Scientific Research Publishing

Open Journal of Nursing, 2024, 14, 459-476
https://www.scirp.org/journal/ojn
ISSN Online: 2162-5344
ISSN Print: 2162-5336

Challenges Experienced by Nurse Educators in Promoting Acquisition of Clinical Reasoning Skills by the Undergraduate Nursing Students: A Qualitative Exploratory Study

Omero. G. Mwale[1*], Mukwato-Katowa Patricia[2], Marjorie Kabinga-Makukula[3]

[1]School of Nursing Sciences, University of Zambia, Lusaka, Zambia
[2]School of Nursing, University of Zambia, Lusaka, Zambia
[3]Department of Basic and Clinical Nursing, University of Zambia, Lusaka, Zambia
Email: omeromwale@gmail.com

How to cite this paper: Mwale, O.G., Patricia, M.-K. and Kabinga-Makukula, M. (2024) Challenges Experienced by Nurse Educators in Promoting Acquisition of Clinical Reasoning Skills by the Undergraduate Nursing Students: A Qualitative Exploratory Study. *Open Journal of Nursing*, **14**, 459-476.
https://doi.org/10.4236/ojn.2024.148032

Received: May 16, 2024
Accepted: August 24, 2024
Published: August 27, 2024

Abstract

Background: Clinical reasoning is an essential skill for nursing students since it is required to solve difficulties that arise in complex clinical settings. However, teaching and learning clinical reasoning skills is difficult because of its complexity. This study, therefore aimed at exploring the challenges experienced by nurse educators in promoting acquisition of clinical reasoning skills by undergraduate nursing students. **Methods**: A qualitative exploratory research design was used in this study. The participants were purposively sampled and recruited into the study. Data were collected using semi-structured interview guides. Thematic analysis method was used to analyze the collected data The principles of beneficence, respect of human dignity and justice were observed. **Results**: The findings have shown that clinical learning environment, lacked material and human resources. The students had no interest to learn the skill. There was also knowledge gap between nurse educators and clinical nurses. Lack of role model was also an issue and limited time exposure. **Conclusion**: The study revealed that nurse educators encounter various challenges in promoting the acquisition of clinical reasoning skills among undergraduate nursing students. Training institutions and hospitals should periodically revise the curriculum and provide sufficient resources to facilitate effective teaching and learning of clinical reasoning. Nurse educators must also update their knowledge and skills through continuous professional development if they are to transfer the skill effectively.

*Corresponding author.

Keywords

Acquisition, Clinical Reasoning Skills, Undergraduate Nursing Student, Nurse Educator

1. Background

As part of the nursing process, clinical reasoning comprises acquiring and assessing important facts to comprehend a patient's current health and prognosis [1]. This competency is crucial for nursing practice [2] [3]. In a nursing curriculum, this concept should be developed from the beginning [4]. To meet the complex problems of the constantly changing healthcare environment, nurses need to possess clinical reasoning skills [4] [5]. To ensure positive health outcomes, nurses must efficiently select and use data for clinical reasoning [6] [7]. Rather than only imparting knowledge, nursing schools should provide opportunities for students to engage in critical analysis of complicated problems [6].

Nurse educators are tasked with helping students develop Clinical reasoning skills [4] [5]. It is recommended that nurse educators include clinical reasoning processes into their curricula to instruct and engage students in this process. Despite the need for clinical reasoning in both classroom and clinical settings, teaching nurses need help. [7] contend that clinical reasoning is difficult for students to master since it is implicit, complicated, and invisible. Effective clinical reasoning skills among nurses improve patient outcomes. On the other hand, those with inadequate clinical reasoning skills frequently overlook the signs of a patient's imminent decline, leading to a "rescue failure" [8].

Given the importance of clinical reasoning skills for helping professionals, learning these skills should take place in both academic and clinical contexts [9]. To support and encourage the development of clinical reasoning among students and practicing nurses alike, nurse educators require a strong foundation of knowledge and models. The educational process in the nursing programmes implements a curriculum designed for a bachelor's degree in nursing. The nursing curriculum helps to prepare tomorrow's nurses with strong clinical reasoning abilities in nursing programmes [10]. The curriculum design specifies the teaching and learning activities for its execution; therefore, it may have an impact on the methods of instruction and activities employed by nurse educators and student nurses. This suggests that the curriculum is focused on the needs of the students and views student nurses as active learners, which will ultimately affect how students learn and acquire CR skills. Therefore, nursing education should aim at producing competent graduates. Furthermore, patient safety should be the total concern when delivering and evaluating quality of care and nursing education outcomes. In line with Malawian nursing education's objective, the NMCN highlights the value of teaching clinical reasoning skills and acceptable attitudes in nursing education [11]. Nursing educators and students can

make efficient use of classroom teaching and learning methods. When nurses practice in the clinical setting, they often encounter issues with clinical reasoning [12]. [8], observed that in emergency medical situations, nurses are increasingly required to make prompt decisions based on strong clinical reasoning. While [13], stated that although developing clinical reasoning skills might be difficult for nurse educators and nursing students, it is essential to incorporate this skill into both theoretical and clinical practice. Likewise, some nurse educators frequently believe that clinical reasoning is a reflexive, unconscious cognitive process, and as such, it receives very little attention [9] [14]. Factors like high-class sizes, student absenteeism, and shortage of qualified nurse educators hinder students' ability to develop clinical reasoning skills [15].

Clinical reasoning is a crucial skill for undergraduate nursing students to enhance the quality of nursing care in Malawian hospitals. Some authors argue that competent nurses with strong clinical reasoning abilities are central for providing high-quality nursing care [16]. Recently graduated nurses, despite being taught at the technician or registered level, have not been adequately employed. The records further reveal that qualified nurses provide substandard patient care, due to lack of clinical reasoning [17]. Nurses who lack clinical reasoning skills in the evolving healthcare environment leads to an imbalance in their ability to meet the increasing patients' demands [18]. Data shows that undergraduate student nurses typically wait for clinicians or physicians to make clinical judgments regarding patient care in practice. This could be attributed to the fact that students, scope of decision-making is limited. According to [7], student nurses face challenges in learning clinical reasoning skills in clinical settings, as practicing nurses often struggle to impart these skills. The failure to transfer clinical reasoning skills may be attributed to inadequate practice in nurse educators' practice [9].

Despite improved clinical skills laboratories and well-qualified nurse educators in the nursing training institutions in Malawi, still, the clinical reasoning skills of the graduates is worrisome [19]. The public often complains that the graduates are not work-ready. The reasons for this trend are not well known. Therefore, this study was conducted to explore the challenges nurse educators face in promoting acquisition of clinical reasoning skills among undergraduate nursing students in Malawi. The following research question served as the study's specific focus: what challenges do nurse educators encounter in fostering acquisition of clinical reasoning by undergraduate nursing students?

To have the same understanding between the researchers and the readers, the following terms have been defined. **Clinical reasoning** is the process by which nursing students collect cues, process the information, come to an understanding of a patient problem, plan and implement interventions, evaluate outcomes and reflect on and learn from the process. **Nurse educator** is a nurse registered with a recognized nursing council with post-registration nursing education qualification employed by the nursing education institution and is clinically competent in their field of teaching. **Undergraduate nurse student** is any male

or female who has successfully enrolled on a pre-registration-nursing Programme for a specified period awaiting registration with a recognized nursing council upon successful completion of the full Programme.

2. Methods

2.1. Study Design and Context

The study utilized descriptive exploratory qualitative design, applying the social constructivism paradigm [20]. This design was appropriate because qualitative methods are mainly concerned with in-depth study of human phenomena to gain insight and understand the phenomena. Two assumptions must be acknowledged and explored to fully comprehend the context in which this study was carried out. Firstly, axiological assumptions have been identified as a potential source of bias within the research field. The assumption was described as how the researchers' personal values, beliefs, and ideas influenced the study's ethical conduct [20] [21]. This aligns with the constructivist viewpoint. To apply the axiological assumption to the study, the researchers had to consider their perspectives on the data collection process and the difficulties that nurse educators faced while trying to promote this skill. The researchers also looked at individual perspectives on nurse educators, clinical instructors and undergraduate nursing students. The second methodological premise stated that evidence is gathered by verifying the predictions made by researchers and new information derived from participant experiences. To obtain information that would help explain the difficulties nurse educators faced while attempting to assist students in developing clinical reasoning, the researcher interviewed nurse educators, clinical instructors and undergraduate nursing students.

The study was conducted at Kamuzu University of Health Sciences, which is newly a public government institution, which delinked from the University of Malawi in May 2021. The university comprises 5 schools which train various disciplines of health professionals at undergraduate and postgraduate levels in the country. The University allocates its students to Queen Elizabeth Central Hospital (QECH) and Kamuzu Central Hospital for clinical practice and to other district hospitals. Mzuzu University; is one of the two public universities in Malawi, which offers nursing education at the bachelor's degree level and master's level in the faculty of nursing and midwifery. The faculty of nursing and midwifery is responsible for training registered nurses at the bachelor's degree level whose training duration is four years. The nurse educators possess master's degree in nursing while the clinical instructors possess bachelor's degree in nursing, and some possess diploma in nursing. This team of nurse educators and clinical instructors work hand in hand in teaching the undergraduate nursing students in the clinical area. The duration for clinical practice varies depending on the competency the students must achieve per clinical rotation. In most cases, the students stay in the clinical area for a minimum of 120 hours per clinical rotation and a maximum of 480 hours. It is also recom-

mended that students should be in the skills laboratory for not less than 40 hours to observe the skills and do return demonstrations before they can go into the ward settings.

2.2. Recruitment of Participants

The participants for this study therefore were the nurse educators, undergraduate nursing students in third and fourth year, and clinical instructors working at a hospital.

Sampling

Normally, a purposive sample is comprised of respondents who are likely to be able to provide information and the phenomenon under study [20] [22]. The sample size of the participants was influenced by the nature of the design and the number of respondents. Four undergraduate nursing students were recruited into the study of whom 2 were from year three and the other 2 were from year four, because they had enough clinical experience. Similarly, 6 nurse educators, with 2-years and 6-years work experience represented the sample. Two clinical instructors with 3-years and 7-years work experience also represented the sample from the clinical site. In this case, nurse educators and clinical instructors were targeted as a sample who had at least 2 to 7 years of work experience. The identified participants were then contacted by the researcher and requested to participate in the study. Data saturation guided the sample size. The sample size for qualitative research was not predetermined and therefore sampling was done until saturation when no new data emerged [22]. Further, [23], states that data saturation has "become the gold standard by which purposive sample sizes are determined in health science research" and they suggest that data saturation can occur after 12 interviews. According to these authors, smaller sample sizes can be sufficient in providing complete and accurate information within a particular cultural context, if participants possess a certain degree of expertise about the domain of inquiry. It is argued that these experiences contribute to the participants' sense of reality and "truth" [22].

2.3. Instrumentation and Data Collection

Instrument

A semi-structured interview guide was used during an in-depth interview. A semi-structured interview guide was appropriate for the study because it provided a basis for convergence on truth and provided a researcher with an opportunity to probe more into the issues under study [22]. The guide had six (6) open-ended questions for the nurse educators/ clinical instructors and some probes. A separate semi-structured interview guide was used to gather data from the students.

Data collection

A semi-structured interview guide was utilized to collect data. All the in-depth interviews were conducted with only the researcher and participant present, to ensure privacy and increase the participant's comfort during the interview pro-

cess. The interviews were audio-recorded to ensure that no data was missed [22], after obtaining consent from the participants. The room in which the interviews were conducted was quiet and comfortable in the training institutions, with good lighting and good ventilation, all of which contributed to a relaxed and informal atmosphere. The researcher also made sure that a notice containing the words "silence please, meeting in progress" was placed on the door so that the interviews were unlikely to be disturbed [22]. Cell phones for each participant were switched off with their permission to do so and that of the interviewer. Each participant was offered a comfortable seat during the interview. The researcher briefly introduced the topic and asked the interviewee to be free to ask questions wherever was not clear. The researcher explained to each participant that he was conducting interviews to gather data on the topic about which had already been informed. Each participant was assured that the information that was gathered was treated confidentially by each participant and the interviewer himself [22]. Once again, before the commencement of each interview, the researcher reminded each participant that they were allowed to withdraw their participation at any time for whatever reason and that the withdrawal would not incur any kind of penalty or disadvantage [22]. Each participant was then asked if they were willing to proceed with the interview and they were asked to sign an informed consent form. The researcher proceeded to ask some background questions to help build a rapport with each participant. The nurse educators were asked the following introductory questions: W*hat is your qualification? For how long have you been working? In which year are you*? These questions provided the opportunity for the nurse educators to discuss issues that they were familiar with, which helped to build rapport. It also allowed the researcher to follow on with questions that encouraged the participants to reflect on challenges they face when cultivating clinical reasoning skills in undergraduate nursing students in clinical nursing. The researcher continued with the open-ended questions and listened to the responses while maintaining eye contact and nodding to encourage the participant to narrate. The researcher also probed where it was necessary to elicit more information that was thought to be relevant to the study. The audiotape recorder was used with the permission of the participants so that no data was missed. At the end of each interview, participants were asked if they wish to make any comments about the study topic. Following this, the researcher thanked each participant for his or her time and valuable contribution. The interview took approximately 45 minutes with each nurse educator/clinical instructor and the student nurse.

2.4. Data Analysis

Thematic analytic steps of [24] guided analysis of challenges experienced by nurse educators in promoting acquisition of clinical reasoning skills by student nurses from the two training institutions in Malawi. The transcribed data and written file notes made by the researcher following each interview provided the

means to begin exploring the data collected. These reflections resulted in refinements to the interview schedule during the first two nurse educators' interviews. Each interview was conducted by the researcher and then transcribed. This approach of re-reading the transcript allowed the researcher to view the preliminary data and highlight any initial ideas as they became obvious. Significantly, it also enabled the exploration of other issues that may not have initially been considered central to the research question [25]. The transcribed interviews were read and re-read to allow the researcher to familiarize with the data. This strategy meets Lincoln and Guba's 1985 as cited in [22] requirement of data immersion being an inductive rather than deductive activity that requires repeated exposure to and engagement with the data. Immersion in the data enabled the researcher to see how the participants' perceived challenges experienced by nurse educators in promoting acquisition of clinical reasoning skills by undergraduate nursing student. It also allowed the researcher to fully comprehend how insights were grounded in and developed from the data with an emphasis on understanding participants' experiences through their descriptions [22]. The researcher read each transcript while listening to the audiotape to gain a sense of the participant's whole story and to reflect on comments, phrases and any associated vocal qualities that were prominent. Patterns and themes that emerged from the data were noted and highlighted in different colours and ideas and thoughts were noted next to particular parts of the text to clearly track the researcher's emerging observations about the data, rather than searching for instances that reflected a previous theoretical position (Lincoln & Guba 1985 cited in [22]). Key terms or phrases together with the corresponding text that illustrated the key terms and phrases were highlighted and then assigned a code [24]. Transcripts and codes were discussed by the research supervisors and reviewed accordingly. The results of the preliminary coding by the researcher and supervisors were then compared and any differences were discussed until agreement was reached. Coded concepts from each transcript were identified and Sub-themes derived from the codes. Two major themes emerged with eight (8) subthemes (See **Table 1**).

Table 1. Summary of inductive thematic data analysis of challenges faced by nurse educators to promote acquisition of clinical reasoning skills by undergraduate nursing students.

Themes	Subthemes	Relevant quotes
Clinical environment	Shortage of qualified nurse educators.	• "*Students are left alone without being accompanied by neither the nurse educators nor the clinical nurses. So, when undergraduate nursing students are left alone who is going to impart the clinical reasoning skills*?" P4.
	Shortage of resources in the clinical area	• *"You are drawn back when there are no resources, as such you tend to improvise. So, one would ask, will this improvision promote clinical reasoning skills when the undergraduate nursing students are not taught the ideal?". She further concluded by saying, "yes this might promote clinical reasoning as students need to think what to do. But the result is compromising the quality of care*." P1.

Continued

Learning and teaching opportunities in both classroom and clinical area	Students' attitudes towards learning	• "*Individual interest of undergraduate nursing students' varies" some are not mature to handle situations*" P2. • "*Some students are lazy and don't like tasks that require them to think critically*". P2.
	Knowledge gap between nurse educators and clinical nurses	• *She had noted a discrepancy when it came to performing of procedures among the nurse educators themselves as well as the clinical nurses.* • "*Sometimes there is a knowledge gap between what undergraduate nursing students learn in class and what the clinical nurses in the ward know, for example management of diabetes mellitus.*" P5.
	Shortage of qualified nurse educators	*We are left alone without being accompanied by neither the nurse educators nor the clinical nurses. So, when undergraduate nursing students are left alone who is going to impart clinical reasoning skills*? P2.
	Student to nurse educators-ratio.	• "*During our time there were manageable numbers say 10 to 15 nursing students per ward, and even the class size was of good size, but today the numbers have increased by three times in the wards and ten times in the classroom, so with such big numbers it becomes very difficult to observe each student as some tend to hide or they are playing on whatsup.*" P5. • "*When you consider the large numbers of students you tend to think how you can just occupy your time, as you cannot reach everyone. So, others are left without being engaged in any patient care.*" P7. • "*Mastering of the procedure was a problem as there were short cuts from the clinical nurses.*" P8.
	Limited time of exposure	• "*We need to allocate equal time to students to practice in skills laboratory as well as in the clinical area if the students must acquire the reasoning skills.*" P10.
	Role modelling	• "*The qualified nurses are not role models in the clinical settings. No mentoring. we follow the shortcuts they are modelling to us by the qualified nurses in the clinical setting.*" ***P4.***

2.5. Trustworthiness of the Study

Trustworthiness is a measure of the extent to which a researcher's findings reflect the truth about situations or entities. All research findings should (as far as is humanly possible) exclude bias and inaccuracies [20]. In the opinion of [22], trustworthiness refers to the quality, authenticity and truthfulness of the findings in qualitative research.

2.6. Strategies that the Researchers Applied to Enhance Trustworthiness of the Study

The researchers initiated a dialogue among nurse educators, which resulted in their enthusiastic and spontaneous engagement. The nurse educators then proceeded to discuss the facts that constitute truth and the various means that one

can use to minimize or eliminate bias [22]. The importance of this group was that it allowed the researcher to acquire data from seasoned and professional practitioners who had quite different perspectives from the nurse educators who comprised the first interviews. The nurse educators discussed the various ways in which they promoted acquisition of clinical reasoning by students both in the classroom and clinical setting. They also contributed to the development of guidelines that may be beneficial for professional nurse educators who are responsible for enhancing clinical reasoning acquisition by undergraduate nursing students in the future.

3. Results

Two major themes that emerged from the transcribed data were: the clinical learning environment with sub-themes of *shortage of qualified clinical nurses and shortage of material resources in the clinical area*. Learning and teaching opportunities with sub themes of, *student attitudes towards learning, student to nurse educator—ratio, knowledge gap between nurse educators and clinical nurses, lack of qualified nurse educators, role modeling and limited time of clinical exposure* (Table 1).

3.1. Clinical Learning Environment

The clinical learning environment emerged as the first theme from the transcribed data that defined the challenges experienced by nurse educators. Two subthemes emerged namely: *shortage of qualified clinical nurses and shortage of material resources in the clinical area*.

3.2. Shortage of Qualified Clinical Nurses

Although it was stated that undergraduate nursing students can easily acquire clinical reasoning skills when provided with competence guidance, the shortage of qualified clinical nurses for undergraduate nursing students in the clinical area hampered their ability to acquire clinical reasoning skills. One student nurse reported this. *We are left alone without being accompanied by neither the nurse educators nor the clinical nurses. So, when undergraduate nursing students are left alone who is going to impart clinical reasoning skills*? **P2.** If undergraduate nursing students are to be competent and safe to practice, it is the responsibility of both nurse educators and clinical nurses to teach them clinical reasoning skills.

3.3. Shortage of Material Resources

The findings further have shown that undergraduate nursing students were not able to acquire clinical reasoning skills due to lack of material resources in the clinical area. This was reported by one nurse educator who said**,** "*You are drawn back when there are no resources, as such you tend to improvise. So, one would ask, will this improvision promote clinical reasoning skills when the undergrad-*

uate nursing students are not taught the ideal?" She further concluded by saying, "*Yes this might promote clinical reasoning as students need to think what to do. But the result is compromising the quality of care.*" **P1**.

3.4. Learning and Teaching Opportunities

Learning and teaching opportunities emerged as the second theme under which the challenges experienced by the nurse educators were classified too. Under this theme, six subthemes emerged from the transcribed data**.** These are *students' attitudes towards learning, knowledge gap between nurse educators and clinical nurses, lack of qualified nurse educators, student to nurse educator-ratio, role modelling and limited time of clinical exposure*.

3.5. Students Attitude Towards Learning

One of the findings of this study was students' attitudes towards learning**.** According to nurse educators, students were uninterested to learn. One nurse educator said this, "*individual interest of undergraduate nursing students' varies*" *some are not mature to handle situations*. The same nurse educator continued to say, "*Some students are lazy and don't like tasks that require them to think critically.*" **P7.**

3.6. Knowledge Gap between Nurse Educators and Clinical Nurses

In this study, it was found that the knowledge gap between nurse educators and clinical nurses affected undergraduate nursing students' acquisition of clinical reasoning skills. The nurse educators may demonstrate standard ways of performing procedures whereas clinical nurses may cut the corners without following the ideal way of conducting the procedure. Sometimes such differences could be because clinical nurses may have been trained in current guidelines leaving out nurse educators. This discrepancy eventually puts the undergraduate nursing student to be unsafe and may lack clinical reasoning skills hence compromising patient safety. This all depends on the context. One nurse educator reported this, "*She had noted a discrepancy when it came to explaining the steps of the procedures among the nurse educators themselves as well as the clinical nurses.* she continued to say." *Sometimes there is knowledge gap between what undergraduate nursing students learn in class and what the clinical nurses in the ward know, for example management of diabetes mellitus.* **P5.** Another nurse educator reported that "*there are some inexperienced lecturers, most of the lecturers do not have the background of principles and practice of education. Such type of lecturers makes the students dull because these students are not equipped with the necessary knowledge to allow them to develop clinical reasoning skills. I feel there is a need to revisit both the curriculum and recruitment criteria if we are to promote the clinical reasoning skills of undergraduate nursing students.*" **P3.**

The same nurse educator further said "*Undergraduate nursing students are novice thinkers beginning their work as health care providers. Therefore, un-*

dergraduate nursing students need assistance from well-qualified nurse educators to assist them to apply theory to specific clinical situations." P3.

3.7. Shortage of Qualified Nurse Educators

This present study further showed that shortage of qualified nurse educators was a significant barrier for the undergraduate nursing students to acquire clinical reasoning skills. One student reported that "*some of us we are not seen by our lecturer, because it's the same person who is to supervise many students, as such it is difficult to acquire the needed clinical reasoning skills*." P4.

3.8. Student to Nurse Educator—Ratio

The findings of this study revealed that students' numbers in the clinical area were too much**.** This was reported by one clinical instructor who said, *"during our time there were manageable numbers say 10 to 15 nursing students per ward, and even the class size was of good size, but today the numbers have increased by three times in the wards and ten times in the classroom, so with such big numbers it becomes very difficult to observe each student as some tend to hide or they are playing on whatsup*." P5**.** Similarly, the other clinical instructor reported that**,** *"when you consider the large numbers of students you tend to think how you can just occupy your time, as you cannot reach everyone. So, others are left without being engaged in any patient care*." P7.

3.9. Role Modelling

The study findings also revealed that role modelling during clinical practicum had a significant influence on undergraduate nursing students' acquisition of clinical reasoning skills. There are no role models one participant reported. The qualified nurses should be role models by setting an example because undergraduate nursing students imitate their actions. A nursing student said this. "*The qualified nurses are not role models in the clinical settings. No mentoring. we follow the shortcuts they are modelling to us by the qualified nurses in the clinical setting."* **P4.**

4. Limited Time for Clinical Exposure

According to the participants, another challenge affecting the acquisition of clinical reasoning skills by undergraduate nursing students was limited time of exposure to clinical practice. One nurse educator said this, "*I think we just allocate them for two, three weeks, sometimes in other areas, they stay less than the prescribed time. "We need to allocate equal time to students to practice in skills laboratory as well as in the clinical area if the students are to acquire the clinical reasoning skills*." P10. This was also reported by the undergraduate nursing students who observed that in some instance they stay in the clinical area for few weeks**.** *One student said, for example, you are allocated in high dependency unit only for two weeks instead of four weeks, so how can one acquire the reasoning*

skills?

5. Discussion

This study was conducted to explore the challenges experienced by nurse educators when promoting acquisition of clinical reasoning skills. The study findings revealed that the clinical environment, learning and teaching opportunities were not favorable for the nurse educators to promote the transfer of the skills to the students. This finding is remarkably consistent with the study findings by [26], who also found that non-conducive learning and teaching environment which was not student-centred prohibited nurse educators to promote the acquisition of clinical reasoning skills. Therefore, tackling nurse educators' challenges and empowering them with the means, opportunity and to apply student-centred teaching and learning methods may contribute to the acquisition of clinical reasoning skills by undergraduate nursing students.

The study also revealed that lack of material resources, such as gloves, nasogastric feeding tubes was a factor that negatively affected acquisition of clinical reasoning skills. This was the case because the nurse educator could not demonstrate the skill due to lack of resources. This finding is in line with [27], who found that lack of resources was a barrier to clinical learning and teaching which contribute to clinical reasoning acquisition. This lack of resources leads to substandard nursing practice through improvision of resources. It is important to know that one can use critical thinking to improvise. However, when students improvise in the clinical area, they tend to just fill the gaps and they will not acquire the necessary clinical reasoning skills required so that they can safely discharge their professional duty.

In the second theme, learning and teaching opportunities in both classroom and clinical area, in this study it was reflected that undergraduate nursing students were not interested in learning the skill. Personal characteristics of the learner have major effects on the degree to which behavioral outcomes are achieved. As mentioned by nurse educators that undergraduate nursing students were not curious and not interested in learning most of the students were just on whatsup instead of observing how the skill was performed by the qualified nurses. Our findings are contrary to [26] who found that readiness to learn, interest and compliance are some of the prime factors influencing the acquisition of clinical reasoning skills.

A further noteworthy finding in this study was the student to nurse educator—ratio in the clinical area and classes. Pressure to increase student intake appears to overwhelm the training institutions' capacity in terms of space and the number of qualified nurse educators to cater for each nursing student, [13]. This finding is similar to [14] studies that highlighted environmental factors that influence the facilitation of critical thinking in a training health institution. If the student ratio surpasses the recommended numbers, then it becomes very difficult to teach undergraduate nursing students to acquire the necessary clinical

reasoning skills.

The current study also uncovered that the knowledge gap between nurse educators and clinical nurses was a challenge in promoting the acquisition of clinical reasoning skills. In Malawian hospitals where nursing students practice both competent registered nurses and nurse technicians assess undergraduate nursing students differently. Qualified nurses with Diploma rate undergraduate nursing students higher while nurses with bachelor's degrees rate undergraduate nursing students lower than themselves, who need to be well prepared. To the researcher's knowledge, it requires a nurse who is highly qualified to assist students in the clinical area. This meant that clinical nurses who have lower qualification levels could almost not transfer the necessary skills to undergraduate nursing students. This is the case in the Malawian hospitals as most nurses on the bedside are diploma nurses with few years of work experience.

To support our findings, [28] highlighted that nursing and other health educators are not always trained in the profession, as many come from clinical practice into higher education without formal instruction about teaching and learning. As a result, they fail to transfer the clinical reasoning skills to the students. Similarly [29] in their study also found similar results whereby nurse educators who had low education levels felt that undergraduate nursing students did not require assistance as they felt inferior, unlike the nurse educators who were highly qualified as they were able to recognize the needs of students. In the same way, since undergraduate nursing students are helped by different cadres of dissimilar experiences and educational levels in numerous hospitals, this could be true as regards the knowledge gap which exists among these nurses, which eventually affects the transmission of clinical reasoning skills to undergraduate nursing students. Therefore, to properly mentor the nursing students, qualified nurse educators need to be well-versed in the latest advancements in the nursing sector.

This study also showed that undergraduate nursing students' acquisition of clinical reasoning skills was impacted by inadequate role modelling in the clinical setting. Trained nurses often make decisions in clinical settings without explanation, making it challenging for trainees to comprehend professional clinical judgment and critical thinking. This is in agreement with [30], who supports that role modelling occurs when a behavior or a skill is demonstrated and then duplicated by an observer. Undergraduate nursing students must be competent and efficient whilst performing clinical skills. However, this may be threatened when undergraduate nursing students observe different practices of qualified nurses. Clinical reasoning skills are not conveyed in accordance with nursing standards frequently because of lack of well-trained nurse educators and inadequate staffing numbers [8]. Nevertheless, the undergraduate nursing students in this study need to be well-prepared because they will graduate as professional nurses in the future and work as nurse educators. This will guarantee that they continue to deliver excellent patient care and meet the necessary standards for

peer clinical nursing education.

5.1. Limitations and Strengths

Transferability was limited since the study was only conducted at two training institutions. Participant reactivity, [22], was another limitation. Because a few nurse educators were acquainted with the researcher, their replies would be influenced or uninfluenced. To address the problem of participant reactivity, the researcher continued to reflect on how and in what ways he might be influencing participants. The researcher made a concerted effort to foster an environment favorable to candid and open discourse.

The potential implications to nursing education and practice include the value of addressing the challenges experienced by the nurse educators in promoting acquisition of clinical reasoning if the nursing students were to properly learn clinical reasoning skills. This will promote safety for the patients since the new graduate will have acquired the necessary clinical reasoning skills.

5.2. Recommendations

Nursing research

Based on the findings of this study it is recommended that further research including replicating it with different population groups and comparing nurse educators in different nursing colleges should be conducted.

Nursing practice

Both nurse educators and clinical nurses must take the initiative to update their knowledge of clinical reasoning through continuous professional development. It is further recommended that the clinical area should have enough material resources to enable the nurse educators to demonstrate the procedures to undergraduate nursing students.

Nursing education

It is recommended that both the training and teaching hospital should revise the curriculum to address the challenges faced by nurse educators and clinical instructors, to enhance acquisition of clinical reasoning by the undergraduate nursing students.

6. Conclusion

In principle, if the challenges experienced by nurse educators are acknowledged and addressed, the undergraduate nursing students will be equipped with necessary clinical reasoning skills, hence enhancing nursing education and practice. In turn the care provided to patients will also improve. Therefore, both the training institutions and teaching hospitals should ensure that there are adequate resources in the clinical area to enable learning and teaching process of the undergraduate nursing students to be effective. Nurse educators should employ innovative teaching methods and update their knowledge and skills if they were to adequately transfer the clinical reasoning skills to the undergraduate nursing

students.

Ethics Approval and Consent to Participate

Ethical clearance was obtained from the University of Zambia Biomedical Research Committee (UNZABREC) and National Commission of Science and Technology (NCST) in Malawi, with the protocol reference numbers: **2773-2022** and **NCST/RTT/2/6** respectively to conduct this study. The purpose of the study was explained to the nurse educators. The researcher protected and treated the information which was provided with high confidentiality to the best of his knowledge. To protect participant anonymity, the researcher did not write the participants' names on the questionnaire or in any reports or papers that may be used to identify the individuals. The participant's name was not linked to the research information in any way. The researcher took care of the data and information collected. The researcher submitted the work for publication in scholarly journals and shared the analysis's findings with relevant national stakeholders. Participants received information about their freedom to withdraw or cancel their participation at any time, including after they had completed the consent form, and that their participation was entirely optional and that their identities would not appear in the report. In addition, participants were informed that they would not be compensated for taking part in the study. All participants who agreed to take part in this study signed an informed consent. The participants gave special consent for the use of an audio recorder.

Availability of Data and Materials

The manuscript has all the data necessary to substantiate the findings.

Authors' Contributions

Omero. G. Mwale conceived the idea, developed the protocol, analyzed and interpreted the results. Omero. G. Mwale also drafted, reviewed and revised the manuscript for the study, while Patricia. K. Mukwato and Marjorie. K. Makukula supervised and reviewed the manuscript. All authors read and approved the final manuscript.

Acknowledgements

The nurse educators who participated in this study need to be recognized for their time and willingness to share their experiences, since this research would not have been possible without them. I sincerely thank these participants for their informative replies.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Deschênes, M., Goudreau, J., Fontaine, G., Charette, M., Da Silva, K.B., Maheu-Cadotte, M., *et al*. (2019) Theoretical Foundations of Educational Strategies Used in E-Learning Environments for Developing Clinical Reasoning in Nursing Students: A Scoping Review. *Nurse Education in Practice*, **41**, Article 102632. https://doi.org/10.1016/j.nepr.2019.102632

[2] Chmil, J.V., Turk, M., Adamson, K. and Larew, C. (2015) Effects of an Experiential Learning Simulation Design on Clinical Nursing Judgment Development. *Nurse Educator*, **40**, 228-232. https://doi.org/10.1097/nne.0000000000000159

[3] Elizondo-Omaña, R.E., García-Rodríguez, M.d.l.A., Hinojosa-Amaya, J.M., Villarreal-Silva, E.E., Avilan, R.I.G., Cruz, J.J.B., *et al*. (2010) Resilience Does Not Predict Academic Performance in Gross Anatomy. *Anatomical Sciences Education*, **3**, 168-173. https://doi.org/10.1002/ase.158

[4] Von Colln-Appling, C. and Giuliano, D. (2017) A Concept Analysis of Critical Thinking: A Guide for Nurse Educators. *Nurse Education Today*, **49**, 106-109. https://doi.org/10.1016/j.nedt.2016.11.007

[5] Seo, Y.H. and Eom, M.R. (2021) The Effect of Simulation Nursing Education Using the Outcome-Present State-Test Model on Clinical Reasoning, the Problem-Solving Process, Self-Efficacy, and Clinical Competency in Korean Nursing Students. *Healthcare*, **9**, 243.

[6] Wallace, R. (2009) In Response to: Dale Pugh (2009) The Phoenix Process: A Substantive Theory about Allegations of Unprofessional Conduct. *Journal of Advanced Nursing*, 65(10), 2027-2037. *Journal of Advanced Nursing*, **66**, 241-242. https://doi.org/10.1111/j.1365-2648.2009.05201.x

[7] Delany, C. and Golding, C. (2014) Teaching Clinical Reasoning by Making Thinking Visible: An Action Research. *BMC Medical Education*, **14**, 1-10. http://www.biomedcentral.com/1472-6920/14/20

[8] Benner, P., Hughes, R.G. and Sutphen, M. (2008) Clinical Reasoning, Decisionmaking, and Action: Thinking Critically and Clinically. In: Hughes, R.H., Ed., *Patient Safety and Quality*: *An Evidence-Based Handbook for Nurses*, The Agency for Healthcare Research and Quality Publications, 87-110. http://www.ncbi.nlm.nih.gov/pubmed/21328745

[9] Johnsen, H.M., Fossum, M., Vivekananda-Schmidt, P., Fruhling, A. and Slettebø, Å. (2016) Teaching Clinical Reasoning and Decision-Making Skills to Nursing Students: Design, Development, and Usability Evaluation of a Serious Game. *International Journal of Medical Informatics*, **94**, 39-48. https://doi.org/10.1016/j.ijmedinf.2016.06.014

[10] Hong, S., Lee, J., Jang, Y. and Lee, Y. (2021) A Cross-Sectional Study: What Contributes to Nursing Students' Clinical Reasoning Competence? *International Journal of Environmental Research and Public Health*, **18**, Article 6833. https://doi.org/10.3390/ijerph18136833

[11] Bvumbwe, T. and Mtshali, N.G. (2018) Transforming Nursing Education to Strengthen Health System in Malawi: An Exploratory Study. *The Open Nursing Journal*, **12**, 93-105. https://doi.org/10.2174/1874434601812010093

[12] Levett-Jones, T., Hoffman, K., Dempsey, J., Jeong, S.Y., Noble, D., Norton, C.A., *et al*. (2010) The 'Five Rights' of Clinical Reasoning: An Educational Model to Enhance Nursing Students' Ability to Identify and Manage Clinically 'at Risk' Patients. *Nurse Education Today*, **30**, 515-520. https://doi.org/10.1016/j.nedt.2009.10.020

[13] Baloyi, O.B. and Mtshali, N.G. (2018) A Middle-Range Theory for Developing Clinical Reasoning Skills in Undergraduate Midwifery Students. *International Journal of Africa Nursing Sciences*, **9**, 92-104. https://doi.org/10.1016/j.ijans.2018.10.004

[14] Christodoulakis, A., Kritsotakis, G., Gkorezis, P., Sourtzi, P. and Tsiligianni, I. (2023) Linking Learning Environment and Critical Thinking through Emotional Intelligence: A Cross-Sectional Study of Health Sciences Students. *Healthcare* (*Basel*), **11**, Article 826.

[15] Boso, C.M., van der Merwe, A.S. and Gross, J. (2021) Students' and Educators' Experiences with Instructional Activities towards Critical Thinking Skills Acquisition in a Nursing School. *International Journal of Africa Nursing Sciences*, **14**, Article 100293. https://doi.org/10.1016/j.ijans.2021.100293

[16] Mbakaya, B.C., Kalembo, F.W., Zgambo, M., Konyani, A., Lungu, F., Tveit, B., *et al*. (2020) Nursing and Midwifery Students' Experiences and Perception of Their Clinical Learning Environment in Malawi: A Mixed-Method Study. *BMC Nursing*, **19**, 1-14. https://doi.org/10.1186/s12912-020-00480-4

[17] Missen, K., McKenna, L., Beauchamp, A. and Larkins, J. (2016) Qualified Nurses' Perceptions of Nursing Graduates' Abilities Vary According to Specific Demographic and Clinical Characteristics: A Descriptive Quantitative Study. *Nurse Education Today*, **45**, 108-113. https://doi.org/10.1016/j.nedt.2016.07.001

[18] Papathanasiou, I., Kleisiaris, C., Fradelos, E., Kakou, K. and Kourkouta, L. (2014) Critical Thinking: The Development of an Essential Skill for Nursing Students. *Acta Informatica Medica*, **22**, Article 283.

[19] Mwale, O.G. and Kalawa, R. (2016) Factors Affecting Acquisition of Psychomotor Clinical Skills by Student Nurses and Midwives in CHAM Nursing Colleges in Malawi: A Qualitative Exploratory Study. *BMC Nursing*, **15**, Article No. 30. https://doi.org/10.1186/s12912-016-0153-7

[20] Creswell, J.W. and Creswell, J.D. (2018) Mixed Methods Procedures. In: Creswell, J.W., Ed., *Research Design*: *Qualitative*, *Quantitative*, *and Mixed Methods Approaches*, Sage Publications, Article 418.

[21] Charmaz, K. (2016) Constructivist Grounded Theory. *The Journal of Positive Psychology*, **12**, 299-300. https://doi.org/10.1080/17439760.2016.1262612

[22] Polit, D .and Beck, C. (2012) Essentials of Nursing Research. 7th Edition, Lippincott Williams & Wilkins, 1689-1699.

[23] Guest, G., Bunce, A. and Johnson, L. (2006) How Many Interviews Are Enough? *Field Methods*, **18**, 59-82. https://doi.org/10.1177/1525822x05279903

[24] van Wyngaarden, A., Leech, R. and Coetzee, I. (2019) Challenges Nurse Educators Experience with Development of Student Nurses' Clinical Reasoning Skills. *Nurse Education in Practice*, **40**, Article 102623. https://doi.org/10.1016/j.nepr.2019.102623

[25] Boso, C.M., van der Merwe, A.S. and Gross, J. (2019) Critical Thinking Skills of Nursing Students: Observations of Classroom Instructional Activities. *Nursing Open*, **7**, 581-588. https://doi.org/10.1002/nop2.426

[26] Wong, S.H.V. and Kowitlawakul, Y. (2020) Exploring Perceptions and Barriers in Developing Critical Thinking and Clinical Reasoning of Nursing Students: A Qualitative Study. *Nurse Education Today*, **95**, Article 104600. https://doi.org/10.1016/j.nedt.2020.104600

[27] Raymond, C., Profetto-McGrath, J., Myrick, F. and Strean, W.B. (2018) Nurse Edu-

cators' Critical Thinking: A Mixed Methods Exploration. *Nurse Education Today*, **66**, 117-122. https://doi.org/10.1016/j.nedt.2018.04.011.

[28] Borchardt, C. (2016) Nursing Clinical Instruction: What's Needed and How to Get There?

[29] Erlam, G.D. (2022) Are They Watching: Pedagogical Influence of Role Modeling on Student Competence, Confidence, and Clinical Reasoning. *Open Journal of Nursing*, **12**, 411-427. https://doi.org/10.4236/ojn.2022.126028

[30] Mohammadi, E., Shahsavari, H., Mirzazadeh, A., Sohrabpour, A.A. and Mortaz Hejri, S. (2020) Improving Role Modeling in Clinical Teachers: A Narrative Literature Review. *Journal of Advances in Medical Education & Professionalism*, **8**, 1-9.