, U., Patel, J., Remawi, BN., Simha, S., Preston, N., Walshe C. (2022). Palliative and end-of-life care in intensive care units in low- and middle-income countries: A systematically constructed scoping review. *Journal of Critical Care.* 71. 154115. doi: 10.1016/j.jcrc.2022.154115.

Rasweswe, MM., Kgatla, NM., Ramavhoya, IT., Mulaudzi, FM. (2024). Ubuntu Is a Critical Component in the Fight against Human Immunodeficiency Virus and Tuberculosis Stigma: Nursing Students' Perceptions. *Int J Environ Res Public Health.* 21(2):229. doi: 10.3390/ijerph21020229.

Ravitch, SM., Carl, NM. (2023). Conceptual Frameworks in Research. Chapter 2. In Qualitative Research: Bridging the Conceptual. Theoretical and Methodological. 2nd Edition. Sage Publishing.

Reason, P. (2002). The practice of co-operative inquiry. *Systematic Practice and Action Research*. 15 (3): 169-176

Reese, H. (2011). The learning-by-doing principle. *Behav Dev Bull.* 17(1):1–19. https://doi.org/10.1037/h0100597

Ren, W. Zhu, X. (2024). How does Internet access quality affect learning outcomes? A multiple mediation analysis among international students in China. *Journal of International Students.* 14(1): 449-468

Resuscitation Council. (2024). The ABCDE Approach. https://www.resus.org.uk/library/abcde-approach [Accessed 21/04/2025]

Rine, S., Lara, ST., Bikomeye, JC., Beltrán-Ponce, S., Kibudde, S., Niyonzima, N., Lawal, OO., Mulamira, P., Beyer, KM. (2023). The impact of the COVID-19 pandemic on cancer care including innovations implemented in Sub-Saharan Africa: A systematic review. *J Glob Health*. 13:06048. doi: 10.7189/jogh.13.06048.

Ritter, M., Ott, D.V.M., Paul, F. et al. (2021). COVID-19: a simple statistical model for predicting intensive care unit load in exponential phases of the disease. *Sci Rep.* 11, 5018. https://doi.org/10.1038/s41598-021-83853-2

Roberts, K., Dowell, A. & Nie, JB. (2019). Attempting rigour and replicability in thematic analysis of qualitative research data; a case study of codebook development. *BMC Med Res Methodol.* 19, 66. https://doi.org/10.1186/s12874-019-0707-y

Robertson, BM. (1993). Angels in Africa: a memoir of nursing with the Colonial Service. Radcliffe Press.

Robinson, SJA., Ritchie, AMA., Pacilli, M., Nestel, D., McLeod, E., Nataraja, RM. (2024). Simulation-Based Education of Health Workers in Low- and Middle-Income Countries: A Systematic Review. *Glob Health Sci Pract*. 12(6):e2400187. doi: 10.9745/GHSP-D-24-00187.

Robinson, H. (2023). Africa is not a Country by Dipo Faloyin. *Geography*. 108(1), 29–32. https://doi.org/10.1080/00167487.2023.2167359

Rooddehghan, Z., ParsaYekta, Z., Nasrabadi, AN. (2015). Nurses, the Oppressed Oppressors: A Qualitative Study. *Glob J Health Sci*. 7(5):239-45. doi: 10.5539/gjhs.v7n5p239.

Roper, N., Logan, W., Tierney, AJ. (1996). The Elements of Nursing: A Model for Nursing Based on a Model of Living. 4th Ed. Churchill Livingstone, Edinburgh.

Roy, R., El Marsafawy, H. (2021). Bridging recognition of prior learning (RPL) and corporate social responsibility (CSR): circular flow of interaction among the university, industry, and people. *Sustainability*. 13(4532): 1-25. https://doi.org/10.3390/su13084532

Russ, E., Petrakis, M., Whitaker, L., Fitzroy, R., & Short, M. (2024). Co-operative inquiry: Qualitative methodology transforming research 'about' to research 'with' people. *Qualitative Research*. 25(1).43-65. https://doi.org/10.1177/14687941241234272

Ruthe, J., North, N. (2020). Developing a specialist children's nursing workforce in sub-Saharan Africa: a descriptive programme evaluation. BMC Nurs. 19(1):113. doi: 10.1186/s12912-020-00502-1.

Ryan, CL., Cant, R., McAllister, MM., Vanderburg, R., Batty, C. (2022). Transformative learning theory applications in health professional and nursing education: An umbrella review. *Nurse Education Today*. 119: 106604. https://doi.org/10.1016/j.nedt.2022.105604

Sacks E., Morrow, M., Story, WT., Shelley, KD., Shanklin, D., Rahimtoola, M et al. (2019). Beyond the building blocks: integrating community roles into health systems frameworks to achieve health for all. *BMJ Global Health*. 3:e001384. DOI:10.1136/bmjgh-2018-001384

Sakuramoto, H., Kuribara, T., Ouchi, A, et al. (2023). Clinical practice competencies for standard critical care nursing: consensus statement based on a systematic review and Delphi survey. *BMJ Open*. 13:e068734. doi: 10.1136/bmjopen-2022-068734

Sale, J.E., Carlin, L. (2025). The reliance on conceptual frameworks in qualitative research – a way forward. *BMC Med Res Methodol*. 25(36): https://doi.org/10.1186/s12874-025-02461-0

Salvation Army Hospital (Northern Rhodesia). (1959). Letter from Sister Tutor to General Nursing Council for England and Wales regarding recognition of institutions for the training of State Registered Nurses. Dated: 26th June 1959. National Archives.

Sampa, M., Fisa, R., Mukuma, C. et al. (2024). The effect of COVID-19 on malaria cases in Zambia: a mixed effect multilevel analysis. *Malar J*. 23: 85. https://doi.org/10.1186/s12936-024-04882-6

Sawe, HR., Mfinanga, JA., Lidenge, SJ., Mpondo, BC., Msangi, S., Lugazia, E., Mwafongo, V., Runyon, MS., Reynolds, TA. (2014). Disease patterns and clinical outcomes of patients admitted in intensive care units of tertiary referral hospitals of Tanzania. *BMC Int Health Hum Rights.* 14:26. doi: 10.1186/1472-698X-14-26.

Schell, C.O., Gerdin Wärnberg, M., Hvarfner, A. et al. The global need for essential emergency and critical care. Crit Care 22, 284 (2018). https://doi.org/10.1186/s13054-018-2219-2

Schoonenboom, J., Johnson, RB. (2017). How to construct a mixed methods research design. *Koln Z Soziol.* 69 (Suppl 2): 107-131. doi: 10.1007/s11577-017-0454-1.

Schulze, S. (2007). The usefulness of reflexive photography for qualitative research: A case study in higher education. *SAJHE*. 21(5), 536–553. https://doi.org/10.4314/sajhe.v21i5.50292

Scott J. (1955). Illustrated practical nursing procedures for hospital assistants. William Heinemann Medical Books Ltd.

Scott, T., Brysiewicz, P. (2017) Piloting a global mentorship initiative to support African emergency nurses. *International Emergency Nursing*. 34: 7–10. http://doi.org/10.1016/j.ienj.2017.05.002

Shamsuddin A, Sheikh A, Keers RN. Conducting Research Using Online Workshops During COVID-19: Lessons for and Beyond the Pandemic. *International Journal of Qualitative Methods.* 20: https://doi.org/10.1177/16094069211043744

Sharp, S., McAllister, M., Broadbent, M. (2018). The tension between person centred and task focused care in an acute surgical setting: A critical ethnography. *Collegian.* 25 (1): 11-17. https://doi.org/10.1016/j.colegn.2017.02.002

Shaffer, FA., Bakhshi, M., Cook, K., Álvarez, TD. (2022). International Nurse Recruitment Beyond the COVID-19 Pandemic: Considerations for the Nursing Workforce Leader. *Nurse Lead*. 20(2):161-167. doi: 10.1016/j.mnl.2021.12.001.

Shaw, TM. (1976). The Foreign Policy of Zambia: Ideology and Interests. *The Journal of Modern African Studies*. 14(1): 79-105.

Short, M., Healy, JP. (2016). Writing 'with' not 'about': examples in co-operative inquiry. In Sharing Qualitative Research. 1st Edition. Routledge.

Sibiya, MN., Ngxongo, TSP., Beepat, SY. (2018). The influence of peer mentoring on critical care nursing students' learning outcomes. *Int J Workplace Health Manag*. 11(3):130-142. doi: 10.1108/IJWHM-01-2018-0003.

Simbeza, S., Mutale, J., Mulabe, M., Jere, L., Bukankala, C., Sikombe, K., Sikazwe, I., Bolton-Moore, C., Mody, A., Geng, EH., Sharma, A., Beres, LK., Pry, JM. (2023). Cross-sectional study to assess depression among healthcare workers in Lusaka, Zambia during the COVID-19 pandemic. *BMJ Open*. 13(4): e069257. doi: 10.1136/bmjopen-2022-069257.

Simbi, C. (2025). Ubuntu philosophy: how embracing cultural heritage in the classroom can enhance teaching. Times Higher Education.

https://www.timeshighereducation.com/campus/ubuntu-philosophy-how-embracing-cultural-heritage-classroom-can-enhance-teaching [Accessed 24/04/25]

Sinyange, N., Brunkard, JM., Kapata, N., Mazaba, ML., Musonda, KG., Hamoonga, R., et al. (2018). Cholera Epidemic - Lusaka, Zambia, October 2017-May 2018. *MMWR Morb Mortal Wkly Rep.* 67(19):556-559. Doi: 10.15585/mmwr.mm6719a5

Sjoding, MW., Dickson, RP., Iwashyna, TJ., Gay, SE., Valley, TS. (2020). Racial Bias in Pulse Oximetry Measurement. *N Engl J Med.* 383(25):2477-2478. doi: 10.1056/NEJMc2029240.

Shiferaw, KB., Mehar, EA., Eshete, T. (2020). eHealth literacy and internet use among undergraduate nursing students in a resource limited country: A cross-sectional study. *Informatics in Medicine Unlocked*. 18: 100273. doi.org/10.1016/j.imu.2019.100273

Silverman, D., (Edt). (2020). Qualitative Research. Fifth Edition. Sage.

Skellett, S., Maconochie, I., Bingham, B., Worrall, M., Scholefield, BR., et al. (2021). Paediatric advanced life support guidelines. https://www.resus.org.uk/library/2021-resuscitation-guidelines/paediatric-advanced-life-support-guidelines [Accessed 17/04/25]

Skinner BF. (2019). The behaviour of organisms: An experimental analysis. BF Skinner Foundation

Spahn, A. (2018). The first generation to end poverty and the last to save the planet?"—Western individualism, human rights and the value of nature in the ethics of global sustainable development. *Sustainability*. 10(6), 1853. https://doi.org/10.3390/su10061853

Spencer, SA., Adipa, FE., Baker, T., Crawford, AM., Dark, P., Dula, D., Gordon, SB., Hamilton, DO., Huluka, DK., Khalid, K., Lakoh, S., Limbani, F., Rylance, J., Sawe, HR., Simiyu, I., Waweru-Siika, W., Worrall, E., Morton, B. (2023). A health systems approach to critical care delivery in low-resource settings: a narrative review. *Intensive Care Med.* 49(7):772-784. doi: 10.1007/s00134-023-07136-2.

Spicer, N., Agyepong, I., Ottersen, T., Jahn, A., Ooms, G. (2020). 'It's far too complicated': why fragmentation persists in global health. *Global Health*. 16(1):60. doi: 10.1186/s12992-020-00592-1.

Spies, C., Botma, Y. (2020). Optimising simulation learning experiences for mature, postgraduate nursing students. *Nurse Education in Practice*. 47: 102834. https://doi.org/10.1016/j.nepr.2020.102834

Squires, A., Amico, A. (2014). An integrative review of the role of remittances in international nurse migration. *Nursing: Research and Reviews.* 5: 1-2.

Stalpers, D., Schoonhoven, L., Dall'Ora, C., Ball, J., Griffiths, P. (2025). 'Entanglement of nursing care': A theoretical proposition to understand the complexity of nursing work and division of labour. *International Journal of Nursing Studies*. 163: 104995. doi.org/10.1016/j.ijnurstu.2025.104995

Sridhar, S., Kang, J., Makasa, J. et al. (2024). Impact of COVID-19 on food security and diet quality in Chilanga District, Zambia. *J Health Popul Nutr.* 43. 27. https://doi.org/10.1186/s41043-024-00523-5

Stephens, T., De Silva, AP., Beane, A., Welch, J., Sigera, C., De Alwis, S. Et al (2017). Capacity building for critical care training delivery: Development and evaluation of the Network for Improving Critical care Skills Training (NICST) programme in Sri Lanka. Intensive and Critical Care Nursing. 39. 28-36. doi: 10.1016/j.iccn.2016.08.008.

Stewart, C. (2021). Understanding new nurses' learning experiences in intensive care. *Intensive & Critical Care Nursing*. 67: 103094. https://doi.org/10.1016/j.iccn.2021.103094

Sommers, MK. (187). Interviews: opinions on conceptual models from other critical care nurses. *Dimensions of Critical Care*. 6(4): 225–228

Sweet, H., Hawkins, S. (2013). Colonial Caring: a history of colonial and post-colonial nursing. Manchester University Press.

Tedesco-Schneck, M. (2013). Active learning as a path to critical thinking: are competencies a roadblock? *Nurse Educ Pract*. 13(1):58-60. doi: 10.1016/j.nepr.2012.07.007.

Tembo, AC. (2023). The place of philosophy in nursing. *Nursing Philosophy*. 25: e12473. 1-7. https://doi.org/10.1111/nup.12473

Thomas, A., Menon, A., Boruff, J. et al. (2014). Applications of social constructivist learning theories in knowledge translation for healthcare professionals: a scoping review. *Implementation Sci*. 9 (54). https://doi.org/10.1186/1748-5908-9-54

Thynne, L., Rodwell, J. (2019). Diagnostic convergent interviewing to inform redesign toward sustainable work systems for paramedics. *Sustainability.* 11(14): 3932. https://doi.org/10.3390/su11143932

Tierney, AJ. (2020). Shifting the Paradigm. *Nurs Standard.* 35(10): 27-30. doi: 10.7748/ns.35.10.27.s26

Tierney, AJ. (1998). Nursing models: extant or extinct? *Journal of Advanced Nursing*. 28, 77-85. doi: 10.1046/j.1365-2648.1998.00766.

Tiliander, A., Olsson, C., Kalèn, S., Ponzer, SS., Fagerdahl, AM. (2023). Factors affecting nurses' decision to undergo a specialist education and to choose a specialty. *Nurs Open*. 10(1):252-263. doi: 10.1002/nop2.1300.

Tremble, D. (2023). Andragogy vs pedagogy: Which approach is best in the post-16 classroom? https://www.sec-ed.co.uk/content/best-practice/andragogy-vs-pedagogy-which-approach-is-best-in-the-post-16-classroom/ [Accessed 24.04.25]

Treinen, KP., Abbott-Anderson, K., Kuechle, L. (2022). Paolo Freire's Pedagogy of the Oppressed: A Way Past Oppression for the Nursing Profession. *Creative Nursing*. 28(3):161-166. doi:10.1891/CN-2022-0026

Tropical Health & Education Trust. (2019). Making medical equipment work. https://www.thet.org/our-work/bme/ [Accessed 17/04/25]

Tropical Health & Education Trust. (2015). The implementation of the first Paediatric Nursing course in Zambia. https://www.globalhealthpartnerships.org/case-studies/implementation-first-paediatric-nursing-course-zambia/ [Accessed 22/04/2025]

Troisi, A., Nanni, RC., Riconi, A., Carola, V., Di Cave, D. (2021). Fear of COVID-19 among Healthcare Workers: The Role of Neuroticism and Fearful Attachment. *J Clin Med.* 10(19):4358. doi: 10.3390/jcm10194358

Tshumba D. (2024). African customs and traditions and the indigenization of international humanitarian law in armed conflict. *International Review of the Red Cross*. 106 (926): 639–658. doi:10.1017/S1816383124000298

Tomlinson, J., Haac, B., Kadyaudztu, C., Samuel, JC., Campbell, ELP., Lee, C., Charles, AG. (2013). The burden of surgical diseases on critical care services at a tertiary referral hospital in sub-Saharan Africa. *Trop Doct*. 43(1): 27-29. doi: 10.1177/0049475513480773.

Toyin-Thomas, P., Wariri, O. Ikhurionan, P. (2024). Harnessing peer mentorship as a tool to turn human resource for health brain drain into brain gain: a case study of a Nigerian peer-mentored research group. *Hum Resour Health*. 22: 46 Doi.org/10.1186/s12960-024-00932-x

Tuma, F., Nassar, AK. (2021). Applying Bloom's taxonomy in clinical surgery: Practical examples. *Ann Med Surg (Lond)*. 5, 69:102656. doi: 10.1016/j.amsu.2021.102656

Tunlind, A., Granstrom, J., Engstrom, A. (2015). Nursing care in a high-technological environment: Experiences of critical care nurses. *Int Crit Care Nurs*. 31(2): 116-123. https://doi.org/10.1016/j.iccn.2014.07.005

Turale, S., Kunaviktikul, W. (2019). The contribution of nurses to health policy and advocacy requires leaders to provide training and mentorship. Int Nurs Rev. 66(3):302-304. doi: 10.1111/inr.12550.

Turan, FD., Dalgıç, AI., Duman, Ö. (2022). Development of a conceptual framework for a Virtual Reality-based Seizure Management Education Program for Parents (VR-ESMEPP). *Epilepsy Behav*. 135: 108875. doi: 10.1016/j.yebeh.2022.108875.

Turner, HC., Hao, NV., Yacoub, S., Hoang, VMT., Clifton, DA., Thwaites, GE., Dondorp, AM., Thwaites, CL., Chau, NVV. (2019). Achieving affordable critical care in low-income and middle-income countries. *BMJ Glob Health*. 4(3): e001675. doi: 10.1136/bmjgh-2019-001675.

Udeagha, GM., van der Wath, AE., Moagi, MM. (2022). Experiences of students who gained entry to a nursing college through recognition of prior learning: A phenomenological study. *Nurse Education Today.* 117: 105474. https://doi.org/10.1016/j.nedt.2022.105474

Ugboma, HAA., Oputa, VOA., Ugboma, EW. (2014). Ruptured ectopic pregnancy: the long and tortuous journey to theatre. *Tropical Doctor*. 44(3): 173-175. doi: 10.1177/0049475514530289.

UNICEF. (2025). Government and Partners Call for Strengthened Partnership and Intensified Efforts Against Maternal and Neonatal Mortality Crisis. https://www.unicef.org/zambia/press-releases/government-and-partners-call-strengthened-partnership-and-intensified-efforts#:~:text=In%20Zambia%2C%20a%20mother%20dies,and%205%2C000%20stillbirths%20were%20registered [Accessed 29/04/2025]

Vangeepuram, N., Fei, K., Goytia, C., Madden, D., Corbie-Smith, G., & Horowitz, C. R. (2023). Community-Based Participatory Research: Insights, Challenges, and Successes from the Perspectives of Frontline Recruiters and Investigators. *Journal of Participatory Research Methods*. 4(2). https://doi.org/10.35844/001c.77399

Vaona, A., Banzi, R., Kwag, KH., Rigon, G., Cereda, D., Pecoraro, V., Tramacere, I., Moja, L. (2018). E-learning for health professionals. Cochrane Database of Systematic Reviews 2018, Issue 1. Art. No.: CD011736. DOI: 10.1002/14651858.CD011736.pub2.

Van Biljoen-Mokhotla, CL., Makhene, A. (2023). Career advancement of professional nurses at a regional hospital in Gauteng. *Curationis*. 46(1): e1-e6. doi: 10.4102/curationis.v46i1.2453.

Van Camp, J., Chappy, S. (2017). The effectiveness of nurse residency programs on retention: a systematic review. *AORN Journal.* 106: 128–44. doi:10.1016/j.aorn.2017.06.003

Vandome, C. (2023). Zambia's developing international relations: 'Positive neutrality' and global partnerships. https://www.chathamhouse.org/sites/default/files/2023-03/2023-03-06-zambias-developing-international-relations-vandome.pdf [Accessed 27/04/2025]

Vaughn, LM., Jacquez F. (2020). Participatory Research Methods – Choice Points in the Research Process. *Journal of Participatory Research Methods*. 1(1). https://doi.org/10.35844/001c.13244

Vaughan, F. (2024). ‘But why is a Ghanaian studying Liberia?’ Leveraging positionality for online data collection during the COVID-19 pandemic. *Possibility Studies & Society*. 3(1). https://doi.org/10.1177/27538699241248850

Vos, T., Allen, C., Arora, M., Barber, RM., Bhutta, ZA. et al. (2020). Global, regional, and national incidence, prevalence, and years lived with disability for 310 diseases and injuries, 1990–2015: a systematic analysis for the Global Burden of Disease Study 2015. *Lancet*. 388(10053): 1545-1602. doi: 10.1016/S0140-6736(16)31678-6.

Vygotsky, L. (1978). Mind in society: The development of higher psychological processes. Cambridge, MA: Harvard University Press; 1978.

Wallace, DJ., Kahn, JM. (2015). Florence Nightingale and the Conundrum of Counting ICU Beds. *Crit Care Med*. 43(11):2517-8. doi: 10.1097/CCM.0000000000001290

Wall S, Allorto N, Weale R, Kong V, Clarke D. (2018). Ethics of burn wound care in a low-middle income country. *AMA Journal of Ethics.* 20(6): 575-580. doi: 10.1001/journalofethics.2018.20.6.msoc1-1806

Wang, X., Cheng, Z. (2020). Cross-sectional studies: strengths, weaknesses and recommendations. Chest. 158(1S): S65-S71. doi: 10.1016/j.chest.2020.03.012.

Wang, C., Burris, MA. (1997). Photovoice: concept, methodology, and use for participatory needs assessment. *Health Educ Behav*. 24(3):369-87. doi: 10.1177/109019819702400309

Watkins, M. (2018). Little room for capacitation: rethinking Bourdieu on pedagogy as symbolic violence. *British Journal of Sociology of Education*. 39(1): 47-60, DOI:10.1080/01425692.2017.1304202

Watt, D. (2007). On becoming a qualitative researcher: the value of reflexivity. *Qualitative Report*. 12: 82–101. DOI: 10.46743/2160-3715/2007.1645

Watters, DAK., Wilson, IH., Leaver, RJ., Bagshawe, A. (2004). Care of the Critically Ill Patient in the Tropics and Sub-tropics. 2nd edition. Macmillan, Oxford.

Webb, S., Massey, D., Goggnas, M., Flajole, K. (2019). Thirty-Five Years of the Gradual Release of Responsibility: Scaffolding Toward Complex and Responsive Teaching. *The Reading Teacher*. 71 (1). 75-83. DOI:10.1002/trtr.1799

Welch, V. (2020). A framework for identifying and mitigating the equity harms of COVID-19 Glover, RE., van Schalkwyk, MC., Akl, EA., Kristjannson, E., Lotfi, T., Petkovic, J., Petticrew, MP., Pottie, K., Tugwell, P., policy interventions. J. Clin. Epidemiol. 128,35–48. doi: 10.1016/j.jclinepi.2020.06.004.

Weninger. M. (2020). The economic case for meeting employees' needs. *Journal of Nursing Management.* 28: 17–23. https://doi.org/10.1111/jonm.12897

Westoby, P., Lathouras, A. (2024). We Make the Spiral in Circle: The Effectiveness of the Spiral Model in Community-Based Learning. *Journal of Transformative Education*. 0(0). https://doi.org/10.1177/15413446241296078

White, MC., Longstaff, L., Lai, PS. (2017). Effect of Pre-operative Anaemia on Post-operative Complications in Low-Resource Settings. *World J Surg.* 41(3):644-649. doi: 10.1007/s00268-016-3785-6.

Wieser T, Makasa E, Gleb A. (2015). Improving perioperative outcomes in low-resource countries: it can’t be fixed without data. Can J Anesth. 62: 1239-1243. doi: 10.1007/s12630-015-0484-y.

Wip C. Napolitano L. (2009). Bundles to prevent ventilator-associated pneumonia: how valuable are they? Curr Opin Infect Dis. 22. 2. 159-66. DOI: 10.1097/QCO.0b013e3283295e7b.

Williams, G., Fulbrook, P., Kleinpell, R., Alberto, L. (2020). The fifth international survey of critical care nursing organisations implications for policy. *J Nurs Scholarship.* 52. 6: 652-660. doi: 10.1111/jnu.12599.

Williams, G., Fulbrook, P., Alberto, L., Kleinpell, R., Christensen, M., Sitoula, K. & Kobuh, N. D. (2023). Critical care nursing policy, practice, and research priorities: An international cross-sectional study. *J Nurs Scholarship.* 55: 1044–1057. https://doi.org/10.1111/jnu.12884

Wolf, L., Brysiewicz, P., LoBue, N., Heyns, T., et al., (2012). Developing a framework for emergency nursing practice in Africa. *African Journal of Emergency Medicine*. 2(4): 174-181. https://doi.org/10.1016/j.afjem.2012.09.001

Wong, A., Prin, M., Purcell, LN., Kadyaudzu, C., Charles, A. (2020). Intensive Care Unit Bed Utilization and Head Injury Burden in a Resource- Poor Setting. *American Surgeon*. 86(12): 1736-1740. doi: 10.1177/0003134820950282.

Wood, R. (2019). The Spiral Curriculum in Higher Education: Analysis in Pedagogic Context and a Business Studies Application. *e-Journal of Business Education & Scholarship of Teaching.* 13(3): 14-26.

Woodward, R. (2019). The Spiral Curriculum in Higher Education: Analysis in Pedagogic Context and a Business Studies Application. e-Journal of Business Education & Scholarship of Teaching. 13(3): 14-26.

World Bank. (2023). Half of the global population lives on less than US$6.85 per person per day. https://blogs.worldbank.org/en/developmenttalk/half-global-population-lives-less-us685-person-day [Accessed 17/04/25]

World Bank. (2024a). Zambia. https://data.worldbank.org/country/zambia

World Bank. (2025a). Nurses and midwives (per 1000 population). https://data.worldbank.org/indicator/SH.MED.NUMW.P3 [Accessed 17/04/25]

World Bank. (2025b). The World Bank in Zambia. https://www.worldbank.org/en/country/zambia/overview [Accessed 17/04/25]

World Federation of Critical Care Nurses. (2019a). Position statement: Rights of the Critically Ill Patient. https://wfccn.org/declarations/ [Accessed 20/04/2025]

World Federation of Critical Care Nurses. (2020). Position statement: Provision of Critical Care Nurse Education. https://wfccn.org/declarations/ [Accessed 20/04/2025]

World Health Assembly. (2017). Improving the prevention, diagnosis and clinical management of sepsis. https://apps.who.int/gb/ebwha/pdf_files/wha70/a70_r7-en.pdf [Accessed 17/04/25]

World Health Assembly. (2023). Integrated emergency, critical and operative care for universal health coverage and protection from health emergencies. https://apps.who.int/gb/ebwha/pdf_files/WHA76/A76_R2-en.pdf [Accessed 20/04/25]

World Health Organization. (2003). Surgical Care at the District Hospital. Geneva.

World Health Organization. (2008). Task shifting: rational redistribution of tasks among health workforce teams : global recommendations and guidelines. https://iris.who.int/bitstream/handle/10665/43821/9789241596312_eng.pdf [Accessed 20/04/25]

World Health Organization. (2008). Task shifting: global recommendations and guidelines. https://iris.who.int/bitstream/handle/10665/43821/9789241596312_eng.pdf [Accessed 20/04/25]

World Health Organization. (2009). Global standards for initial education and professional nurses and midwives. https://iris.who.int/bitstream/handle/10665/44100/WHO_HRH_HPN_08.6_eng.pdf [Accessed 17/04/25]

World Health Organization. (2010). Monitoring the building blocks of health systems: a handbook of indicators and their measurements. https://iris.who.int/bitstream/handle/10665/258734/9789241564052-eng.pdf [Accessed 20/04/25]

World Health Organization. (2012). Guidelines for essential trauma care. https://www.who.int/publications/i/item/guidelines-for-essential-trauma-care [Accessed 20/04/25]

World Health Organization (2013). Transforming and scaling up health professionals' education and training: World Health Organization Training Guidelines 2013. https://iris.who.int/bitstream/handle/10665/93635/9789241506502_eng.pdf?sequence=1 [Accessed 21/04/2025]

World Health Organization. (2017). WHO Director-General Dr Tedros appoints Cook Islands' Elizabeth Iro as WHO's Chief Nursing Officer. https://www.who.int/news/item/12-10-2017-who-director-general-dr-tedros-appoints-cook-islands-elizabeth-iro-as-who-s-chief-nursing-officer [Accessed 30.04.2025]

World Health Organization. (2020). State of the World's Nursing: Investing in education, jobs and leadership. Geneva

World Health Organization. (2021). Global Patient Safety Action Plan 2021-2030. https://www.who.int/publications/i/item/9789240032705 [Accessed 30/04/2025]

World Health Organization. (2023). WHO health workforce support and safeguards list 2023. https://www.who.int/publications/i/item/9789240069787 [Accessed 20/04/25]

World Health Organization. (2024). Medical device donations: considerations for solicitation and provision. Second edition. https://iris.who.int/bitstream/handle/10665/378274/9789240093621-eng.pdf?sequence=1 [Accessed 17/04/25]

World Health Organization. (2024a). Zambia. https://data.who.int/countries/894 [Accessed 17/04/25]

World Health Organization. (2025a). Zambia Health Expenditure Profile. Geneva.

World Health Organization. (2025). Integrated emergency, critical and operative care. https://www.who.int/teams/integrated-health-services/clinical-services-and-systems/emergency--critical-and-operative-care [Accessed 17/04/25]

World Health Organization. (2025c). Official launch of State of the World's Nursing 2025. https://www.who.int/news-room/events/detail/2025/05/12/default-calendar/2025-sown-launch [Accessed 20/04/2025]

World Health Organization. (2025d). Integrated emergency, critical and operative care. Integrated emergency, critical and operative care (ECO) [Accessed 22/04/2025]

World Health Organization. (2025e). Zambia Health Data Overview. https://data.who.int/countries/894 [Accessed 21/04/2025]

World Health Organization. (2021). World Malaria Report 2021. https://www.who.int/teams/global-malaria-programme/reports/world-malaria-report-2021 [Accessed 21/04/2025]

Wright, T., Mughal, F., Babatunde, OO., Dikomitis, L., Mallen, CD., Helliwell, T. (2022). Burnout among primary health-care professionals in low- and middle-income countries: systematic review and meta-analysis. *Bull World Health Organ.*;100(6):385-401A. doi: 10.2471/BLT.22.288300.

United Kingdom Parliament. (2019). Mrs Kapelwa Sikota. 29 November 1960. Volume 631. https://hansard.parliament.uk/commons/1960-11-29/debates/3712f9b8-a394-461f-8088-f190f0e96385/MrsKapelwaSikota [Accessed 20/04/25]

United Nations. (2025). Sustainable Development Goals. http://www.un.org/sustainabledevelopment/sustainable-development-goals/ [Accessed 17/04/25]

United Nations Educational Scientific and Cultural Organization. (2011). International Standard Classification of Education. https://uis.unesco.org/sites/default/files/documents/international-standard-classification-of-education-isced-2011-en.pdf [Accessed 17/04/25]

UNICEF. (2025). Health. https://www.unicef.org/zambia/topics/health?page=0%2C%2C%2C%2C0 [Accessed 21/04/2025]

UNICEF. (2022). Health: Zambia has made progress in reducing child mortality, but challenges remain in maternal and neonatal mortality. https://www.unicef.org/zambia/health

Vasilopoulos, A., Pantelidaki, NA., Tzoura, A., Papadopoulou, D., Stilliani, K., Paralikas, T., Kortianou, E., Mastrogiannis, D. (2022). Factors underlying denial of and disbelief in COVID-19. *J Bras Pneumol*. 48(5): e20220228. doi: 10.36416/1806-3756/e20220228.

Vieira, JA., Deodato, S., Mendes, F. (2021). Conceptual Models of Nursing in Critical Care. *Critical Care Research & Practice.* 583319 (1): 1-6. https://doi.org/10.1155/2021/5583319

Von Colln-Appling, C., Giuliano, D. (2017). A concept analysis of critical thinking: A guide for nurse educators. *Nurse Educ Today.* 49:106-109. doi: 10.1016/j.nedt.2016.11.007.

Voss, JG., Alfes, CM., Clark, A., Lilly, KD., Moore, S. (2022). Why Mentoring Matters for New Graduates Transitioning to Practice. *Nurse Leader.* 20(4): 399-403. DOI: 10.1016/j.mnl.2022.01.003 External Link

Xie, J., Tong, Z., Guan, X. et al. (2020). Critical care crisis and some recommendations during the COVID-19 epidemic in China. *Int Care Med.* 46: 837–840. https://doi.org/10.1007/s00134-020-05979-7

Xu, J., Stark, AT. (2021). A conceptual model of nurses' workplace social capital: a theory synthesis. *BMC Nursing*. 20(148). https://doi.org/10.1186/s12912-021-00660-w

Xue, Z. (2023). Exploring Vygotsky's Zone of Proximal Development in Pedagogy: A Critique of a Learning Event in the Business/Economics Classroom. *International Journal of Education and Humanities*. 9(3). 166-168. DOI: https://doi.org/10.54097/ijeh.v9i3.10506

Yarbrough, S., Martin, P., Alfred, D., McNeill, C. (2017). Professional values, job satisfaction, career development, and intent to stay. *Nursing Ethics*. 24(6), 675–685. DOI: 10.1177/0969733015623098

Yip, SY. (2023). Positionality and reflexivity: negotiating insider-outsider positions within and across cultures. *International Journal of Research & Method in Education*. 47(3), 222–232. https://doi.org/10.1080/1743727X.2023.2266375

Zireva, D. (2020). Reflective Practice: The Hallmark of Andragogics in Ubuntu/Unhu Societies. *Journal of Educational System.* 4(2): 4-11.

Appendix 1: National E-Survey Questionnaire

BIRMINGHAM CITY University

E-Survey Questionnaire Participant Information Sheet

I am a researcher and PhD student from the UK, who has a background in critical care nurse education and practice, who is looking to

- Develop and implement a culturally competent, culturally safe, and sustainable conceptual framework for critical care nurse education and practice in Zambia.
- Develop policy model and recommendations for a career structure for critical care nurses.

The Advancing Access to Critical Care Education (AACCE) Project in Zambia is a collaborative project with the Ministry of Health in Zambia. The purpose of this e-survey questionnaire is to:

- Enable you to have a voice in identifying how the future of critical care nursing in Zambia is shaped.
- Provide information on your views on critical care nurse education and practice.
- Provide information on how to develop a career structure from a Diploma level education to a higher-level education in critical care nursing.

Please note:

- This study has received ethics approval in both Zambia and the UK and further information can be obtained from the project lead below.
- If you agree to take part, you just need to complete the questionnaire. You are free to withdraw from the study at any point, without giving a reason, until you press the submit button.
- You can withdraw at any time, however, once you have submitted the questionnaire, you are no longer able to withdraw, as all responses are anonymous, so we will not be able to identify individual responses.
- All information gathered will be anonymised so no one reading the report will be able to identify what has been said by an individual participant.
- Most of the questions require an answer from you.
- If you do not provide an answer, you will not be able to progress to the next question.
- All responses are anonymous and confidential, and it will not be possible for anyone to identify who you are.
- It should take you no more than 10 minutes.

If you have any queries, please contact the undersigned and thank you in advance for completing this questionnaire.

Thank you in advance for completing this questionnaire.

Chris Carter
Researcher & PhD Student
chris.carter@bcu.ac.uk

Section 1: Biographical Information

1. How long have you been a Registered Nurse?

<1 year	
1-2 years	
2-5 years	
5-10 years	
10-15 years	
>15 years	

2. How long have you worked in critical care?

<1 year	
1-2 years	
2-5 years	
5-10 years	
10-15 years	
>15 years	

3. Do you think critical care students should have critical care experience before starting a critical care nursing course?

Strongly agree	Agree	Neither Agree or Disagree	Disagree	Strongly disagree

Please explain your answer

Section 2: Critical Care Provision

4. How many critical care beds are there on your unit?

1-2 beds	
3-5 beds	
6-10 beds	
>10 beds	

5. On average how many qualified registered critical care nurses are there on each day shift?

None	
1-2 beds	
3-5 beds	
6-10 beds	
>10 beds	

6. On average how many qualified registered critical care nurses are there on each night shift?

None	
1-2 beds	
3-5 beds	
6-10 beds	
>10 beds	

Section 3: Education

7. Do you think critical care education should be at?

Diploma level	
Advanced Diploma level	
Bachelor's (degree) level	
Master of Science level	

Please explain your answer

8. In your opinion how long should a post registration course in critical care nursing last?

6 months	
9 months	
12 months	
24 months	
Other (please specify)	

9. In your opinion would e-learning have helped you during your critical care course?

Yes	
No	
No sure	

Please explain your answer

10. In your opinion what percentage of the critical care training programme should be undertaken in clinical practice?

25%	
50%	
75%	
Other (please specify)	

Please explain your answer

11. In your opinion do you think simulation should be included as part of clinical practice time?

Yes	
No	
No sure	

Please explain your answer

12. In your opinion should a newly qualified critical care nurses have a protected period of consolidation.

Yes	
No	
No sure	

Please explain your answer

13. If answered yes to question 12, how long should this period of protected time last?

1 month	
2-3 months	
3-6 months	
Other	

13. Is there any other information you would like to add?

Thank you for completing this questionnaire.

Appendix 2: Focus Group Consent Form, Participant Information Sheet & Question Guide

3.1 Consent Form

Advancing Access to Critical Care Education (AACCE) Project in Zambia

CONSENT FORM FOR FOCUS GROUP

		Please **initial** box
1.	I confirm I have read the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	
2.	I understand that my participation is voluntary and that I am free to withdraw without giving a reason.	
3.	I understand no individual identifying details will be used.	
4.	I understand that the comments I may make, may be used within the research report and published in journal articles, but that this will be anonymised, to protect my identity and maintain confidentiality.	
5.	I understand that I will be required to maintain confidentiality and not discuss with anyone what has been said during the focus group and feedback session.	
6.	I agree to attend a focus group, and I am aware this meeting will be audio recorded.	
7.	I agree to take part in the study.	

Name of Participant	Date	Signature
Name of Person taking consent	Date	Signature

Researchers Contact Details:

Chris Carter
Chris.carter@bcu.ac.uk

UNZABREC Contact details
University of Zambia
Ridgeway Campus
PO Box 50110
Lusaka
Zambia
Telephone: 256067

E-mail: unzarec@unza.zm

Birmingham City University Contact details
Birmingham City University
Faculty of Health, Education & Life Sciences
City South Campus (Seacole Building)
Westbourne Road
BIRMINGHAM
B15 3TN
United Kingdom
Email: HELS_Ethics@bcu.ac.uk

3.2 Participant Information Sheet

ADVANCING ACCESS TO CRITICAL CARE EDUCATION (AACCE) IN ZAMBIA

FOCUS GROUP PARTICIPANT INFORMATION SHEET

Introduction

I am a PhD student from the UK, who has a background in critical care nursing education and practice who is looking to develop a logical framework to assist with the identification of culturally specific critical care nurse education and practice in Zambia. The Advancing Access to Critical Care Education (AACCE) in Zambia is a collaborative project in conjunction with the Ministry of Health, to:

- Develop and implement a culturally competent, culturally safe, and sustainable conceptual framework for critical care nurse education and practice in Zambia.
- Develop policy model and recommendations for a career structure for critical care nurses.

Procedure

To participate in this research, you will be invited to a focus group. Prior to attending the focus group, you will be given time to consider the information within this document and asked to sign a consent form. The focus group will include up to 6 people and during the discussions, you will be asked about your views on critical care nursing practice and education in Zambia. The focus group will last between 1 and 1.5 hours.

Confidentiality

The focus groups will be audio recorded and stored on i-cloud as a separate file on a password protected computer at the researchers' place of work. Only the researcher and the facilitator of the focus group will have access to the raw data. The audio recordings will be transcribed verbatim by the researcher. At this phase all data will be anonymised. The transcripts will be stored separately from any identifying documentation in a locked filing cabinet at the researchers' place of work. Only the primary investigator will have access to identifiable information.

Analysis of data and transcriptions will be by the researchers. Your name will not be used during data analysis. Both Birmingham City University and University of Zambia have guidelines for data security, storage and when data must be destroyed which will be strictly adhered to.

What are the possible advantages of taking part?

This research will help the Zambian Ministry of Health to review the current provision of critical care nurse education and to develop future courses which meets the needs of the Nation. In addition, this research will explore the provision of critical care nursing in Zambia, where there

is currently a paucity of evidence available. This work forms part of a wider project to capacity builds critical care nursing.

What are the possible risks of taking part?

You will be required to spend between 1 and 1.5 hours participating in a focus group discussion. The discussions may invoke memories or situations that you would rather forget.

Voluntary Participation

It is up to you to decide to join this project. If you agree to take part, you will be asked to sign a consent form. It is important you take time to read this information sheet before agreeing to take part.

Right to withdraw & seek clarifications

You are free to withdraw from the study up until the point of recording the group focus group interviews, without giving a reason. Once the data has been collected it will not be possible for you to withdraw from the study due to the nature of focus group discussions and the difficulty in extracting segments of data whilst maintaining the flow of ideas expressed. All information gathered will be anonymised so no one reading the report will be able to identify what has been said by an individual participant. We welcome any questions you may have on the project and your involvement in the focus groups. You will be given a consent form with this information sheet, and you will be asked to sign this consent form prior to participating in the group discussion.

Standard of Care

This research project is educational in focus, it does not directly involve any patients as participants and no physical risks have been identified. The researcher does not work, teach or assess any nurses / students directly involved in this study. As outlined above, all participation is voluntary, and no identifiable links will be made, and all information will be anonymised at the transcription stage.

Researcher Contact Details

Chris Carter,
PhD Student
Birmingham City University
Faculty of Health, Education & Life Sciences
City South Campus
Westbourne Road
Birmingham
B15 3TN
+44 (0)121 331 6161
chris.carter@bcu.ac.uk

Director of Studies

Prof Joy Notter
Professor of Community Health Care Studies
Faculty of Health, Education and Life Sciences
Birmingham City University
Westbourne Road
Birmingham
B15 3TN
+44 (0)121 331 6161
joy.notter@bcu.ac.uk

UNZA Research & Ethics Committee Contact Details
University of Zambia
Ridgeway Campus
PO Box 50110
Lusaka
Zambia
E-mail: unzarec@unza.zm

Birmingham City University Ethics Committee Contact Details
Faculty of Health, Education & Life Sciences
City South Campus (Seacole Building)
Westbourne Road
Birmingham
B15 3TN
United Kingdom
Email: HELS_Ethics@bcu.ac.uk

3.3 Semi-Structured Interview Question Guide

Advancing Access to Critical Care Education (AACCE) in Zambia

Welcome

- Before we start the focus group, please can I confirm that you have received a copy of the Participant Information Sheet and signed the consent form. Any questions before we start?
- To confirm all responses will be anonymous and no one reading the report will be able to identify what has been said by an individual participant.
- Thank you once again for agreeing to participate in this focus group.
- Please could we start with introductions.
- Explain the context of the study.

About your role as a Critical Care Nurse:

- Why did you become a critical care nurse?
- Can you tell me about critical care nursing in Zambia?
- What do you find easy / difficult in your role?
- What skills do you need to become a critical care nurse? Do they differ to other nursing specialities?
- What do you think are the challenges facing critical care nursing today?

About current critical care nurse education:

- Looking back at your training what did you particularly like about the critical care course?
- What would you recommend changing?
- What additional topics (if any) do you think need to be included in the critical care course?

Career Development

- What are the barriers and enablers critical care nurses face in developing their careers?
- How would you like to see your career advance?
- Thinking about critical care nursing, how do you develop yourself / others?
- Can you explain a typical day in your unit?

General Questions:

- What future healthcare challenges do you see facing Zambia?
- What changes would you like to see in healthcare?

Appendix 3: National Cross-Sectional Survey to identify the types of Adult Patients Admitted to Critical Care in Zambia

BEDSIDE DATA COLLECTION

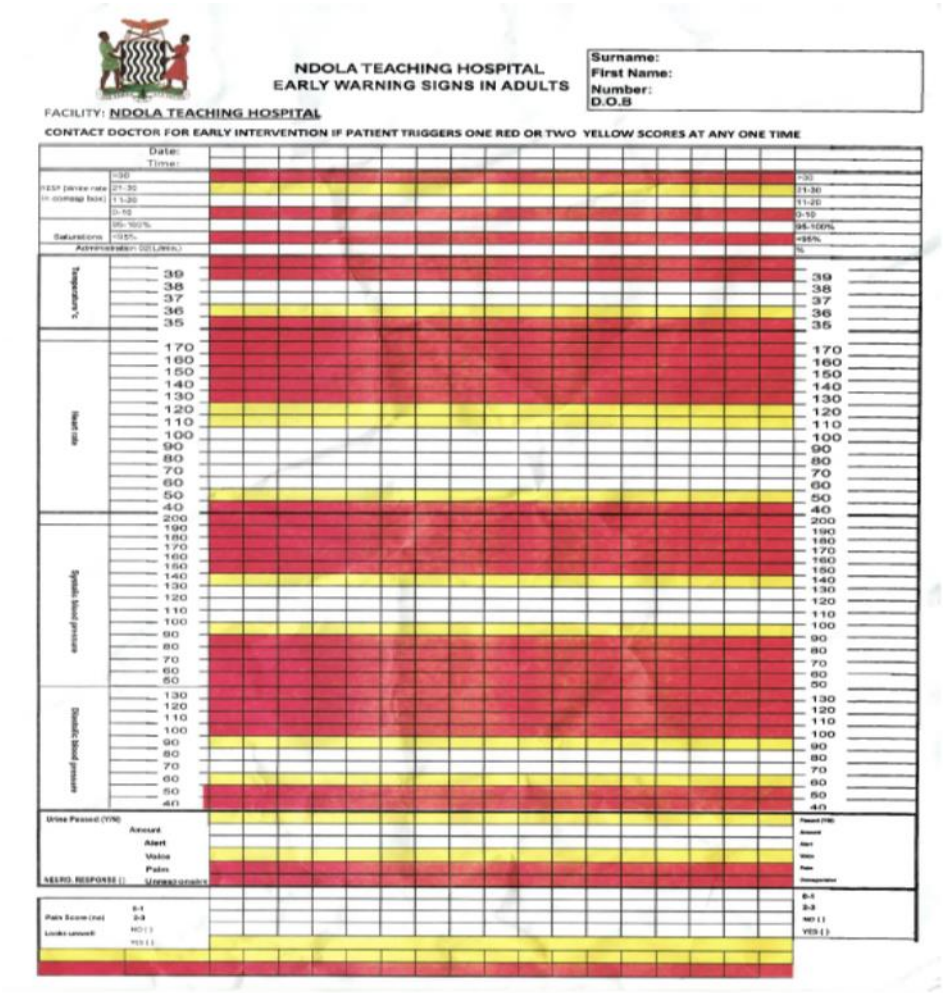
Patient Identification Code:

Hospital Code:

Date:

Sex	Male / Female
Age:	
Reason for admission:	
Date of admission to hospital:	
Date of admission to critical care:	
Admission from:	ED / Filter Ward / Medical Ward / Surgical Ward / OT / Other (specify)
Type of ICU Admission	Emergency / Urgent / Elective
Time of Admission to ICU	
Last set of ward observations or ICU Admission Observations	
Time observations performed:	
Ward or ICU observations?	Ward / ICU
Blood pressure (mmHg)	
Pulse rate	
Respiratory rate	
Sp02	
Oxygen therapy (% and type)	Nasal Specs / Face Mask / Intubated / Other (specify)
Temperature (°C)	
AVPU	
GCS	E: V: M:
Pupils:	
Comments:	

Appendix 4: Early Warning Scoring Chart



NDOLA TEACHING HOSPITAL
EARLY WARNING SIGNS IN ADULTS

Surname:
First Name:
Number:
D.O.B

FACILITY: NDOLA TEACHING HOSPITAL

CONTACT DOCTOR FOR EARLY INTERVENTION IF PATIENT TRIGGERS ONE RED OR TWO YELLOW SCORES AT ANY ONE TIME

Colour Coded Observation Chart used in Emergency Departments, Wards and Critical Care Units. Reproduced with permission from Ndola Teaching Hospital, Zambia

Appendix 5: Ethics Approvals

BIRMINGHAM CITY University

Faculty of Health, Education and Life Sciences Research Office

Faculty of Health, Education and Life Sciences
Birmingham City University
Westbourne Road
Birmingham
B15 3TN

HELS_Ethics@bcu.ac.uk

15/02/2018

Major Chris Carter

Dear Chris ,

Re: Carter /Jan /2018 /R(C) /1300 - Advancing Access to Critical Care Education (AACCE) Project - The development of a culturally competent and culturally safe conceptual framework and model for critical care nursing in Zambia.

Thank you for your application and documentation regarding the above study. I am pleased to confirm that the Faculty of Health, Education and Life Sciences of Birmingham City University has agreed to take on the role of Sponsor.

I can also confirm that the legal liability for death or injury to any person participating in the project is covered under the University's insurance arrangements.

A copy of BCU's insurance details is available at:
https://icity.bcu.ac.uk/Finance/Procurement-and-Insurance/Insurance

If you wish to make any changes to your proposed study (by request or otherwise), then you must submit an Amendment application to us. Examples of changes include (but are not limited to) adding a new study site, a new method of participant recruitment, adding a new method of data collection and/or change of Project Lead.

Please also note that the Committee should be notified of any serious adverse effects arising as a result of this activity.

Keep a copy of this letter along with the corresponding application for your records as evidence of approval.

If you have any queries, please contact HELS_Ethics@bcu.ac.uk

May I take this opportunity to wish you every success with your study.

Yours Sincerely,

[redacted]

On behalf of the Faculty Academic Ethics Committee
Health, Education and Life Sciences

Page 1 of 1

THE UNIVERSITY OF ZAMBIA

BIOMEDICAL RESEARCH ETHICS COMMITTEE

Telephone: 260-1-256067
Telegrams: UNZA, LUSAKA
Telex: UNZALU ZA 44370
Fax: + 260-1-250753
E-mail: unzarec@unza.zm
Assurance No. FWA00000338
IRB00001131 of IORG0000774

Ridgeway Campus
P.O. Box 50110
Lusaka, Zambia

16th April, 2018.

Ref: 013-02-18.

Mr. Chris Carter,
Birmingham City University,
Faculty of Health, Education and Life Sciences,
City South Campus,
Edgbaston,
B15 3TN,
Birmingham.

Dear Prof/Dr/Ms/Mr/Mrs. Carter,

RE: SUBMITTED RESEARCH PROPOSAL: "THE DEVELOPMENT OF A CULTURALLY COMPETENT AND CULTURALLY SAFE LOGICAL CONCEPTUAL FRAMEWORK AND MODEL FOR CRIRICAL CARE NURSING IN ZAMBIA" (REF.NO. 013-02-18)

The above-mentioned research proposal was presented to the Biomedical Research Ethics Committee (UNZABREC) on 11th April, 2018. 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. 013-02-18

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

- **APPROVAL DATE : 16th April, 2018**
- **TYPE OF APPROVAL : Expedited**
- **EXPIRATION DATE OF APPROVAL : 15th April, 2019**
  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.
- **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.
- **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).
- **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.
- **NHRA:** Where appropriate, apply in writing to the National Heath Research Authority for permission before you embark on the study.
- **QUESTIONS**: Please contact the UNZABREC on Telephone No. 256067 or by e-mail on unzarec@unza.zm.
  Other: Please be reminded to send in copies of your research findings/results for our records. You're also required to submit electronic copies of your publications in peer-reviewed journals that may emanate from this study.

Yours sincerely,

[redacted]

Appendix 6: Relevant Articles

Carter, C., Notter, J. (2023). Evaluation of an international health partnership to capacity build emergency, trauma and critical care nurse education and practice in Zambia: An experience from the field. *Int Nurs Rev*. 70(3):266-272. doi: 10.1111/inr.12813

Received: 9 January 2022 | Accepted: 17 July 2022

DOI: 10.1111/inr.12813

International Nursing Review WILEY

EXPERIENCE FROM THE FIELD

Evaluation of an international health partnership to capacity build emergency, trauma and critical care nurse education and practice in Zambia: An experience from the field

Chris Carter MEd, BSc (Hons), DipHE, RN(A)[1] | **Joy Notter PhD, MSc, SRN, RHV, HVT, PGCEA**[2]

[1]Birmingham City University, Birmingham, UK

[2]Professor of Community Healthcare Studies, Birmingham City University, Birmingham, UK

Correspondence
Chris Carter, Birmingham City University, City South Campus, Westbourne Road, Birmingham B15 3TN, UK.
Email: chris.carter@bcu.ac.uk

Funding information
UK Department for International Development (DFID) (2017–2018); Johnson & Johnson Africa Grants Programme (2019–2020); UK Global Challenges Research Fund (2020); UK Research and Innovation / Newton Agile Response (2020–2022)

Abstract

Aim: To evaluate an international health partnership project to capacity build emergency, trauma and critical care nurse education and practice in Zambia.

Background: Zambia continues to face a significant workforce challenge and rising burden of communicable and non-communicable diseases, compounded by the COVID-19 pandemic. In response to these, the Zambian Ministry of Health is investing in specialised nurses. Emergency, trauma and critical care nursing education and training were seen as one of the solutions. North–south partnerships have been identified as a force for good to capacity build and develop emerging specialities.

Sources of evidence: We use an evaluative approach, which includes desk research, a rapid literature review and documentary data analysis from published papers, government reports and project documentation. Ethics committee approval was sought and gained in both Zambia and the UK.

Discussion: A critical review of the evidence identified three key themes: challenges with changing education and practice, developing Zambian faculty for sustainability and the effect of an international health partnership project on both Zambia and UK. The outcomes from this project are multifaceted; however, the main achievement has been the implementation of emergency, trauma and critical care graduate programmes by the Zambian faculty.

Conclusion: This experience from the field outlines the benefits and limitations of a north–south partnership and the importance of transparency, shared ownership and collegiate decisions. It has facilitated knowledge exchange and sharing to capacity build emergency, trauma and critical care nursing.

Implications for nursing practice: Lessons learned may be applicable to other international nursing partnerships, these include the need for deep understanding of the context and constraints. Also, the importance of focusing on developing long-term sustainable strategies, based on research, education and practice was noted.

Implications for nursing policy: This paper outlines the importance of developing nursing education and practice to address the changing burden of disease in line with Zambian national policy, regional and international standards. Also, the value of international nursing partnerships for national and international nursing agendas was described.

KEYWORDS
Critical care nursing, emergency and trauma nursing, evaluation, north–south partnership, bi-directional learning

AIM

Evaluation of an international health partnership project in capacity building emergency, trauma and critical care nurse education and practice in Zambia.

BACKGROUND

Recognising, developing and valuing nurses are crucial in order to protect the future of healthcare systems and maintain high-quality care (Lamb et al., 2020; World Health Organization [WHO], 2020). Zambia has a population of approximately 16 million, and, according to the United Nations Human Development Index, it is ranked 146 out of 189 countries (UN Human Development Reports, 2022). In many countries, nurses are the backbone of healthcare services (Benton & Watkins, 2020; WHO, 2020), and the COVID-19 pandemic has highlighted the need for highly skilled emergency and critical care nurses, to respond to the high numbers of patients who require emergency and critical care nursing. However, the Zambian Strategic Health Plan developed before the pandemic made limited reference to critical care services and emergency and trauma (Ministry of Health [MOH], 2018), because these are new specialities that are still in the process of being formally recognised. The Strategic Health Plan (2018) also points out that an ongoing challenge for Zambia is a significant healthcare workforce shortfall in all areas (MOH, 2018). As a result, the doctor and nurse ratio to population is well below the recommendations of the WHO (WHO, 2022). The current National Human Resources for Health Strategic Plan 2018–2024 (MOH, 2018) point out that this low ratio inevitably impacts service provision and ultimately the health of the community. The situation has now been further compounded by the effects of the pandemic and increased recruitment of Zambian nurses by high-income countries (Royal College of Nursing, UK, 2022).

North–South Health Partnerships have been identified as a force for good and support the strengthening of healthcare systems of all involved (Mormina & Pinder, 2018; Spies et al., 2017; United Nations [UN], 2022). The importance and value of such partnerships have also been recognised by the joint report by the WHO and the International Council of Nurses [ICN] (2020) as a model for good practice for capacity building in nursing. The partnership described in this paper used a participatory approach to knowledge exchange and sharing, with key strategic stakeholders in Zambia and Birmingham City University (BCU), a UK Higher Education (HE) provider (Carter et al., 2021). The partnership was initiated in 2015 and began with a scoping visit, which identified the urgent need to capacity build critical care and emergency and trauma nursing. This led to a national needs assessment, completed in partnership with the Ministry of Health (MOH) and BCU. It was essential to devise an approach that was built upon existing expertise, using knowledge exchange and sharing to enable all partners to contribute their expertise to the development of specialist nurse education, training and practice. Emphasis was placed on identifying the shared and differing challenges for each healthcare system, following which a series of partnership projects were devised to incrementally build upon each other, each one moving the nursing agenda forward (MOH, 2018).

Stakeholders included the MOH, Nursing and Midwifery Council of Zambia (NMCZ, the nursing regulator), Zambia Union of Nurses Organisations (ZUNO, a professional body and trade union), universities and Colleges of Nursing, and representatives from clinical practice were involved in all stages of the project. Activities took place between 2017 and 2021, using the scoping exercise (2015) and two national needs assessments (2016 and 2020), which were submitted and accepted by the MOH; this led to the recognition of the need to increase the numbers of trained emergency, trauma and critical care nurses (Carter et al., 2020). These key nurses have the responsibility of supporting their peers and junior colleagues, helping them to reduce the theory–practice gap, raising and enhancing the quality of care delivered. The project was designed to be delivered in two phases. It was recognised that for sustainability, the project needed to be incremental, with each phase being closely linked to current practice while at the same time developing a pathway to move practice forwards, which fitted within the National Strategic Health Plan and documentation (MOH, 2018). Phase I focused on documentary data analysis (including policy documents), a comprehensive review and revisions to the Advanced Diploma in Critical Care. This phase was completed by an NMCZ-led international, multi-stakeholder revalidation of the programme that met regulatory requirements and could be embedded into the health system (Nurses & Midwives Act, 2019). This was seen as essential for sustainability and to future-proof service provision. Zambia needs to maximise the effectiveness of any new initiative by ensuring that it follows ministerial policy and legal requirements. Phase II then utilised the outcomes from phase I to develop and validate Zambia's first specialist Bachelor of Science (BSc) in Critical Care Nursing. Phase III utilised templates from phases I and II to develop emergency and trauma nursing. At the same time, it was recognised that to retain these qualified staff, the Zambian critical care nursing definition, scope of practice, a mentorship model and programme were developed which encompassed a recognised and approved nursing career structure as essential elements (Carter et al., 2021).

SOURCES OF EVIDENCE

An evaluative approach to this study was used to gain meaningful in-depth information, rather than superficial descriptive data sets (Vaessen et al., 2020). As Morgan (2022) points out, this has been an underused approach in research and is increasingly being accepted as a valuable tool that enables researchers to focus on the advantages and limitations of project and policy documentation (Price et al., 2021). In preparing this experience from the field, research and evidence were sourced using a desk-based research approach

(Guerin et al., 2018). The inclusion criteria involved searching the WHO, ICN and MOH webpages for key policy documents about specialist nurses, critical care and emergency nurses and nursing workforce development. A rapid review of the literature was conducted to search international peer-reviewed articles relating to emergency, trauma and critical care nursing in Zambia (Tricco et al., 2017). In addition, a search of partnership records for project documentation (including logical frameworks, reports and records of decisions, faculty reports and dissemination activities) was conducted. Exclusion criteria were policy documents not related to specialised nursing, non-peer–reviewed articles and non-project–related documents. Also, a timeframe of 8 years was set, to coincide with the lifetime of the project. Gathering qualitative and quantitative experiences from the field was part of the monitoring and evaluation of the capacity-building projects. All of these had received Ethics Committee approval from the UK and, when necessary, from Zambia.

DISCUSSION

Following a review of project documentation and key local and international policies, the following lessons learned were identified in three key areas: challenges with changing education and practice, developing Zambian Faculty for sustainability and the effect of an international health partnership project on both Zambia and the UK.

Challenges with changing education and practice

There are complex challenges when reviewing and developing any specialist areas of practice that are new, and in resource-constrained settings, these are compounded by the limited workforce, faculty and expert practitioners (Brysiewicz et al., 2021). This is a 'catch-22 situation'; deciding where to start was not easy; however, north–south health partnerships offer benefits as they combine local, national and international expertise facilitating the exploration of this conundrum. Our partnership recognised the challenges and together decided to avoid the risk of short-term fixes, instead focusing on moving the nursing education agenda forward and in line with WHO recommendations for developing sustainable graduate specialist nurse education programmes (WHO, 2016), while working within the current Zambian systems for regulation, policy, education and practice. This was not an easy decision as stakeholders and funders had to accept short-term instant changes were not what was needed. This would have given an indication of success, but would not have addressed the long-term issues, as they do not offer sustainability.

To address this, all activities were multidisciplinary, with representation from each stakeholder, all of whom were given time to present, discuss and debate their perspectives. To maintain equity in the various workshops and meetings, the role of the chair rotated around the different stakeholders. This approach was welcomed and seen as exemplifying the importance of health partnerships crossing over education, practice, regulation and policy, as without all sides of the equation being considered, the revised programme may not have met the needs and requirements of all involved.

Having carefully considered the Zambian healthcare system and regional practices, the stakeholders made a strategic decision that has permanently affected specialist practice. While some neighbouring African countries combine emergency and critical care nursing as one nursing speciality (Scott & Brysiewicz, 2017), the stakeholders rejected this approach. Instead, they chose to propose to the MOH and NMCZ the need to develop these specialities as independent programmes. They acknowledged that there is an overlap between these two areas of practice, but believed, in the light of advancing medical care in Zambia, that combining the two programmes in the long term would constrain the effectiveness of advanced nursing practice (Carter et al., 2021).

All stakeholders were adamant that developments needed to include future proofing, as they wanted a programme that could be relatively easily adjusted to reflect the changing disease burden (IHME, 2022). This proved to be a crucial decision, as when the COVID-19 pandemic hit Zambia, it was possible to add in COVID-19 content to the programme without triggering another review and revalidation. Changes also included a review of clinical placements and the introduction of an attachment to a rural district hospital, as many of the students will return to such settings (Carter et al., 2021). Therefore, they needed to see not only the facilities of tertiary referral hospitals but also the reality they would face once qualified. This meant that the combination of revised COVID-19 content and rural placements could support the cascade of information during and after specialist training, essentially given the few specialist nurses and doctors nationwide. To support the limited number of expert nurses developing the programmes, stakeholders requested an external peer review of activities. The UK partners identified independent expert nurses to carry out this activity. The reviewers were selected from a UK-wide open call for emergency and critical care nurses who had the experience of working in resource-limited settings. Reviewers were supplied with a template that included regional and international standards for emergency and critical care curricula to benchmark the Zambian programmes (African Federation of Emergency Medicine, 2022; World Federation of Critical Care Nurses, 2022). The subsequent reports were fed directly back into the multidisciplinary workshops to support and guide developments.

Development of Zambian faculty for sustainability

Another lesson learnt was the importance of developing the faculty for sustainability. The capacity-building approach did not use role substitution, as this does not provide long-term sustainability (Bauer, 2017), but focused on the importance of sufficient numbers of the Zambian faculty,

developing the expertise and confidence to own the project outcomes and become self-sufficient (Plamondon et al., 2021). In consequence, a train-the-trainer approach was used, as this approach is seen as the best practice for sustainability (Mormina & Pinder, 2018). Topics covered in the train-the-trainer programme had to include staff education development such as curriculum design, mentorship and assessment of students and the use of simulation (Carter et al., 2021). In addition, faculty on the train-the-trainer programme together with sakeholders participated in all curriculum design workshops. The health partnership had identified that in the last decade, Zambia has introduced several new post-basic programmes and recognised these as a sustainable platform to build on for a sustainable future. The NMCZ held experience in curriculum development and design and agreed to support the stakeholders and the train-the-trainer programme to facilitate the implementation of the new programmes. Evaluation of this programme was positive, with respondents identifying the personal and professional lessons learned:

> 'the review of the diploma curriculum as well as the development of the first bachelor's curriculum in critical care nursing … to see it evolve was so good.' (Strategic Stakeholder Evaluation [SSE], respondent 3)

Similarly, for another respondent, seeing the long-term outcome proved to be very rewarding:

> 'The best part was that after developing the advanced Diploma curriculum for critical care nurses, it went through validation in 2018 and was implemented it and it is operational.' (SSE Respondent No. 2)

With few in-country and regional opportunities to obtain a higher degree in emergency, trauma and critical care, the challenge for Zambia was to develop a sustainable faculty that could deliver the new higher-level programmes. They asked for assistance in pump priming faculty and leaders in advancing practice; therefore, BCU offered a one-off delivery of a Master of Science programme for 20 students, which began in 2021. The main outcome of this programme was to enable Zambia to have a critical mass of Master's level nurses across the country that will bridge education and practice until the locally developed programmes start to produce graduates, a sustainable output beyond the lifetime of the projects.

Effect of an international health partnership project on both the Zambian and UK faculty

Goal 17 of the United Nations Sustainable Development (UN SDG) is to 'strengthen the means of implementation and global partnership development' (UN SDG, 2022), which allows for sharing of knowledge, expertise, technologies and financial resources (Matenga et al, 2019). However, studies over the past decade have continually identified challenges, including power imbalance, communication, different priorities and agendas and limited capacity building in partners (Parker & Kingori, 2016; Walsh et al., 2016). Therefore, in this partnership project, every effort was made to use bi-directional learning to share and exchange knowledge and expertise as this reciprocal process helps to balance differentials (Lenhard et al., 2022). In consequence, activities were designed to prevent 'intellectual dependency' and promote equity (Matenga et al., 2019). Thus, the views of partners through the capacity-building process were essential for the success of the project. As part of project monitoring, evaluation and shared learning, an anonymous e-survey was circulated in 2020 to stakeholders in Zambia. In 2022, this was repeated with individual interviews with UK staff involved in the project. Both these activities resulted in data that identified that the health partnership had been able to develop and share ownership, transparency and evidence of bi-directional learning.

Since the start of the partnership, a core project manual was developed that acted as a 'live document' and was used to monitor and evaluate progress. When necessary, it was updated collaboratively providing transparency and ownership at local and strategic levels, as one respondent reported partnership objectives:

> '… are clearly defined [and] explained to all … involved.' (SSE Respondent No 10)

While another respondent reported:

> 'The Partners allow us to own the project fully.' (SEE Respondent No. 5)

Many of the activities involved changes in education and practice. In consequence, the change process model required representation from a range of stakeholders from MOH to those in practice. At each event, it was important for stakeholders to understand and accept the implications for education and practice in a Zambian context when making changes.

> '… BCU understand our … situation [Zambia is]… a low [middle] income country … when issues are presented … we work hand in hand … [to reach] … consensus.' (SEE Respondent No. 6)

To facilitate opportunities for UK faculty, the project team used a 'hub and spoke' model (Carter et al., 2022). BCU acts as the overall lead organisation and 'the hub' to provide project leadership, coordination, governance and financial responsibility. While BCU is able to provide educators to support curriculum design, validation and masterclasses for faculty and students, it was recognised that expertise would be needed from clinical practice. Therefore, National Health Service (NHS) hospitals that provided emergency, trauma and

critical care nurses acted as the 'spoke' and provided a pool of nurses with clinical expertise. This model increased the number and experience of faculty members and allowed access to the range of technical experts requested by Zambian stakeholders. In total, since the start of the project activities, 212 nurses have completed the revised and revalidated Advanced Diploma in Critical Care Nursing staff, and the programme is now offered in three Colleges of Nursing; 79 have completed the Advanced Diploma in Emergency and Trauma Nursing, 35 are studying the BSc in Critical Care Nursing and the BSc in Emergency and Trauma Nursing commences January 2023. In addition, during UK education visits, UK Faculty hosted Zambian counterparts to provide an insight into NHS emergency, trauma and critical care nursing (Carter et al., 2021).

Coordinating staff from different organisations, and over geographical distances, was an identified risk; therefore, a detailed faculty handbook was developed. This handbook detailed the project aims, organisation and structure, risk assessments, information on Zambian healthcare and access to further reading. Each section included self-test and reflective activities to support individuals with the UK Nursing and Midwifery Council (NMC) Revalidation (NMC, 2022) and annual appraisals. To demonstrate transparency, and good governance, at the request of the Zambian partners, the faculty agreed to a set of terms of reference, with objectives agreed upon before departure. An induction day enabled new members to meet the project team and enabled faculty members to discuss any concerns and agree on any specific activities to be undertaken. All faculty members were selected and screened by both the UK Project Team and the lead Zambian partner for suitability. On return to the UK, individuals were requested to submit a post-trip report within two weeks. This was structured in a format that encouraged the faculty to review their terms of reference, planned activities, and progress with activities, any feedback and suggestions for improvement.

Although not a prerequisite, most of the faculty had had the experience of working overseas. During the project, 11 UK faculty members supported activities in Zambia. Five of these faculty members worked in HE, with a further six working in acute tertiary referral NHS hospitals. Nine faculty members had worked in overseas settings such as Afghanistan, Ghana, Jamaica, Kenya, Oman, Sierra Leone, Somaliland, South Sudan and Vietnam.

The partnership recognised early on the crucial value of two-way learning and that international experiences give participants the opportunity to review their own practice and to gain new skills, ideas and initiatives for use on their return to their professional role (Health Education England [HEE], 2022; Lenhard et al., 2022; Notter & Carter, 2021). Understanding different perspectives and working together on projects was seen as important, as reported by one respondent:

> 'They were easily competent in terms of essential teaching skills, but the approach was probably new, and the style of delivery… building a mutual understanding that enabled the workshop to develop and run using the best of both countries approaches to education was a fantastic experience.' (UK Faculty Respondent 3)

Another respondent reflected on how the experiences had affected them professionally and personally:

> 'It certainly helped develop my ability to work with other people bringing new approaches to a task… by the end of the two weeks … we could sit back and watch the Zambian staff deliver the workshop and left confident that we had contributed to lasting development in the teaching resources at the school of nursing'. (UK Faculty Respondent 2)

Faculty members acknowledged that over time the shared experience had proved to be one of knowledge sharing and the use of bi-directional learning had enabled them to learn valuable lessons from their Zambian counterparts. This was reflected by comments such as:

> 'I found the longer I was there … and the more conversations I had the better I understood how nurse education and nursing 'worked'… I felt this improved understanding led to better communication in the workshops and increased my ability to understand the points people were making.' (UK Faculty Respondent No. 9).

Working in a new environment and being exposed to a different culture, healthcare system and expectations towards medicine can be difficult for faculty working abroad, regardless of whether they have experience of working in another country (McDermott-Levy et al., 2018).

> 'It was about just how hard you have to work to try and understand how people may be viewing you … you've been 'parachuted' into their country…workplace and what experiences are you bringing with you? What have their experiences been of other people going over there to [join their] Faculty? (UK Faculty Respondent No. 5)

The project used short-term placements ranging from 1 week to 6 weeks, because staff who supported activities could not take long periods away from their primary roles. This approach of short-term faculty placements has been a successful model for many projects involving senior clinical and academic staff (Bould et al., 2015). To address this, the project used a logical framework that provided a clear plan of activities and a 'golden thread' identifying how these short-term visits link and build upon each other.

Working abroad can be a life-changing experience, which left the faculty members with many good memories and lasting friendships (Health Education England, 2022). In this evaluation, they felt the experience was rewarding, they liked

seeing the project and partnership develop and evolve over time.

> 'We are all coming from our own experiences and lives … actually in many ways we have more similarities than differences … everyone goes to work … relaxes after work … and likes their days off! So… we're all the same … but different enough that's it's interesting!' (UK Faculty Respondent No. 8)

> 'Zambia is a lovely place … everyone really worked hard to look after us and welcome us to their workplace and even into their homes … I've been there twice now and returning this year it was even better seeing people I'd worked with the year before'. (UK Faculty Respondent No. 10).

For faculty, completing short-term placements and identifying impact was initially difficult:

> 'Will anyone take any notice of what you've said when… just as suddenly as you arrived … you've gone?' (UK Faculty Respondent No. 5)

However, they found that reflecting over time, clarified their role when in country and identified what they had brought back to their various roles in practice and education.

IMPLICATIONS FOR NURSING PRACTICE

Some of the lessons learned may well be applicable to other international nursing partnerships. First, understanding and acceptance of the different constraints experienced by the stakeholders. Second, to resist the urge for a quick fix and focus instead on developing long-term sustainable solutions to service needs. Developing project proposals that are transparent, that enable funders and partners to see the benefits and potential impacts over time supports sustainability. For equity, the use of clear project documentation, such as a logical framework, provides overall structure and governance, which helps reduce power imbalances. The 'hub and spoke' model reduces the challenges of staff from one organisation being released to support activities and allows for a tripartite approach to project activities, with representation from research, education and practice (HEE, 2022). Nursing is a competency-based profession, and this collaborative approach allows for a whole systems approach to capacity building and embedding new practices.

IMPLICATIONS FOR NURSING POLICY

To maintain pace with the changing burden of diseases, nursing education and practice need to evolve to address the ever-changing healthcare needs (IHME, 2022). In many lower income countries, emergency and critical care provision is limited but following the pandemic has now been recognised as an important element of strengthening the healthcare system and needs to be included in policy planning (Scott & Brysiewicz, 2017; WHO, 2020). Developing capacity within an already overstretched workforce and healthcare system remains a challenge. International health partnerships between different organisations are one way to develop education and practice (UN, 2022). However, this is possible only where stakeholders from all areas combine to develop a shared vision, taking ownership of the project, its activities, outcomes and impact, using these to inform policy and strategic plans for healthcare delivery.

CONCLUSION

This health partnership has proved to be challenging, rewarding and ultimately successful in delivering the requested changes in the education, training and practice of emergency, trauma and critical care nurse education and practice in Zambia. It took time for all partners to accept and recognise the capacity-building approach, in which key stakeholders start with and retain full ownership of the project, with all decisions taken collegiately. Transparency in all activities was essential, with good communication crucial throughout the project. The north–south partnership between HE institutions in Zambia and the UK has facilitated knowledge exchange and sharing with nurses working with nurses to support nurses and independently move the nursing agenda forward.

AUTHOR CONTRIBUTION

Manuscript writing: CC, JN.

ACKNOWLEDGEMENT

The authors would like to acknowledge the contribution from the lead partners, the Lusaka College of Nursing, and expert stakeholders from the Zambian Ministry of Health, Nursing Midwifery General Nursing Council of Zambia, Zambian Union of Nursing Organisations, University of Zambia Department of Nursing Sciences, Levy Mwanawasa Medical University, The University Teaching Hospital, Ndola Teaching Hospital, and The Arthur Davidson Children's Hospital, Ndola College of Nursing and the Lusaka College of Nursing.

FUNDING

Partnership activities were supported partly through a series of projects from the UK Department for International Development (DFID) (2017–2018), Johnson & Johnson Africa Grants Programme (2019–2020) managed by the Tropical Health and Education Trust, a UK Global Challenges Research Fund (2020) and a UK Research and Innovation / Newton Agile Response (2020–2022).

CONFLICT OF INTEREST

No conflict of interest has been declared by the authors.

REFERENCES

African Federation of Emergency Medicine. Resources. Available at: https://afem.africa/resources/ [Accessed 27th October 2022].

Bauer, I. (2007) More harm than good? The questionable ethics of medical Faculty and international student placements. *Tropical Diseases, Travel Medicine and Vaccines*, 3(5), 5. https://doi.org/10.1186/s40794-017-0048-y

Benton, D.C. & Watkins, M.J. (2020) Evidence into action: a policy brief exemplar supporting attainment of nursing now. *International Nursing Review*, 67(1), 61–67. https://doi.org/10.1111/inr.12573

Bould, M., Clarkin, C., Boet, S., Pigford, A. A. E., Ismailova, F., Measures, E., McCarthy, A. & Kinnear, J. (2015) Faculty experiences regarding a global partnership for anaesthesia postgraduate training: a qualitative study. *Canadian Jounal of Anaesthesia*, 62, 11–21. https://doi.org/10.1007/s12630-014-0252-4

Brysiewicz, P., Scott, T., Acheampong, E. & Muya, I. (2021) Facilitating the development of emergency nursing in Africa: operational challenges and successes. *African Journal of Emergency Medicine*, 11(3), 335–338. https://doi.org/10.1016/j.afjem.2021.03.013

Carter, C., Mukonka, P., Sitwala, L., Howard-Hunt, B. & Notter, J. (2020) The development of critical care nursing education in Zambia. *British Journal of Nursing*, 29(9), 499–505. https://doi.org/10.12968/bjon.2020.29.9.499

Carter, C., Mukonka, P., Sitwala, L., Mulawisha, G. & Notter, J. (2021) The 'sleeping elephant': the role of mentorship of critical care nurses in Zambia. *International Nursing Review*, 68(4), 543–550. https://doi.org/10.1111/inr.12717

Carter, C., Sakala-Mukonka, P. & Notter, J. (2022) International capacity building via the 'new norm' of virtual teaching and volunteering. *British Journal of Nursing*, 31(9), 502–503

Guerin, B., Janta, B. & van Gorp, A. (2018) Desk-based research and literature review. In Hofman. J., Sutherland, A. (2018). Evaluating interventions hat prevent or counter violent extremism: A practical guide. RAND Europe.

Health Education England (2022) Global engagements. Available at: https://www.hee.nhs.uk/our-work/global-engagement [Accessed 9th January 2022].

Institute for Health Metrics and Evaluation. (2022). Global Burden of Disease. https://www.healthdata.org/gbd/2019.

Lamb, D., Hofman, A., Clark, J., Hughes, A. & Sukhera, A.M. (2020) Taking a seat at the table: an educational model for nursing empowerment. *International Nursing Review*, 67(1), 118–126. https://doi.org/10.1111/inr.12549

Lenhard, N.K., An, C., Jasthi, D., Laurel-Vargas, V., Weinstein, I., Vargas, J.A. et al. (2022) Establishing a virtual global health education partnership: the Cleveland–Cusco connection. *Medical Science Educator*, 32, 1087–1094. https://doi.org/10.1007/s40670-022-01626-6

Matenga, T.F.L., Zulu, J.M. & Corbin, J.H. (2019) Contemporary issues in north–south health research partnerships: perspectives of health research stakeholders in Zambia. *Health Research Policy System*, 17(1), 7. https://doi.org/10.1186/s12961-018-0409-7

McDermott-Levy, R., Leffers, J. & Mayaka, J. (2018) Ethical principles and guidelines of global health nursing practice. *Nursing Outlook*, 66(5), 473–481. https://doi.org/10.1016/j.outlook.2018.06.013

Ministry of Health. (2018) National human resources for health strategic plan 2018–2024. Available at: www.moh.gov.zm [Accessed 27th October 2022].

Morgan, H. (2022) Conducting a qualitative document analysis. *The Qualitative Report*, 27(1), 64–77. https://doi.org/10.46743/2160-3715/2022.5044

Mormina, M. & Pinder, S. (2018) A conceptual framework for training of trainers (ToT) interventions in global health. *Global Health*, 14(1), 100. https://doi.org/10.1186/s12992-018-0420-3.

Notter, J. & Carter, C. (2021) What lessons can we take from reverse innovation? *British Journal of Nursing*, 30(13), 770. https://doi.org/10.12968/bjon.2021.30.13.770

Nursing and Midwifery Council. (2022) Revalidation. Available at: https://www.nmc.org.uk/revalidation/ [Accessed 9th October 2022].

Nurses and Midwives Act. (2019) Available at: www.parliament.gov.zm [Accessed 27th October 2022].

Parker, M. & Kingori, P. (2016) Good and bad research collaborations: researchers' views on science and ethics in global health research. *Plos One*, 11(10), e0163579. https://doi.org/10.1371/journal.pone.0163579

Plamondon, K.M., Brisbois, B., Dubent, L. &Larson, C.P. (2021) Assessing how global health partnerships function: an equity-informed critical interpretive synthesis. *Global Health*, 17(73), https://doi.org/10.1186/s12992-021-00726-z

Price, H., Domoney, J., Ariss, S. & Larson, C.P. (2021) Documentary analysis within a realist evaluation: recommendations from a study of sexual assault referral centres. *International Journal of Qualitative Methods*, 20, 1–13. https://doi.org/10.1177/16094069211047818

Royal College of Nursing. (2022) Ten-fold increase in nurse recruitment from "red list" countries. Available at: https://www.rcn.org.uk/news-and-events/Press-Releases/ten-fold-increase-in-nurse-recruitment-from-red-list-countries.

Scott, T. & Brysiewicz, P. (2017) Piloting a global mentorship initiative to support African emergency nurses. *International Emergency Nursing*, 34, 7–10. https://doi.org/10.1016/j.ienj.2017.05.002

Spies, L.A., Garner, S.L., Faucher, M.A., Hastings-Tolsma, M., Riley, C., Millenbruch, J. et al. (2017) A model for upscaling global partnerships and building nurse and midwifery capacity. *International Nursing Review*, 64(3), 331–344. https://doi.org/10.1111/inr.12349.

Tricco, A.C., Langlois, E.V. & Straus, S. E. (2017) Rapid reviews to strengthen health policy and systems: a practical guide. Available at: https://www.who.int/alliance-hpsr/resources/publications/rapid-review-guide/en/ [Accessed 27th October 2022].

United Nations Human Development Report. (2022) Zambia human development indicators. Available at: http://www.hdr.undp.org/en/countries/profiles/ZMB [Accessed 9th October 2022].

United Nations. (2022) Sustainable development goals. Available at: https://sdgs.un.org/goals [Accessed 9th October 2022].

Vaessen, J. Lemire, S. & Befan, B. (2020) Evaluation of international development interventions: an overview of approaches and methods. World Bank Group.

Walsh, A., Brugha, R. & Byrne, E. (2016) "The way the country has been carved up by researchers': ethics and power in north-south public health research. *International Journal of Equity Health*, 15(1), 204. https://doi.org/10.1186/s12939-016-0488-4

World Federation of Critical Care Nurses. (2022) Declarations and position statements. Available at: https://wfccn.org/declarations/ [Accessed 27th October 2022].

World Health Organization. (2016) Nurse educator core competencies. Available at: https://www.who.int/hrh/nursing_midwifery/nurse_educator050436.pdf [Accessed 9th January 2022].

World Health Organization. (2020) State of the world's nursing report. Available at: https://www.who.int/publications/i/item/9789240003279.

World Health Organization. (2022) Zambia. Available at: https://www.who.int/workforcealliance/countries/zmb/en/ [Accessed 9th January 2022].

How to cite this article: Carter, C. & Notter, J. (2023) Evaluation of an international health partnership to capacity build emergency, trauma and critical care nurse education and practice in Zambia: An experience from the field. *International Nursing Review*, 70, 266–272. https://doi.org/10.1111/inr.12813

Carter, C., Mukonka, PS., Sitwala, LJ., Howard-Hunt, B., Notter, J. (2020). The development of critical care nursing education in Zambia. *Br J Nurs.* 29(9):499-505. doi: 10.12968/bjon.2020.29.9.499.

The development of critical care nursing education in Zambia

Chris Carter, Priscar Sakala Mukonka, Lilian Jere Sitwala, Barbara Howard-Hunt and Joy Notter

ABSTRACT

Background: Critical care services reflect the healthcare services they support. In many low-to-middle-income countries (LMICs), balancing a sparse workforce, resources and competing demands to fund services, is a significant challenge when providing critical care. In Zambia, critical care has evolved significantly over the past 10 years. This article explores the provision of critical care services and the review and validation of a critical care nursing course. Objectives: To review the literature relating to critical care nursing in sub-Saharan Africa to support a review and validation of the current critical care nursing course and to prepare a framework for a Bachelor of Science (BSc) in critical care nursing programme in Zambia. Results: A search of the published literature identified key themes, including a paucity of evidence, limited educational opportunities, a lack of national and international opportunities, protocols and standards, and the challenges of providing technical services. The subsequent review and validation took account of these themes. Conclusion: This project has had an impact on improving critical care nurses' knowledge and skills and provided the foundations for the BSc in critical care nursing.

Key words: Critical care ■ Critical care nursing ■ Zambia ■ Nurse education

Critical care services are key components of modern healthcare delivery, with qualified and specialist nurses described as the core of service provision (Marshall et al, 2017). Globally, there is known to be a shortage of qualified nurses, and Zambia is recognised as having what the World Health Organization (WHO) classifies as a severe shortage (WHO, 2020). In addition, in Zambia, specialist fields of nursing practice such as critical care are relatively new (WHO, 2020), and across the country there are fewer than 200 trained critical care nurses (Ministry of Health (MoH), 2017). Zambia continues to face a high burden of disease, despite making progress in many of the internationally recognised indicators for HIV, malaria, under-five child mortality and maternal mortality ratio (MoH, 2017). In consequence, the achievement of targets set by the United Nations (UN) Sustainable Development Goals (SDGs) (2015) and the MoH, as well as the move to universal access to healthcare, will be delayed. As critical care is one of the few specialties that bridges both communicable and non-communicable diseases, it is essential that critical care services be prioritised when considering the allocation of resources.

One of the most urgent priorities in critical care is the shortfall of critical care nurses. To meet the demands of this shortfall, access to high-quality nurse education is required to provide specialised nurses to staff critical care units throughout the country. This article will provide a review of the activities undertaken that led to the development of the revised critical care nurse education programme in preparation for the transition to a bachelor's level qualification. To achieve these activities, a multidisciplinary stakeholder event that included representation from the MoH, General Nursing Council of Zambia (GNCZ), Zambian Union of Nursing Organisations (ZUNO), the University of Zambia (UNZA), the Lusaka College of Nursing (LUCON), the Ndola College of Nursing and an interdisciplinary panel of expert critical care nurses, renal specialist nurses, midwives and anaesthetists from the University Teaching Hospital in Lusaka were involved in the review and validation events. Support was provided by experts from Birmingham City University in the UK. This activity was part funded through the UK Department for International Development's (DFID) Health Partnership Scheme (HPS), and latterly by Johnson & Johnson's Africa Grants Programme.

The need for this project was identified by Zambian stakeholders who recognised that there was a need to increase and enhance critical care services to meet the needs of the nation. In Zambia, due to the limited number of critical care-trained and experienced doctors, critical care nurses are often the only professional group represented in intensive care units (ICUs) throughout the country. This is of concern because, within many African countries, nurses have traditionally been deemed subservient to doctors and, in some instances, the profession is seen only as a technical trade (Bultemeier, 2012). This has resulted in there being little focus on the education and training of nurses, with far less attention being given to developing specialist nursing roles such as critical care.

Chris Carter, Senior Lecturer, Faculty of Health, Education and Life Sciences, Birmingham City University, Chris.carter@bcu.ac.uk

Priscar Sakala Mukonka, Head, Lusaka College of Nursing, Republic of Zambia

Lilian Jere Sitwala, Principal Tutor, Critical Care Nursing, Lusaka College of Nursing, Republic of Zambia

Barbara Howard-Hunt, Senior Lecturer, Faculty of Health, Education and Life Sciences, Birmingham City University

Joy Notter, Professor of Community Healthcare Studies, Birmingham City University

Accepted for publication: March 2020

Justification for the review

The purpose of this activity was for key stakeholders to review and validate the current Advanced Diploma in Critical Care Nursing and to prepare a framework for a bachelor degree-level critical care nursing programme. This activity is part of a wider project to support the strategic capacity building of a career framework for critical care nursing in Zambia.

An initial literature review revealed a paucity of published articles in this area of nursing. With few results, the search was widened and included searching article reference lists, derived from CINAHL, Athens, British Nursing Index, PubMed and Medline, professional websites and signposting to other articles by experts in the field. This provided 22 studies to review. These articles were selected and assessed using an adapted research appraisal tool (Hawker et al, 2002). Following critical appraisal, eight articles were rejected and a total of 14 studies were included in this review. Examples are given in *Table 1*.

Results of the literature review

The literature review results have been divided into three key sections. First, the context of critical care in Zambia; second, local, national and international guidelines, policies and service provision; and third, education.

The context of critical care in Zambia

Sub-Saharan Africa (SSA) critical care services face significant health-related challenges, with high incidences of HIV/AIDS, malaria and tuberculosis. These additional challenges have seriously impacted the delivery and development of healthcare services and the professional development of nurses in SSA (Mutea and Cullen, 2012). The research evidence available demonstrated limited use of national and international protocols, with those being used often developed in high-income countries (HICs) where medical challenges differ.

In a retrospective audit into avoidable mortality in Zambia, Lillie et al (2015) found that 62% cases of identified deaths that they reviewed were either avoidable or potentially avoidable, and many records were incomplete. They cited repeated incidences of limited staff capability and access to intensive care. Weiser et al (2015) pointed out that, without standardised medical records within Zambia, accurate collection, analysis, interpretation and reporting of perioperative statistics must be treated with caution. Nevertheless, Lillie et al's (2015) study raised important points that cannot be ignored in terms of workforce planning, access to education and critical care provision. They identified that some countries, such as Zambia, have little or no continuing professional development and had resource-restricted specialist education programmes for both doctors and nurses. As a result, doctors and nurses must travel to other countries to study postregistration specialisms, a situation that the UN (2015) has stated must change.

Zambia is making efforts to enhance and develop critical care services. The country now adheres to international priorities regarding the standardisation of medical records (MoH, 2017), but has yet to develop a national reporting system from which to measure current and future impacts (MoH, 2016). Murthy et al (2015) pointed out that this finding is reflected across the continent, with few instances of published national statistics, no regionally agreed definitions and standards for critical care, making comparisons across the continent difficult. The lack of consensus impacts on implementation of services because the workforce, having trained in different countries, brings back different concepts for practice. On the positive side, this creates fresh ideas and new initiatives. Conversely, it can delay decision making as providers have to adapt their knowledge and expertise to fit within the Zambian health systems, resources and context.

Most of the Zambian population live in rural areas, making access to the critical care services difficult. Dart et al's (2017) quantitative audit of adult medical and surgical patients in a tertiary referral hospital, found that 45% of patient observations revealed evidence of the need for admission to critical care, which was beyond the critical care capacity of the hospital, where only eight critical care beds were available. This study supported the internal audit of Zambia's critical care services, which found a total of 70 beds across the whole country (MoH, 2016). The result is that many critically ill patients are cared for on wards where staff have limited or no critical care training or experience (Lillie et al, 2015; Dart et al, 2017).

Local, national and international guidelines, policies and service provision

Studies focusing on local, national and international protocols were few, although several studies discussed the need to develop these (Towey and Ojara, 2008; Gondwe et al, 2011; Adipa et al, 2015; Murthy et al, 2015; Lillie et al, 2015). Only two studies reviewed admission criteria, clinical care and standardised reporting on critical care capability, and, of these, one was Zambian based (Mwewa and Mweemba, 2010). Riviello et al (2016) developed and trialled a risk-prediction model to estimate expected hospital and critical care mortality based on patients' characteristics. They highlighted the importance of developing context-specific protocols, as those based on HIC protocols are not appropriate, as they either require significant data collection and resources, which are not available, or they cite conditions and comorbidities not routinely seen in LMICs. Thus, although these studies had small sample sizes, they were innovative and provided a baseline for further research, which needs to be designed for translation across the continent.

Most studies found that it was normal practice to admit both adult and paediatric patients, and that there were no separate units for paediatrics (Towey and Ojara, 2008; Ttendo et al, 2016; Muteya et al, 2013; Tomlinson et al, 2013; Murthy et al, 2015). In addition, as they are frequently the only hospital department that can offer specialist care, admission criteria are broad, including both communicable and non-communicable diseases, a relatively high incidence of malaria, trauma, maternal complications and patients with complex postoperative needs (Towey and Ojara, 2008; Jacob et al, 2009; Kwizera et al, 2012; Muteya et al, 2013; Tomlinson et al, 2013; Ttendo et al, 2016).

Education

In addition to limited critical care services, only two studies focused specifically on the development of critical care education programmes (Towey and Ojara, 2008; Bould et al, 2015). However, others argued for the importance of developing a specialist

Table 1. Examples of selected Zambian articles

Author/date	Date of research	Country	Study design	Description	Sample size	Aim	Key findings
Dart et al (2017)	2014	Zambia	Quantitative	Point prevalence study	120 medical and surgical admissions over 48 hours to 3 wards	To objectively measure demand for critical care services in a tertiary referral centre	45% had objective evidence of requirement for intensive care unit (ICU) admission. Greater than expected HIV rate (71%)
Bould et al (2015)	2011–2012	Zambia	Qualitative	Semi-Structured interviews	14 visiting and local faculty members supporting the Masters in Medicine Anaesthesia course	To investigate experiences of both visiting and local faculty in the first year of an externally supported postgraduate programme	Themes: ■ Differences in clinical practice ■ Resource limitations ■ Organisational issues ■ Presentation and comorbidities of patients ■ Surgical differences ■ Cultural issues relating to communication and teamwork
Lillie et al (2015)	2012	Zambia	Quantitative	Retrospective cohort study	59 cases in one hospital	To compare recent avoidable perioperative mortality at University Teaching Hospital Lusaka, Zambia, with historical data from 1987	Incomplete records available making it difficult to undertake analysis. From data available: ■ 30% identified avoidable ■ 32% probably avoidable ■ 24% unavoidable ■ 14% unclear Key factors: ■ Delays in surgery ■ Lack of availability ■ Poor postoperative care
Mwewa and Mweemba (2010)	No information	Zambia	Quantitative	Descriptive study	50 randomly selected nurses from emergency departments, obstetrics, medical and surgical wards and theatres	To determine nurses' knowledge and utilisation of ICU admission criteria and guidelines	Awareness of emergency and ward nurses of critical care provision and admission criteria. Respondents had no training in managing critically ill patients prior to admission to ICU

critical care workforce (Adipa et al, 2015; Dart et al, 2017). However, parallels can be drawn from within the continent as a whole. Towey and Ojara's (2008) prospective qualitative study in Uganda highlighted that nurses who had received specialist critical care nurse training reported increased morale and that this had a 'ripple' effect because knowledge then cascaded to other areas of the hospital. Conversely, Gondwe et al's (2011) exploratory study of 10 critical care nurses in Malawi, found significant challenges and occupational stress when providing family support while simultaneously delivering complex care to critically ill patients. This led to compassion fatigue and resulted in nurses considering leaving the profession or working in another specialty. The researchers found nurses reported limited training in psychological care and few protocols to help them support families.

Bould et al's (2015) evaluation of an internationally supported postgraduate anaesthesia programme in Zambia reported the same range of clinical issues, including variations in practice. Their concern was that there was no orientation programme that enabled staff trained in HICs to adapt to service provision in limited-resource countries. Although this was a medical education programme, the issues are the same for critical care nurses trained abroad. Adipa et al's (2015) study of ward nurses in Ghana also commented on the fact that interventions taken for granted in HICs, are often not available in LIMCs. Overall, it appears that experienced nurses argue that their experience does not compensate for limited education and training (Chiarella and White, 2013).

Critical care nurse course review 2018

In recognition of the need for Zambia-specific trained critical care nurses, a 12-month full-time Advanced Diploma in Critical Care Nursing began in 2012 at the LUCON following the development of the curriculum by the GNCZ, with support from the Tropical Health Education Trust (THET) and the Brighton-Lusaka Link. However, since then, there have been challenges in course delivery as the original teaching team changed, leaving insufficient tutors to revise the content to reflect current and future healthcare provision in Zambia. In recent years, there has been a rapid expansion in critical care education and services. There was recognition that, in line with GNCZ regulations and WHO (2009) best practice, the

curriculum urgently needed revision to meet these requirements and the changing burden of disease.

Education programmes are inextricably linked to safe practice, public accountability and the healthcare context in which the nurses practise. Therefore, all validations and reviews must be multidisciplinary and include representatives from nursing regulatory and professional organisations, the MoH and clinicians of all grades, including doctors. In consequence, education providers must develop curricula that balance the different requirements arising from health politics, the realities in current practice and workforce funding. It was agreed that to provide peer review and external scrutiny to the process, the review, finalisation and validation events required representatives from all the key stakeholders involved in critical care nursing. To provide governance, terms of reference were developed and adhered to by all participants through each process. The review and validation events each took 5 days and involved changes in the course ethos, structure and content, and changes in practice. To reflect the revised programme, the procedures manual, assessment processes, and teaching materials were all reviewed and amended.

Key changes to the critical care course

Course structure

The new programme reflects the MoH changes in healthcare provision to meet the changing demography and disease burden (Carter et al, 2018). Care was taken to check that the revision enabled the advanced diploma to meet the UN Educational, Scientific and Cultural Organization (2011) *International Standard Classification of Education* (ISCED) for level 5 study, which aims to provide students with 'professional knowledge, skills and competencies', that are practice based and occupational specific. Nurse education in Zambia follows an integrated programme whereby students must successfully complete both theory and practice components. These comprise 19 weeks (665 hours) of theory and 32 weeks (1255 hours) in practice. During the course both formative and summative assessments are used. Summative assessments form the intermediate, hospital and GNCZ written examination and the Objective Structured Clinical Examination (OSCE) practical examinations (Muldoon et al, 2014).

The underpinning educational theory follows the principles of constructivism, in a format Biggs (2018) described as constructive alignment. This approach is referred as an 'ecosystem for learning' (Weller, 2016) and involves balancing all the components to support each other by structuring the specific learning outcomes through effective assessment and feedback (Biggs, 2018). It promotes self-directed study, with the student developing the academic and clinical skills to 'construct' their own path through the various learning activities. The teacher is the catalyst for learning, creating a learning environment that enables the student to 'align' their learning to the learning outcomes (Biggs, 2018).

Overall, learning objectives have been designed to facilitate the process through which the nurse can 'acquire the specialised knowledge, skills and attitude to recognise, respond appropriately and care for acutely or critically ill patients in a range of settings, including intensive care, high dependency ward and emergency areas' (GNCZ, 2018). Specific learning objectives have been differentiated to provide clear direction on the requisite outcomes for successful completion of the programme.

Placements

Critical care nurses work not only in the ICU, but are often called upon to support the care of a deteriorating patient on a ward or in an emergency department. In many hospitals, with limited numbers of health professionals, the critical care nurse may be the only practitioner trained and experienced in this area and will be called upon to support decision making and provide advice to both doctors and nurses (MoH, 2016). In consequence, students need to have a variety of practical experiences to help prepare them for their future role.

Students must undertake a major component of their programme in practice. Placements include adult, paediatric and neonatal ICUs, anaesthesia/operating theatres, renal units, cardiac catheter laboratories, radiology, special observation units (midwifery), emergency departments and medical emergency units. Many of these placement areas were added in recognition of the need to increase students' exposure to a broader range of experiences. Each placement area was evaluated to confirm its appropriateness and to identify the learning needs.

Students also now undertake an attachment at an ICU in a rural district hospital. The rationale for this is that the majority of the programme is delivered in an urban, tertiary referral hospital, but many students come from and will return to district hospitals. On successful completion of the course, students returning to their hospitals may be required to set up and lead units (Carter, 2016). This placement, in addition to providing students with exposure to a different setting, enables tutors to share advances in critical care education with those in practice, so providing an element of continuing professional development for staff. During the review, feedback from stakeholders identified that clinical practice mentors had limited skills in supporting students in practice; this is a key element of the educational approach chosen. In response, a 'train the trainers' programme on mentorship in practice was developed and delivered. Key stakeholders have undertaken to cascade this to all nurses involved in the mentorship and assessment of students within the clinical practice area.

Competencies

In Zambia, nursing is regulated by the Nurses and Midwifery Act (2001), which provides nurses with a scope of practice that includes prescribing drugs in accordance with the *Nurse and Midwifery Formulary* and to undertake therapeutic interventions, which may include insertion and removal of devices, intubation, resuscitation and infusions. In consequence, all nurse education and training programmes must be competence based if nurses are to provide comprehensive care to the critically ill patient.

During the review and validation events, all existing competencies were assessed, revised and peer reviewed. As a result of this process, identified gaps in education and training needed to be addressed, and, in addition to the previous critical care nursing procedures, 11 new competencies were developed and ratified. These were neonatal resuscitation, neonatal continuous

positive airway pressure (CPAP), paediatric assessment, paediatric cardiopulmonary resuscitation (CPR), dealing with postpartum haemorrhage, pre-eclampsia and eclampsia, plus transfers, sedation scoring, pain management, and use of syringe drivers and volumetric infusers.

Future developments

During the validation events, the MoH and GNCZ agreed with the existing provider LUCON that additional education provision was needed and approved the Ndola College of Nursing, located in the Copperbelt Province, to deliver critical care nursing courses from mid-2018 onwards. The introduction of this second training institution has increased opportunities for nurses to train in critical care, with students undertaking their main clinical placements at the Ndola University Teaching Hospital and the Arthur Davidson Children's Hospital.

Essential to the success of education is a highly skilled education workforce. The academic staff supporting these courses include principal tutors, nurse tutors and clinical instructors. It is recognised that, for sustainability and future proofing, additional teaching staff will be needed, but currently there are no in-country Bachelor of Science (BSc) or Masters programmes in critical care nursing. In consequence, these tutors will need to be trained outside Zambia, which increases the costs and reduces the numbers who can access the appropriate level of training to maintain and further this specialist field of practice.

The WHO (2009) has recommended that all nursing programmes are at bachelor level (ISCED level 6). Following the successful validation and implementation of the new programme, the MoH has supported the development and validation of its own BSc in Critical Care Nursing, which needed to be developed within the context of Zambia and not based on Western or medical models (Munjanja et al, 2005). The MoH requested that the same key stakeholders who had successfully completed the revision and validation of the Advanced Diploma be reconvened to develop the proposed BSc in Critical Care Nursing. Linked to this, was its recognition that, for sustainability, this BSc needed to be part of a career framework for critical care nurses, through which it could extend and develop its own long-term workforce. It accepted that international evidence has shown that ICUs with an increased number of degree-level trained nurses were associated with reduced mortality among ventilated patients (Kelly et al, 2014). This is supported by international evidence from other nursing specialisms, which has also revealed that the relationship between mortality and adverse events was linked to nurse staffing and educational level (Rafferty et al, 2007; Diya et al, 2012; Aiken et al, 2014). Although the methodologies of some of these studies may have been challenged by critics arguing against the transition to bachelor programmes (Whitehead, 2010), the evidence consistently demonstrates that a graduate-level nursing workforce makes a difference in terms of reducing complications, hospital stay and mortality (Rafferty et al, 2007; Diya et al, 2012; Aitken et al, 2014).

Training a critical mass of nurses to BSc level will support those who wish to remain in the clinical environment, and also facilitate roles in education, for example, clinical instructors, lecturers and roles in research and leadership to develop. In time, this will enable critical care nurses, with enhanced leadership roles, to become involved in strategic decision-making processes related to service provision, which at present is often the domain of physician anaesthetists. As nurses have been described by the MoH as their major workforce in healthcare provision, this in turn will result in improved care.

Conclusion

Education and training in critical care in Zambia has advanced rapidly. In the past two years, the revised and validated Advanced Diploma has been implemented and the newly validated BSc degree has a planned start date of July 2020. Formative evaluation of the course's accessibility, appropriateness and acceptability has been completed for the Advanced Diploma. Summative evaluation of the effectiveness, efficiency and extent to which the programme meets its objectives is now in progress. The same systematic approach will in due course be followed for the BSc programme. At this stage summative evaluation is not complete and therefore minor adjustments may need to be made to the programme once all monitoring and evaluation processes are complete. It should also be noted that as this was the first BSc programme, there was no comparative degree programme on which to build. Nevertheless, the activities completed indicate that the programme has been well received and that the nurses who graduate will have the competencies necessary for specialist critical care practice.

It is hoped that this article will add to the growing body of knowledge on critical care nursing in Zambia and other LMICs and has outlined a clear rationale for a BSc-level programme in critical care nursing in Zambia. Critical care provision in Zambia has changed and advanced both academically and clinically since the initial introduction of critical care nursing as a specialty in 2012. However, the numbers trained are still small.

The new programmes will transform care provision, offering evidence-based, knowledgeable and skilled specialist critical care nurses. This investment in developing critical care nurses, in terms of knowledge and professional opportunities, will not only impact on the ICU but the wider hospital setting. It therefore has the potential to improve the outcomes of the critically ill in Zambia and should prove a major achievement for the country. **BJN**

Declaration of interest: none

Acknowledgments: The authors would like to acknowledge the contributions of the Ministry of Health, General Nursing Council, the Zambian Union of Nursing Organisations, University of Zambia Department of Nursing Sciences, The University Teaching Hospital, Lusaka College of Nursing, Ndola College of Nursing, Birmingham City University and the Tropical Health and Education Trust's Zambia and London offices for their support in delivering this project

Adipa FE, Aziato L, Zakariah AN. Qualitative exploration of nurses' perceptions on clinical oxygen administration in Ghana. International Journal of Africa Nursing Studies. 2015;2:42–46. https://doi.org/10.1016/j.ijans.2015.03.002

Aiken LH, Sloane DM, Bruyneel L et al for the RN4CAST consortium. Nurse

staffing and education and hospital mortality in nine European countries: a retrospective observational study. Lancet. 2014;383(9931):1824–1830. https://doi.org/10.1016/S0140-6736(13)62631-8
Biggs J. Aligning teaching for constructive learning. The Higher Education Academy. 2018. https://tinyurl.com/h7mklbl (accessed 29 April 2020)
Bould M, Clarkin CL, Boet S et al. Faculty experiences regarding a global partnership for anaesthesia postgraduate training: a qualitative study. Can J Anaesth. 2015;62(1):11–21. https://doi.org/10.1007/s12630-014-0252-4
Bultemeier KI. Nursing in Malawi: nursing theory in the movement to professionalize nursing. Nurs Sci Q. 2012;25(2):184–186. https://doi.org/10.1177/0894318412437953
Carter C. The nurse's role in delivering the Global Safe Surgery Campaign. Br J Nurs. 2016;25(16):907. https://doi.org/10.12968/bjon.2016.25.16.907
Carter C, Makonka PS, Watkiss S, Howard-Hunt B, Notter J. Critical care nursing in Zambia: global healthcare integration. Br J Nurs. 2018;27(9):497–498. https://doi.org/10.12968/bjon.2018.27.9.497
Chiarella M, White J. Which tail wags which dog? Exploring the interface between professional regulation and professional education. Nurse Educ Today. 2013;33(11):1274–1278. https://doi.org/10.1016/j.nedt.2013.02.002
Dart PJ, Kinmear J, Bould MD, Mwansa SL, Rakhda Z, Snell D. An evaluation of inpatient morbidity and critical care provision in Zambia. Anaesthesia. 2017;72(2):172–180. https://doi.org/10.1111/anae.13709
Diya L, Van den Heede K, Sermeus W, Lesaffre E. The relationship between in-hospital mortality, readmission into the intensive care nursing unit and/or operating theatre and nurse staffing levels. J Adv Nurs. 2012;68(5):1073–1081. https://doi.org/10.1111/j.1365-2648.2011.05812.x
General Nursing Council of Zambia. Curriculum for registered critical care nursing. Lusaka: General Nursing Council of Zambia; 2018
Gondwe WTM, Bhengu BR, Bultemeier K. Challenges encountered by intensive care nurses in meeting patients' families' needs in Malawi. Africa Journal of Nursing and Midwifery. 2011;13(2):92–102
Hawker S, Payne S, Kerr C, Hardey M, Powell J. Appraising the evidence: reviewing disparate data systematically. Qual Health Res. 2002;12(9):1284–1299. https://doi.org/10.1177/1049732302238251
Jacob ST, Moore CT, Banura P et al. Severe sepsis in two Ugandan hospitals: a prospective observational study of management and outcomes in a predominately HIV-1 infected population. PLoS One. 2009;4(11):e7782. https://doi.org/10.1371/journal.pone.0007782
Kwizera A, Dünser M, Nakibuuka J. National intensive care unit bed capacity and ICU patient characteristics in a low income country. BMC Res Notes. 2012;5(1):475. https://doi.org/10.1186/1756-0500-5-475
Kelly DM, Kutney-Lee A, McHugh MD, Sloane DM, Aiken LH. Impact of critical care nursing on 30-day mortality of mechanically ventilated older adults. Crit Care Med. 2014;42(5):1089–1095. https://doi.org/10.1097/CCM.0000000000000127
Lillie EMMA, Holmes CJ, O'Donohoe EA et al. Avoidable perioperative mortality at the University Teaching Hospital, Lusaka, Zambia: a retrospective cohort study. Can J Anaesth. 2015;62(12):1259–1267. https://doi.org/10.1007/s12630-015-0483-z
Marshall JC, Bosco L, Adhikari NK et al. What is an intensive care unit? A report of the task force of the World Federation of Societies of Intensive and Critical Care Medicine. J Crit Care. 2017;37:270–276. https://doi.org/10.1016/j.jcrc.2016.07.015
Ministry of Health. Critical care nursing in Zambia: final report prepared for Dr Mwaba Permanent Secretary, Ministry of Health, Republic of Zambia. Lusaka: Ministry of Health; 2016
Ministry of Health. Zambia national health strategic plan 2017–2021. 2017. www.moh.gov.zm/docs/ZambiaNHSP.pdf (accessed 29 April 2020)
Muldoon K, Biesty L, Smith V. 'I found the OSCE very stressful': student midwives' attitudes towards an objective structured clinical examination (OSCE). Nurse Educ Today. 2014;34(3):468–473. https://doi.org/10.1016/j.nedt.2013.04.022
Munjanja MO, Kibuka S, Dovlo D. The nursing workforce in sub-Saharan Africa. The Global Nursing Review Initiative. 2005;7.1–59. https://tinyurl.com/yankpya7 (accessed 29 April 2020)
Murthy S, Leligdowicz A, Adhikari NKJ. Intensive care unit capacity in low-income countries: a systematic review. PLoS One. 2015;10(1):e0116949. https://doi.org/10.1371/journal.pone.0116949
Mutea N, Cullen D. Kenya and distance education: A model to advance graduate nursing. Int J Nurs Pract. 2012;18(4):417–422. https://doi.org/10.1111/j.1440-172X.2012.02043.x
Muteya MM, Kabey AK, Lubanga TM, Tshamba HM, Tambwe AM, Mkay T. Prognosis of tetanus patients in the intensive care unit of Provincial Hospital Jason Sendwe, Lubumbashi, DR. Congo. Pan Afr Med J. 2013;14:93. https://doi.org/10.11604/pamj.2013.14.93.2180
Mwewa B, Mweemba P. Knowledge and utilization of ICU admission criteria and guidelines, Lusaka, Zambia. Medical Journal of Zambia. 2010;37(3): 143–152
Rafferty AM, Clarke SP, Coles J et al. Outcomes of variation in hospital nurse staffing in English hospitals: cross-sectional analysis of survey data and discharge records. Int J Nurs Stud. 2007;44(2):175–182. https://doi.org/10.1016/j.ijnurstu.2006.08.003
Riviello ED, Kiviri W, Fowler RA et al. Predicting mortality in low-income country ICUs: the Rwanda Mortality Probability Model (R-MPM). PLoS One. 2016;11(5):e0155858. https://doi.org/10.1371/journal.pone.0155858
Tirindo SS, Was A, Preston MA, Munyarugero E, Kerry VB, Firth PG. Retrospective descriptive study of an intensive care unit at a Ugandan regional referral hospital. World J Surg. 2016;40(12):2847–2856. https://doi.org/10.1007/s00268-016-3644-5
Tomlinson J, Haac B, Kadyaudzu C, Samuel JC, Campbell ELP, Lee C, Charles AG. The burden of surgical diseases on critical care services at a tertiary referral hospital in sub-Saharan Africa. Trop Doct. 2013;43(1): 27–29. https://doi.org/10.1177/0049475513480773
Towey RM, Ojara S. Practice of intensive care in rural Africa: an assessment of data from Northern Uganda. Afr Health Sci. 2008;8(1): 61–64
United Nations. Sustainable development goals. 2015. http://www.un.org/sustainabledevelopment/sustainable-development-goals/ (accessed 29 April 2020)
United Nations Educational, Scientific and Cultural Organization. International standard classification of education (ISCED). 2011. https://tinyurl.com/y897oxvm (accessed 29 April 2020)
Weiser TG, Makasa EM, Gelb AW. Improving perioperative outcomes in low-resource countries: it can't be fixed without data. Can J Anaesth. 2015;62(12):1239–1243. https://doi.org/10.1007/s12630-015-0484-y
Weller S. Chapter 4. Promoting critical approaches to the curriculum. In: Academic practice: developing as a professional in higher education. London: Sage; 2016
Whitehead B. Will graduate entry free nursing from the shackles of class and gender oppression? Nursing Times. 2010;106(21):19–22
World Health Organization. Global standards for the initial education of professional nurses and midwives. 2009 https://tinyurl.com/y85s8cza
World Health Organization. Nursing and midwifery. 2020. https://tinyurl.com/yyjfnu2n (accessed 29 April 2020)

KEY POINTS

- Critical care in Zambia has evolved significantly in the past 10 years, but there are still too few critical care nurses to meet World Health Organization recommendations
- The literature review affirms the need for additional research to develop evidence-based practice and support standardisation of national processes, procedures and protocols
- The Advanced Diploma in Critical Care was updated and revalidated to meet the United Nations' international standard classification of education, as preparation for the move to graduate education and training
- The first Zambian specialist Bachelor of Science in Critical Care Nursing has been validated, is due commence in July 2020 and will enhance and transform practice

CPD reflective questions

- This review revealed limited evidence to support standardisation. In your own setting, can you identify an area where you could develop evidence-based practice to support your clinical role?
- Reflecting on your own practice, what additional education and training do you need to enhance the care you deliver?
- Looking at the literature review, can you identify an area where you could use this approach with your wider team to reflect on and improve your knowledge and expertise?

Appendix 7: First Round Focus Groups

Quote	Perceptions, Thoughts & Context	Code	Emerging Category / Theme
'… because we are not recognised … they [nurses] *get discouraged… so they would rather go to a speciality that they know immediately they finish …* [where] … *they will be recognised…'*	Participant expressing concern, indicating they may leave critical care nursing / country.	Recognition Discouraged Migration	Recognition
'…there are no degrees… so they did …general nursing or public health…'	No appropriate career progression in critical care.	Lack of opportunity	Lack of Education / Opportunity
'…there are very few specialised critical care nurses…'	Limited number of qualified staff	Realities	Realities
'…you need to know neuro gastro trauma obstetrics orthopaedics and emergency… you have to have that broad understanding of every speciality almost, because those patients can be admitted…'	Range of expertise needed is large. How do you do this in a one-year programme?	Recognition of content Not able to cover all content	Need for longer programme and higher level.
'… you can't cover neonatology, paediatrics and adults in any depth in that time…'	Not enough time to learn content.	Timing	Need for longer programme and higher level.
'… the neonatal component is short with students spending the majority of time in ICUs with adults and children…'	Key specialities not covered in sufficient depth.	Incomplete education.	Need for longer programme, dedicated programme and higher level.
'…there are those doctors who will just look at the nurse and think maybe … they don't know what they're doing… they [doctors] know it better'.	Cross professional working Critical care nurses still not fully accepted. Realities	Realities	Realities
'…when they see you doing something different from what they know or maybe using a piece of equipment differently from the way they do, some are interested to learn…'	Sharing knowledge with others. Seen to be the expert.	Expertise Clinical teaching role	Expert
'…there are those who are willing to learn and they ask questions and they also um, trying to learn from you… yeah… so you work together and you'll be there may be in the lead to help them do what they are supposed to do…'	Differences in professionals Teaching and leadership role.	Leadership	Recognition as leaders.
'… so as much as we want to promote… we are stuck… there is nothing that's really pushing me to go further…'	Disappointed in lack of opportunities. Nothing to motivate.	Lack of career progression	Need for career structure and opportunities.
'… immediately you make a mistake… the whole hospital is going to hear about it…' This inevitably affected their moral and as one stated '…we are not really motivated…'.	Realities & transparency in practice Bullying Leading to lack of morale and loss of motivation.	Workplace culture	Workplace culture.
'…most of the time you just hear people saying something nice about you when you die…'	Realities Workplace culture	Workplace culture	Workplace culture.
'…in the resuscitation ward… they will call a nurse from ICU to … be with the nurses in the resuscitation ward … you use your skills	Extended role	Extended role Recognition	Extended role.

in how to handle the patient… and if they need resuscitation… you do that…'	Expected to lead in and outside of critical care. Task shifting and new expectations – now expected to guide and lead specialist colleagues. Needed but no time allowed.		
'…there will be a need for you to rush to see a patient or maybe intubate a patient because for them to move the patient to ICU before the patient is intubated might be too late…'	Extended role Recognition of skills Task shifting Needed but can adversely affect care on critical care unit.	Extended role Recognition	Extended Role
'…the skills that you acquire as a critical care nurse, you can use them anywhere… and in the hospital set-up… like here where we are, you can work in the outpatient department… too… you can work in the medical surgical wards…they have critically ill patients…'	Transferrable skills a possibility to work where needed. Needed outside of the critical care unit. Recognition of knowledge and skills.	Transferrable skills	Transferrable skills
'…our ICU is very small… so you find that … in the wards… you have patients that are critically ill… and you need critical care nurses there…'	Recognition of need outside of critical care. Need for critical care nurses to be placed in general wards.	Traditional role of working in critical care challenged.	Opportunities
'…we train them and then they go'.	Migration from increased knowledge and skills.	Migration Employability	Migration Employability
… we have one nurse who is currently working in the UK as is on vacation leave [90-120 days] … if she does not return she will be a deserter and will be removed from the payroll… it will be difficult if she ever wants to work here again…'	Realities of being a civil servant retaining the concept of desertion, with long term adverse effect on career.	Workplace cultures Policies	Workplace culture
'…another nurse returned as she had trouble in the UK so came back and managed to get a contract with the MOH.	Realities of return. Disappointing she came back not from choice but due to difficulties.	Realities Workplace culture	Workplace culture
… all her friends that she left are now nursing officers' tutors… she is just an RN working on a medical ward… doing weekends and nights looking after 40 – 50 patients… she lost everything her status… seniority… and will be there until she retires…'	Career limited by policies. No recognition of previous experience. No acceptance of individual choice. No forgiveness	Realities	Realities of coming home
'…why would you study another diploma…'	Lack of appropriate critical care opportunities	Need for career structure.	Career structure
'I am a critical care nurse….'	Pride	Pride	Pride in role

…' in the hospital where I was coming from there were none…so… I think we gained more confidence being at a bigger hospital… unlike our general hospitals… [or] central hospitals where we are coming from…	Country wide need for critical care Realities	Recognition of need for critical care Realities	Recognition of need for critical care.
'The ICU opened in 2010 we were calling it an Acute Ward… and were only registered nurses there… being headed by a midwife… we had a lot of challenges in that when a critically ill patients comes we don't know how to intubate… all we knew to do was the routines… the vital signs… the measuring of urine and everything as in the acute bay nursing care…'	Realities Lack of recognition Lack of appropriate education Lack of appropriate leaders.	Realities	Need for critical care nurses to run the unit.
'…so when we started training the critical care nurses… it bought a bigger change… we even had new machines that came in… that we never knew how to use initially… but after the [critical care] training we got to know how to use a ventilator… the monitors… and everything… so we even started intubating… of course with the help of the anaesthetist being around… so it has changed so much…'	On job training. Realities New equipment no training	Realities	Need for specialist nurses
'…there are no progression pathways for us hence few candidates enrolling in the programme…'	Lack of education and career. Nurses choosing different options.	Employability Opportunities	Career Structure
'…in the main ICU… a few years ago would have a patient… one patient in two… three days… but not of late… we've got… we have had an increase number of patients… conditions like cardiovascular conditions were quite rare… but now we've been seeing much more of that… there's been a change in almost everything…'	Changes in number and complexity of patients. Also, changes in expertise needed.	Changing role	Increased utilisation Changing disease burden

Appendix 8: First Round Focus Groups

Table 7.2: first round: Framework Analysis			
Quote	**Initial thoughts and description**	**Initial codes**	**Emerging categories/themes**
'…I think the first person a critically ill patients should see is a qualified critical care nurse…'	Seeing the patient as needing to see, specialist nurse	specialist care role of the nurse	Role Specialist care
'*…we need to be there …we can organise the ward…'*	Specialist role includes Management skills leaders	management skills leaders in ptractice	Leadership and management
'…we take care of the critically ill patients … we provide highly specialised care…'	Extended role to deliver Specialist care	Specialist care	Specialist care role
…as a specialist you can make decisions… you don't need to wait for a doctor.. … if CPR is needed…I'll do it…'	Specialist role and critical decision making skills sits in 2 themes	Decision maker Independent expert	Specialist roles Decision maker
'…the problem is shortage of drugs…so care is compromised…'	Perennial problem raised at almost every meeting	Shortages in access to medication	Access to medication and technical services
'…we can't check things like ABGs..but we need these…'	As above	Shortages in access to essential blood tests etc	
'… you know patients can be different types of conditions that we need a specialist [nurse] *to take care of them…'*	Different to general patients more specialist expertise needed	Specialist care know of different conditions	Specialist expertise
'…if you don;'t have that knowledge … if you are just a general nurse you will not know that a patient is worse…'	Specialist knowledge for good care and patient safety	More knowledge than general nurses	Knowledge
'… she [critical care nurse] *… can share … that motivated me to study..to get the knowledge…'*	Wanted to learn following role model	Motivation for Education Following role model	Motivate to learn
'...I've made efforts .. read…search the literaure …it sticks in my mind… if I do my own research it's difficult to forget… do you get me…'	Self motivated to learning Improved retention limits of available information need for access to education	Independent study searching literature	Independent study
'... we don't have tutors that have done critical care …there are very few…so we need more…'	Lack of faculty so need to increase expertise of educators to deliver pecialist programmes	Education delivery affected by lack of expetise	Lack of specialist educators
'… you are literally there with your stethoscope …bilateral airway.. ECG all those things are not OK… you can take action…'	Recogniton that the skills gained support adiditional skills at bedside able to act	Need to have advanced skills	Advanced Clinical skills

'…*we need to act… according to ..ECGs we need to know how to operate the ventilator ….to intubate then ventilate…'*	To need to act so range of clinical expertise Need to inclde technical expertise	Critical care skills include managing medical equipment	Specialist skills
'…how to interpret ABGs…to look at pH …carbon dioxide…and so on…'	Skills to interpret advanced medical tests and use them	Ability to use Medical results	Interpretation of results
'… *you have to think ahead…whether there's a doctor or no doctor… you know what you're meant to do…to decide …in emergencies…'*	Critical decision making skills. Able to act in emergencies Can anticpate needs and work alone	Able to make clinical decisions	Decision making
'…We… are different .. look at general nurses .. every time the patient's condition changes .. they call a doctor and wait for instructions…'	Change in expertise and role following education able to make clinical decisions	Anticipate care needs independent	Independent decisions made
'… *we make decisions …assert…we stand on our own… when you know* [the right decision] *no one ….not a doctor is going to intimidate…'*	Confident of clinical decision making skills. Will wo work autonomously and lead	confidence to make decisions and act	Able to make decisions

Appendix 9: Mentorship Article

Carter, C., Mukonka, PS., Sitwala, LJ., Mulawisha, G., Notter, J. (2021). The 'sleeping elephant': The role of mentorship of critical care nurses in Zambia. *Int Nurs Rev*. 68(4):543-550. doi: 10.1111/inr.12717.

Received: 26 January 2021 | Accepted: 23 August 2021

DOI: 10.1111/inr.12717

International Nursing Review WILEY

EXPERIENCE FROM THE FIELD

The 'sleeping elephant': The role of mentorship of critical care nurses in Zambia

Chris Carter MEd, BSc (Hons), DipHE, RN(A), Senior Lecturer[1] | **Priscar Sakala Mukonka PhD, MPH, BSc Nsg, Dip Nsg, RN, Head**[2] | **Lilian Jere Sitwala MSc, BSc, Dip Nsg, RN, Principal Tutor**[3] | **Godwin Mulawisha BSc Nsg, ROTN, RN, Principal Tutor**[4] | **Joy Notter PhD, MSc, SRN, RHV, HVT, PGCEA, Professor**[5]

[1] Faculty of Health, Education & Life Sciences, Birmingham City University, UK

[2] Lusaka College of Nursing, Lusaka, Zambia

[3] Department of Critical Care Nursing, Lusaka College of Nursing & Midwifery, Lusaka, Zambia

[4] Department of Critical Care Nursing, Ndola College of Nursing & Midwifery, Ndola, Zambia

[5] Community Healthcare Studies, Faculty of Health, Education & Life Sciences, Birmingham City University, Birmingham, UK

Correspondence
Chris Carter, Birmingham City University, City South Campus, Westbourne Road, Birmingham, B15 3TN, UK.
Email: chris.carter@bcu.ac.uk

Funding information
Johnson and Johnson, Africa Grants Programme / Tropical Health & Education Trust, Grant/Award Number: AGP 3.21; UK Department for International Development, Health Partnership Scheme / Tropical Health & Education Trust, Grant/Award Number: AGS15; UK Research and Innovation / Newton, Grant/Award Number: GCRF_NF105

Abstract

Aim: To develop and evaluate a Zambian context-specific mentorship model that supports registered nurses completing emergency, trauma and critical care programmes in Zambia.

Background: In Zambia, emergency and trauma and critical care nursing are relatively new specialties, with education and training programmes less than a decade old. A train the trainer mentorship programme was developed and delivered at two colleges of nursing. Ethics approval was gained in both Zambia and the UK.

Sources of evidence: Documentary data analysis and focus groups were used. Focus groups included stakeholders and nurses in practice who had completed the train the trainer programme and were using the mentorship model.

Discussion: The critical review of the literature revealed there was a paucity of evidence on the role of mentors in critical care. However, national documentation identified that most post basic education programmes are at Diploma Level with limited content that focuses on bedside teaching, mentorship and assessment content.

Conclusion: Feedback from representatives attending the stakeholder workshops and focus groups which included participants who had completed the training programme enabled the mentorship model and workshop to be developed and evaluated.

Implications for nursing practice: Nurses are the backbone of healthcare systems in Africa and the world. Mentorship and assessment in practice enables nurses to develop the competence and skills to lead practice, support peers and junior colleagues.

Implications for nursing policy: This paper has identified the need for a context-specific formalised mentorship model to support specialist practice and this project has provided the foundations for mentorship of emergency, trauma and critical care nurses in Zambia.

KEYWORDS
assessment, competence, critical care nursing, education and training, emergency and trauma nursing, low-middle income country, mentoring, supervision

AIM

The main aim of this experience from the field was to develop and evaluate a context-specific mentorship model for qualified nurses completing specialist emergency, trauma and critical care nursing programmes in Zambia.

BACKGROUND

The World Health Organization (WHO) reports that the maintenance of health and society are dependent upon the expertise of its nursing and healthcare workforce (WHO, 2021a). The recent findings of the WHO, International

Council of Nurses (ICN) and Nursing Now (2020) report on the state of nursing recognise the importance of mentorship as a way to develop and maintain high quality of care and patient safety. It is important to note that mentorship needs to occur at all levels from bedside to strategic leadership (Turale and Kunaviktikul, 2019).

Zambia is a land-locked country in central southern Africa and continues to face a high burden of disease, in many of the internationally recognised health indices, including HIV, malaria, as well as neonatal, peri-natal, infant and maternal mortality ratios (WHO, 2021c). The Ministry of Health (MOH) is committed to improving the health and economic wellbeing of communities across the country. However, the strategies for achievement of targets set by the United Nations (UN) Sustainable Development Goals (UN, 2021a) and increasing universal access to healthcare continue to be severely impacted upon by COVID-19. This has led to the diversion of core funding to provide immediate and essential pandemic services. In consequence, the reductions in communicable and non-communicable diseases are at risk of being reversed (Nikoloski et al., 2021; Ottersen & Engebresten, 2020). In addition, the economic impact of the pandemic is also a cause for concern, as this includes rising cost of food and increased unplanned expenditure in terms of illness and loss of work (Shretta, 2020).

Prior to the COVID-19 pandemic, the MOH had recognised the importance of specialist nursing practice, with critical care nurse education and training commencing in 2012 and emergency and trauma nursing courses in 2018 (Ministry of Health, 2017). Although specialist programmes are planned, expansion of the health sector is challenging in a country where nearly 60% of the population live in rural settings (World Bank, 2021). This is not an unfamiliar scenario for low-middle income countries (LMIC) (United Nations, 2021b).

SOURCES OF EVIDENCE

The Consolidated Criteria for Reporting Qualitative research (COREQ) checklist was used to prepare this paper reporting experiences from the field. As no single method of data collection would support the development and evaluation of the model and training, different sources of evidence were used. This included documentary data analysis of international policy, current literature, nurse education policy documents, presentations and reports and records of decisions from national strategic meetings. Focus groups included stakeholders and participants who were nurses in practice who had completed the train the trainer programme and were using the mentorship model.

Strategic workshops involving stakeholders with representation from policy, education and practice were deemed as essential as the heterogeneity, amongst the participants encouraged dynamic group interaction and diversity of perception. During the project period, three workshops were attended by 15, 17 and 18 participants, respectively. Strategic stakeholders' workshops allowed for the agreement for the proposed training the trainer programmes, the Zambian model of mentorship and definition for mentorship to be developed. Finally, the strategic stakeholders provided the overview of all activities to confirm the mentorship model needed was based on the identified needs and requirements of Zambia, and not those of the project team.

The train the trainers programme was delivered in two colleges of nursing where critical care nurse education is provided. During an 8-month period (August 2018 to February 2019), six workshops were delivered and a total of 92 critical care nurses, educators and senior nurses participated. Twenty participants who completed the workshops participated in focus groups.

In view of the mixed datasets, triangulation was used to enhance understanding of the role of the mentor. This approach increases reliability, rigour, credibility and validity of the findings; however, care had to be taken that the data extracted was not biased (Frey, 2018; Noble & Heale, 2019). Therefore, all datasets were collected and analysed by a Zambian/UK team, with each document checked for appropriateness.

Ethical approval for this project was sought and gained in both Zambia and the UK. This included consideration of all procedures for obtaining consent, data collection, analysis, usage and storage of data. This allowed the project team to identify and understand the similarities and differences between the two processes and to check all appropriate steps to ensure beneficence and non-maleficence have been taken. In addition, the Chief/Senior Medical Superintendent and Chief Nurses for each institution where workshops and focus groups were undertaken were formally approached for approval to conduct the study in their areas of responsibility.

DISCUSSION

Defining the role of the mentor

Within emergency, trauma and critical care nursing, the importance of mentorship has been recognised internationally and regionally to support the application of theory to practice and to assess clinical competence (Scott & Brysiewicz, 2017; World Federation of Critical Care Nurses, 2019). In addition, the recent WHO (2020a) Nursing Now report has reaffirmed the crucial role of mentorship at all levels. A literature review of published research articles revealed that from across the African continent there was limited research, but a wealth of information from high-income countries was found. Therefore, the search strategy was revised, and from within the last 5–6 years (Table 1), five studies were found from Africa, two were qualitative, one quantitative and one used a mixed methods approach. One study included a collaboration of countries including Ghana, Mozambique, Rwanda, Tanzania and Zambia. Other studies focused on mentoring in individual countries, including Rwanda (2), South Africa (1) and Zambia (1).

TABLE 1 Results of the search for published research into African-Specific Mentorship models

Source	Country	Study Design	Purpose	Results / Findings
Mwilinga et al. (2017)	Zambia	A qualitative phenomenological study of certified midwives who had completed an internship.	To explore certified midwives' experiences of mentorship and supervision received during an internship at the national tertiary referral hospital.	Themes: - Clinical environments - Relationship between mentors and mentees/ward staff - Availability of human and maternal resources - Mentor's knowledge, attitude and skills regarding mentorship and supervision - Lessons learnt
Manzi et al. (2017)	Ghana Mozambique Rwanda Tanzania Zambia	Mixed methods: - Semi-structured interviews - Questionnaire	Evaluation to identify differences and commonalities in implementation components and pathways, successes and challenges in a mentoring/coaching project.	Preparation and implementation of mentorship and coaching interventions. Selection and orientation of mentors and coaches. Strategic deployment of mentorship and coaching teams Data use for routine monitoring and supervision of mentoring and coaching. On site mentoring 'mentoring the mentors. Contextual factors. Adherence to evidence-based policies.
Setati and Nkosi (2017)	South Africa	In-depth individual interviews. Qualitative and hermeneutic approach	To explore the perceptions of professional nurses on student mentorship in clinical areas.	The mentoring chameleon Mentoring perception Success in mentoring – benefits for both mentor and mentee Challenges of mentoring
Magge et al. (2015)	Rwanda	Pre–post intervention study	To measure the change in the quality of care following the addition of a mentorship intervention to didactic training.	Significant improvement in assessment, classification and treatment. Improvement in the percentage of children given correct treatment, improved service coverage.
Manzi et al. (2014)	Rwanda	Focus groups	To explore the perceptions and acceptability of Mentoring and Enhanced Supervision at Health Centres (MESH) from the perspective of mentors, district clinical leadership and direct recipients.	Interactive, collaborative capacity building. - Active listening and relationships - Supporting not policing - Systems improvement - Real-time feedback. - Staff turn-over, stock-outs and other system gaps barriers to MESH and IMCI implementation.

These revealed different models of mentorship, some of which combine the mentor, teacher and assessor roles; however, whether the component mentorship roles are formal or informal tended to be implicit (Manzi et al., 2017). No specific studies relating to critical care nursing were found; however, themes did emerge that could be translated for use in critical care. A regional mentoring programme for Emergency Nurses, recognised the need for an 'Afrocentric' mentorship programme, which recognised the unique and different context in which nurses' practice in (Scott and Brysiewicz, 2017). Themes from the wider literature search included, defining and developing the role of mentors, the impact of the clinical impact on learning, the impact on both mentors and students and finally improved patient outcomes/adherence to evidence-based practice guidelines. It was also evident that the model chosen was dependent on the standards agreed by national regulators, education and clinical providers. However, the terms mentor, supervisor and assessor are often used interchangeably, and definitions within the nursing literature vary (Manzi et al., 2017). This confusion is a cause for concern because students need to know and understand the nature of the support and clinical/professional governance they can expect as they work towards gaining clinical competence and completing their assessments. Setati and Nkosi

(2017) described this confusion as leading to a 'mentoring chameleon', who is constantly changing roles to act as leader, teacher, supervisor, role model and/or guide. Nevertheless, regardless of the model, title or descriptors used, there is agreement that practitioners need to have initial and ongoing training and development to help them acquire the additional skills and expertise necessary to become effective and efficient mentors and assessors, leading and guiding their peers and other colleagues (Manzi et al., 2017).

It is acknowledged that nurses in resource constrained environments need to 'do more with less' (Brysiewicz et al., 2021; p. 335), with nurses providing a key role in preventing complications, disability and death (Woo et al., 2017). This challenge is evident in Zambia, where there is a lower doctor and nurse to population ratio than that set by the WHO (WHO, 2021b). At the time of writing, emergency and trauma nursing is just starting its third cohort of training nationally, while critical care nursing has been established for over a decade. In consequence, critical care nurses are providing mentorship in a range of settings, nurses are often called upon to review patients in emergency departments and to go onto the wards to support the general nursing staff, sharing their knowledge and experience with these other healthcare workers and making complex decisions regarding admission, management and ongoing care (Carter et al., 2020). Hence, there is a need for a Zambian-specific mentorship model, with the aim of having a ripple effect, which will impact on patient care. Nurses need to have confidence to escalate concerns, make decisions and ensure timely and appropriate care for critically ill patients.

A review of Zambian nursing education policies identified that most post basic courses are at advanced diploma level. Also, the exception of the Clinical Instructors course, there has been limited focus on teaching, mentorship and assessment of students and peers. For nurses who complete Bachelor of Science programmes, teaching methodologies are included; however, on completion of these courses, nurses tend to move into leadership and education roles. Therefore, at the bedside, most nurses hold Advanced Diplomas, and are in the position of supporting and guiding students and junior colleagues with limited recognition of their role and responsibilities when mentoring and/or supervising students. In consequence, it was recommended that mentorship and assessment should be included in all revised specialist Advanced Diploma and Bachelor of Science programmes. The results of the documentary data analysis were used to underpin and support the strategic workshops.

During strategic stakeholders groups, it was agreed the starting point was a definition which could then be applied across all critical care education and training in Zambia. It needed to make explicit the role of mentors and recognise the skills and expertise they need for this role. Issues agreed by the participants were:

> *the knowledge skills and expertise to be leaders both in the critical setting and in other acute environments… the ability to comprehensively assess patients and to assess and co-ordinate care… observe and assess students as well as providing mentorship and supervision.*

This fits with Brysiewicz et al.'s (2021) argument for mentorship of nurses in resource-limited countries and across the African content. Their paper demonstrates that mentorship is in place in different countries and this needs to be expanded. In the workshops, there was acceptance that in some instances mentors had been perceived as *'policing students'*; however, this approach needed to change to encompass a more *'supportive'* role. Participants were aware this could be a challenge for existing mentors who had developed their own idiosyncratic approaches to mentorship. It was therefore, decided that once the model was agreed, it would be used to develop a specific train the trainer programme including agreed national standards and practice assessment. This would make explicit descriptors of roles and responsibilities delineating similarities and differences between the roles of mentor and supervisor. There was agreement that a crucial role of the critical care nurse was to provide bedside teaching, assessment and mentorship of peers and others.

The development of the mentorship model

With an understanding of the role of mentors in critical care, the next step was consideration of existing models. Although it is acknowledged that a regional mentorship programme for emergency nurses is available; at the time, stakeholders decided to focus on a more generic mentorship model, that in the long term could be applied to all nursing specialities at all levels. Stakeholders at the first workshop were presented with a series of mentorship models, including the African Federation of Emergency Medicine global mentorship programme (Scott & Brysiewicz, 2017). Stakeholders debated these models and concluded the model for midwives in Uganda was the most appropriate, as it contained three core components, professional standards, the clinical learning environment and teaching and assessment tools (Kemp et al., 2018). However, in that model, the patient is not central, and all partners agreed that this was a prerequisite for Zambia. The concepts were therefore an important component, which contributed, but did not lead the development of the context-specific model for Zambia. There was recognition that the role being developed was not just an *'add on'*, and each concepts had roles and responsibilities linked to them, which would support the development of:

> *specialist nurses that can lead practice forward… and training the next generation of nurses is important ….if high quality care is to be sustained … mentoring can't just be 'fitted round' the qualified nurses' normal workload. It needs to be a recognised part of their job…*

There was consensus that all qualified nurses should be able to supervise and assess students and should see it as part

of their role. However, it was pointed out that, as to date, there had been no formalised programme, nurses were being asked to act as mentors without standardised processes and protocols. The participants discussed examples from other countries, identifying those where mentor was an agreed and accepted role. Those who had been on study exchanges to Egypt, Thailand, Japan, UK and Finland, shared examples where the role of the mentor is both recognised and supported by senior staff. With these models, the outcomes of mentorship had a key place in the overall training, and students could not qualify without passing the mentors' assessments. They went on to describe the current approach in Zambia,

> *the best way to describe it [mentorship] is as 'a sleeping elephant' ….everyone knows it's there, but we all 'tip toe round it' sliding over the issues and concerns … we don't talk about it and we don't try to find solutions… it's just a problem that is always there…*

There was recognition that rather than seeking for solutions to this perennial training problem, they all just hoped '*it would just go away*'. In some ways, mentorships can be seen as comparable to the hidden curriculum (Raso et al., 2019), there are key concepts that all acknowledge are important, but nobody openly speaks of. Until what is implicit becomes explicit, it will be difficult to develop national standards of assessment, and through that, national standards of practice. Participants wanted this to change, and they argued that the needed to be able to see where they fitted in the clinical setting, as a student, and when they qualified.

> *it starts with us… whatever good thing we should say… but again somehow it also comes with how we treat each other how we say things.*

Both stakeholders and participants argued that there was a need for transparency with students, to be able to discuss freely what they saw, mentors needed to know how to guide a student and critique appropriately. The participants recognised that students learn at different rates, and a student who does not pass a procedure first time, can still become a '*good*' nurse. The challenge was that these students needed much more time and support. Currently, nurses in practice were allocated no additional time for this vulnerable groups, and therefore there was a concern that the current system did not adequately support such students.

> *We have enough nurses to be mentors but not enough time to support the students properly… we have to fit it in our day job… that is fine for students who are good but it doesn't help the others.*

The tutors in the workshops were supportive of this perspective, but pointed out that they too had insufficient time and there were too few clinical instructors to arrange for students to have remedial training. There was also an agreement that it is not only pre-registration students who need mentorship, but also that newly qualified emergency, trauma and critical care nurses need guidance to gain the confidence for critical decision making. These nurses are the '*leaders of the future*' and it is important that they are supported through transition to autonomous practice. Without this they may well choose to leave the clinical setting returning to an area which as one said is '*within their comfort zone*'.

For some participants who had previously acted as mentors for several years, the real challenge was supporting the '*failing student*'. They argued that the group, who had failed an assessment more than once, needed time away from patients to enable them to gain the skills they needed. They were adamant that patient safety meant that students struggling to understand new protocols and procedures should be able to carry out the nursing tasks in a safe environment such as a skills laboratory. For them the difficulty was that the current skills laboratories tended to be fully booked. They wanted access to a skills facility within the hospital where '*they could take the student and show them*', arguing, that waiting until there was time in the skills laboratory meant that the student had '*probably forgotten what the problem was*'. In addition, the limited numbers of clinical instructors and mentors made it hard to assess whether students had '*finally*' achieved the competencies needed. They wanted:

> *Time protected for mentoring… we need time each week in which we could book the space [clinical] to show the student what we wanted the student to do… managers need to recognise that this is an official part of the job and not something… we just fit in.*

There were too many students for mentors to work with them all.

> *students* [are] *sent to clinical areas… the numbers are unmanageable.*

Where the nursing workforce is already at full stretch, trying to find time to guide and support several students adversely impacts not only on the student but also on the nursing care given to patient and through that patient safety. The focus groups participants were well aware of their role as '*gatekeepers*' for the profession. They were concerned that without recognition of their mentorship duties and the time that this takes, they were compromising their professional responsibilities, and increasing the risk to patents. They wanted their model to identify and delineate the position and roles of the mentor, tutor and clinical instructor.

The starting point for the model was the patient and the role of the student (Figure 1). As the model is primarily for nurses undertaking specialist education they pointed out:

> *… they need to recognise* [that] *as critical nurses…. they decide care… not just follow orders [tasks given by doctors] … they need to look at*

FIGURE 1 The start

all …. the [patient] *needs….so patient centred care ….the competencies* [state] *… comprehensive…..full…nursing diagnosis…*

They saw nurses as the ones '*who are always there*' who complete observations, give all aspects of care. They were keen to move away from '*task centre care…to holistic care*'. They saw this model as a way to formally '*state*' the change, pointing out that once agreed, the change in terminology and approach would be become accepted. Support and assessment of performance based on this training pack would therefore be based on more than just performance of tasks, highlighting the higher knowledge and expertise found in these specialist nurses (Akresh-Gonzales, 2018).

In the initial stakeholders workshop, there was a debate as to where the three components from the Uganda model should sit. For mentorship the starting point was teaching and assessment tools, and this should be linked to the tutor and clinical assessor as these key workers prepared the student for practice. To keep the model true to their ideas, they were adamant that '*professional standards and clinical environment must rise up*' from academic teaching and assessment. Professional standards needed to come first as theory, standards and clinical competence are all inextricably linked. However, clinical competence cannot be developed without practice, and the environment has to be conducive for study (Kemp et al., 2018). Thus, the clinical environment as the third component has to be linked to the other two. Also, these three have to be '*joined together to wrap around the student*' as they have to meet to encompass the patient student and teaching. Having seen a triangle as the best way to join the concept, seeing the shape as a clear and '*aspirational*' as it reminded them of the hierarchy of needs, *with the 'tip to be aimed for showing higher skills'*. The final step was to identify the place of the mentor in the model and participants decided that it sat at the:

top of the triangle as they [mentors] *are guarding the point between professional standards and … clinical….*

In both workshops, participants were adamant that developing '*good*' mentors was essential for the future of critical care nursing. They also wished to emphasise the importance of the interconnectedness of the differing elements of the model, using colour to delineate this (Figure 2). This final model was then presented to a strategic stakeholder meeting for review. They considered the model for its appropriateness, accessibility (ease of use) and acceptability, with it being approved for practice.

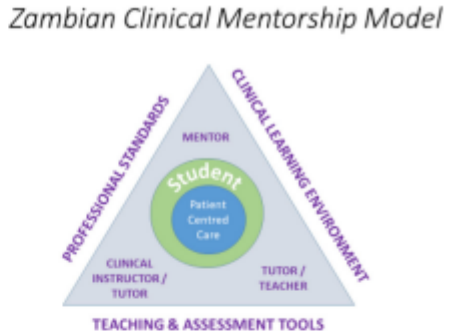


FIGURE 2 Illustrates the final format agreed for the model for critical care mentorship in Zambia

Embedding into the curriculum and practice

Following completion of the mentorship model, a train the trainer programme was structured around the components of the model. Three experienced senior Zambian nurse educators who undertook a study tour to the UK, worked with mentors and facilitators to develop training materials for inclusion in the train the trainers' mentorship programme. The new Bachelor of Science in Critical Care Nursing programme, which is due to start in July 2021, recognises that due to the complex nature of the programme, students and newly qualified critical care nurses need a period of mentorship to enable them to consolidate their training and reach their full potential. However, it is accepted this is an area that will need to be further developed and formalised as this is the first specialist graduate nursing programme. In addition, a Bachelor of Science in Emergency and Trauma nursing is currently being developed and includes a mentorship component.

CONCLUSION

This mentorship model for emergency, trauma and critical care nursing was specifically designed by key stakeholders to fit within the Zambian healthcare context and MoH agenda for specialist nursing practice. The model provides a potential framework to formalise the role of mentors in this new area of nursing practice. It has facilitated discussions with strategic stakeholders and educators regarding ways to support students and newly qualified staff while maintaining quality standards. There is also a need for further development and evaluation of this model for use nationally. It has provided a mechanism for nurses to be guided through the application of theory into practice and the acquisition of competencies necessary for specialist practice.

IMPLICATIONS FOR NURSING PRACTICE

Nurses are the backbone of healthcare systems and the largest group of healthcare workers in Africa and the world (WHO, 2020a. Cunningham et al., 2017; Crisp, 2016). This project has embedded mentorship and assessment in practice within education programmes and in the colleges where emergency, trauma and critical care nurse education is delivered. However, with increasing numbers of education providers and numbers of specialist nurses, there is a need to further develop and formally accept the model for national cascade training. It has to be noted that new initiatives can potentially overwhelm limited human resources in practice and education. Therefore, it is important to have support from the strategic stakeholders, with any changes that affects practice, so that it fits within national policy and direction.

IMPLICATIONS FOR NURSING POLICY

It is crucial that nursing practice adapts and evolves to the changing burden of disease and specialist nurse education programmes are one way to meet the rapidly changing patient needs. In many low resource countries, emergency, trauma and critical care service provision is limited (Schell et al., 2018; Scott & Brysiewicz, 2017), and the challenge is to develop specialist practice within a limited workforce and with few role models. In consequence, it is important that while each country may use international evidence and guidance, individualised policies for practice, which fit within the unique healthcare system of the country, should be developed.

This collaborative approach used by the Zambian–UK partnership facilitated knowledge exchange and transfer, with all partners gaining increased awareness and understanding of the differing health systems in which they work. This experience from the field contributes to the international debate on mentorship and support for specialist nurses. The focus on fitting within the Zambian healthcare system has led to the development of a low cost, high sustainable model for nurse education.

AUTHOR CONTRIBUTION

Study design: Chris Carter, Joy Notter, Priscar Sakala Mukonka, Lilian Jere Sitwala. *Data collection*: Joy Notter, Chris Carter, Priscar Sakala Mukonka. *Data analysis*: Chris Carter, Joy Notter, Priscar Sakala Mukonka, Godwin Mulawisha. *Manuscript writing*: Chris Carter, Joy Notter, Priscar Sakala Mukonka, Godwin Mulawisha.

ACKNOWLEDGMENTS

The authors would like to acknowledge the contribution of expert stakeholders from the Zambian Ministry of Health, Nursing & Midwifery Council of Zambia, Zambian Union of Nursing Organisations, University of Zambia Department of Nursing Sciences, Levy Mwanawasa Medical University, The University Teaching Hospital, Ndola Teaching Hospital and The Arthur Davidson Children's Hospital, Ndola College of Nursing and the Lusaka College of Nursing. UK Faculty from Birmingham City University, Royal Free London NHS Foundation Trust, Royal Wolverhampton NHS Trust and the UK Defence Medical Services who supported activities in both the UK and Zambia.

ETHICS STATEMENT

The study was approved by Birmingham City University Ethics Committee (Ref:3431 /R(B) /2020 /Mar /HELS FAEC) and University of Zambia Biomedical Research Ethics Committee (Ref: 163-2019).

CONFLICT OF INTEREST

The authors have declared no conflict of interest.

REFERENCES

Akresh-Gonzales, J. (2018) Bloom's taxonomy – from knowledge to practice. NEJM Knowledge+ Available at: https://knowledgeplus.nejm.org/blog/blooms-taxonomy-from-knowledge-to-practice/ (Accessed 27 July 2021)

Brysiewicz, P., Scott, T., Acheampong, E. & Muya, I. (2021) Facilitating the development of emergency nursing in Africa: Operational challenges and successes. *African Journal of Emergency Medicine*, 11(3), 335–338. https://doi.org/10.1016/j.afjem.2021.03.013

Carter, C., Mukonka, P., Sitwala, L., Howard-Hunt, B. & Notter, J. (2020) The development of critical care nursing education in Zambia. *British Journal of Nursing*, 29(9), 499–505. https://doi.org/10.12968/bjon.2020.29.9.499

Crisp, N. (2016) Triple Impact: how developing nursing will improve, health, promote gender equality and support economic growth. *All Party Parliamentary Group on Global Health*. Available at: http://www.appg.globalhealth.org.uk/ (Accessed 17 July 2021)

Cunningham, C., Brysiewicz, P., Sepeku, A., White, L., Murray, B., Lobue, N. & Sawe, H. (2017) Developing an emergency nursing short course in Tanzania. *African Journal of Emergency Medicine*, 7(4), 147–150. http://DOI.org/10.1016/j.afjem.2017.08.002

Frey, B. (edt). (2018) *Document Analysis. SAGE Encyclopaedia of Educational Research, Measurement and Evaluation*. SAGE Publications.

Kemp, K.J., Shaw, E. & Musoke, M.G. (2018) Developing a model of midwifery mentorship for Uganda: The MOMENTUM project 2015–2017. *Midwifery*, 59, 127–129. http://doi.org.10.1016/j.midw.2018.01.013

Magge, H., Anatole, H., Rwabukwisi, F.C., Mezzacappa, C., Nkikabhizi, F. Niyonzima, S., Drobac, P.C., Ngabo, F. & Hirschhorn, L.R. (2015) Mentoring and quality improvement strengthen the integrated management of childhood illnesses implementation in rural Rwanda. *Archives of Disease in Childhood*, 100(6), 565–70. https://doi.org/10.1136/archdischild-2013-305863

Manzi, A., Hirschhorn, L.R., Sherr, K., Chirwa, C., Baynes, C. & Awoonor-William, J. (2017). Mentorship and coaching to support strengthening healthcare systems: Lessons learned across the five Population Health Implementation and Training partnership projects in sub-Saharan Africa. *BMC Health Services Research*, 17(3), 831, http://doi.org/10.1186/s12913-017-2656-7

Manzi, A., Magge, H., Hedt-Gautheier, B., Hedt-Gauthier, B.L., Michaelis, A.P., Cyamatare, F.R., Nyirazinyoye, L., Hirschhorn, L.R. & Ntaganira, J. (2014) Clinical mentorship to improve paediatric quality of care at the health centres in rural Rwanda: A qualitative study of perceptions and acceptability of healthcare workers. *BMC Health Services Research*, 14(275), https://doi.org/10.1186/1472-6963-14-275

Ministry of Health (2017) Zambia national health strategic plan 2017–2021. https://www.moh.gov.zm/?wpfb_dl=68 (Accessed 27 July 2021)

Mwilinga, B.M., Maimbolwa, M.C. & Muleya, M.C. (2017) Certified midwives' experiences of mentorship and supervision during internship in Lusaka, Zambia. *African Journal of Midwifery and Women's Health*, 11(1), 33–45, https://doi.org/10.12968/ajmw.2017.11.1.33

Nikoloski, Z., Alqunaibet, A.M., Alfawaz, R.A., Almudarra, S.S., Herbst, C.H., El-Saharty, S., Alsukait, R. & Algwizani, A. (2021) Covid-19 and non-communicable diseases: Evidence from a systematic literature review. *BMC Public Health*, 21, 1068, https://doi.org/10.1186/s12889-021-11116-w

Noble, H. & Heale, R. (2019) Triangulation in research, with examples. *Evidence-Based Nursing*, 22(3), 67–68, http://doi.org10.1136/ebnurs-2019-103145

Ottersen, O.P. & Engebretsen, E. (2020) COVID-19 puts the Sustainable Development Goals center stage. *Nature Medicine*, 26, 1672–1673 https://doi.org/10.1038/s41591-020-1094-y

Raso, A., Marchetti, A., D'Angelo, D. & Albanesi, B. (2019) The hidden curriculum in nursing education: A scoping study. *Medical Education*, 53(1), http://doi.org10.1111/medu.13911

Schell, C.O., Gerdin Wärnberg, M., Hvarfner, A., Höög, H., Baker, U., Castegren, M. & Baker, T. (2018). The global need for essential emergency and critical care. *Critical Care*, 22, 284 https://doi.org/10.1186/s13054-018-2219-2

Scott, T. & Brysiewicz, P. (2017) Piloting a global mentorship initiative to support African emergency nurses. *International Emergency Nursing*, 34, 7–10. http://doi.org/10.1016/j.ienj.2017.05.002

Shretta, R. (2020) The economic impact of COVID-19. https://www.research.ox.ac.uk/Article/2020-04-07-the-economic-impact-of-covid-19 (Accessed 27 July 2021)

Setati, C. & Nkosi, Z.Z. (2017) The perceptions of professional nurses on student mentorship in clinical areas: A study in Polokwane municipality hospitals, Limpopo province. *Health SA Gesondheid*, 22, 130–137. https://doi.org/10.1016/j.hsag.2017.01.008

Turale, S. & Kunaviktikul, W. (2019) The contribution of nurses to health policy and advocacy requires leaders to provide training and mentorship. *International Nursing Review*, 66(3), 302–304. https://doi.org/10.1111/inr.12550

United Nations. (2021a) Sustainable Development Goals. https://www.un.org/sustainabledevelopment/ (Accessed 27 July 2021)

United Nations. (2021b) 68% of the world population projected to live in urban areas by 2050. https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html (Accessed 27 July 2021)

World Bank. (2021) The World Bank in Zambia: Overview. https://www.worldbank.org/en/country/zambia/overview#2 (Accessed 27 July 2021)

World Federation of Critical Care Nurses. (2019) Position Statement Provision of Critical Care Nursing Workforce. http://wfccn.org/wp-content/uploads/2019/09/WFCCN-Workforce-PS_17.9.19.pdf (Accessed 27 July 2021)

World Health Organization. (2021a) Nursing and midwifery. https://www.who.int/news-room/fact-sheets/detail/nursing-and-midwifery (Accessed 27 July 2021)

World Health Organization. (2021b) Zambia. https://www.who.int/workforcealliance/countries/zmb/en/ (Accessed 27 July 2021)

World Health Organization. (2021c) Non- communicable Diseases Country Profiles: Zambia. https://www.who.int/nmh/countries/zmb_en.pdf?ua=1 (Accessed 27 July 2021)

World Health Organization. (2020) State of the World's Nursing Report. https://www.who.int/publications/i/item/9789240003279 (Accessed 27 July 2021)

Woo, B.F.Y., Lee, J.X.Y. & Tam, W.W.S. (2017) The impact of the advanced practice nursing role on quality of care, clinical outcomes, patient satisfaction, and cost in the emergency and critical care settings: A systematic review. *Human Resources for Health*, 15(1), 63. https://doi.org/10.1186/s12960-017-0237-9

How to cite this article: Carter C., Mukonka, P.S., Sitwala, L.J., Mulawisha, G. & Notter, J. (2021) The 'sleeping elephant': The role of mentorship of critical care nurses in Zambia. *International Nursing Review*, 68, 543–550. https://doi.org/10.1111/inr.12717

Appendix 10: Dissemination

Selected Publications & Conference Presentations

Notter J. Carter C. Muyunda L. Nakazwe N. (2024). Virtual mentorship: the opportunities and limitations for nurses in international health partnerships. British Journal of Nursing. 33. 9: https://doi.org/10.12968/bjon.2024.33.9.408

Banda P. Carter C. Notter J. (2024). Family Witnessed Resuscitation in the Emergency Department in a Low-Income Country. British Journal of Nursing. 33:1, 28-32

Notter J. Carter C. Nsonga M. Chongwe M. (2023). The challenge of rehabilitation following critical illness in low-income countries. British Journal of Nursing. 32 (21): 1054-1055

Notter J. Carter C. Nsonga M, Chongwe M. (2023). The challenge of rehabilitation following critical illness in low-income countries. British Journal of Nursing. 32. 21. DOI.org/10.12968/bjon.2023.32.21.1054

Carter C. Mukonka P. Sitwala L. Mulawisha G. Notter J. (2021). The 'sleeping elephant': the role of mentorship of critical care nurses in Zambia. Int Nur Rev. 68. 4. 543-550. doi: 10.1111/inr.12717

Carter C. Mukonka PS. Sitwala LJ. Howard-Hunt B. Notter J. (2020). The development of critical care nursing education in Zambia. British Journal of Nursing. 29. 9. 499-505

Presentations:

Maphenduka S. Notter J. Carter C. (2024). From the intensive care unit to the community (at home): strengthening referrals and counter referrals. Inagural National Community Health Symposium. Lusaka, Zambia

Carter C. Notter J. Banda P. Maphenduka S. (2023). Impact of Critical Care Nurses in Resource Limited Environments. British Association of Critical Care Conference International Conference. 2023

Carter C. Mukonka P. Notter J. (2021). Our all-weather partnership. Invited plenary presentation for the Tropical Health & Education Trust Conference on Partnerships in the time of Covid-19

Public Recognition & Acceptance from Minister of Health Zambia (October 2024)

Public Recognition & Acceptance from Minister of Health Malawi (November 2024)

Participants from Zambia and Malawi Critical Care Nursing Associations attending inaugural Critical Care Conference in Malawi (November 2024)