ORIGINAL ARTICLE

Challenges Experienced by Clinical Educators in the Assessment of Students: Findings from Nursing and Their Application to Radiography in Zambia

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ABSTRACT

Background: There have been concerns about the incompetence of newly qualified radiographers in Zambia, raising questions about the effectiveness of clinical assessments. Although several challenges concerning the assessment of nursing students during clinical placements have been reported, there is no published research on this subject in radiography. The study aimed to review the challenges that clinical educators face while assessing nursing students and apply the findings to radiography education in Zambia.

Methods: An electronic search of the literature was conducted in March 2024 in three databases: Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed/MEDLINE, and ScienceDirect. This was supplemented with hand searches of nursing journals, reference lists, and grey literature. The eligibility criteria for inclusion were qualitative studies published in English from 2000 to date. Six (6) primary research studies from the nursing profession were identified and included in this review. The extracted data was re-analysed by themes.

Results: Four themes representing challenges experienced by clinical educators emerged. The themes include training and support in clinical education, failing to fail underperforming students, differing objectives between clinical and academic educators, and unfavourable conditions for clinical placements.

Conclusion: This study revealed that clinical educators experience challenges in assessing students that contribute to the incompetence of newly qualified healthcare professionals. Most of the challenges identified are related to a lack of training among clinical educators. The establishment of a clinical education training programme is therefore strongly recommended. This study also identified a literature gap in the Zambian radiography system that needs research to have a complete understanding of the problem in the local context.

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INTRODUCTION

Medical, nursing, and allied health professionals who are involved with students in the clinical learning environment (CLE), may be required to participate in their assessment, as it is an integral part of clinical education. Assessment is the process of making a judgment about a student's performance against established criteria such as learning outcomes or competency statements. [1] This is done by describing, recording, scoring, and interpreting information about a student's knowledge, attitudes, and skills against a standard criterion. Such assessment criteria are designed to reflect the safe and competent professional standards of the specific practice.[2-4] Assessment is divided into formative and summative. Assessment which takes place during clinical practice to gather information about a student's progress is termed formative assessment. [1,4] On the other hand, an assessment that takes place at the end of training is termed a summative assessment. [1] The aim is to ensure that only competent students pass the clinical assessment to protect patients and members of the public from harm.[2,5]

There are two types of assessment used for practical among medical, nursing, and allied health professionals: clinical competence and performance-based assessments. Harden and Laidlaw [6] explain that tests of clinical competence, demonstrate in a controlled situation what a student can do, whereas clinical performance assessment tests what the student does in practice. Competence is best assessed in a controlled learning environment using the objective structured clinical examination (OSCE).[2,6] The controlled learning environment allows students to be assessed in a risk-free environment.[6] Students can make mistakes and appreciate their consequences without the risk of causing harm to patients. This is even important in radiography where ionising radiation is used in imaging and treating patients. Ionising radiation can cause biological effects on human tissue. On the other hand, direct observation of procedural skills (DAPS) is the common method used in assessing students' clinical performance.[2,6]

The literature reports many reasons why assessment is undertaken during clinical training. The first reason is that assessment motivates students to learn. Norcini and McKinley [7] report that assessment has a positive impact on students and is a major factor in driving their learning. The second reason is to monitor students' progress. The clinical educator needs to identify deficiencies early in training so that these can be remediated without waiting until the final examination when it is too late to take the necessary action.[3] The third reason is to measure the effectiveness of clinical education. [4] The last reason is to assess students' levels of competence. [3,4] Clinical educators who serve as assessors must decide whether the student is "fit for purpose", which involves evaluating a student who has satisfactorily completed the training programme and achieved the standard expected by the professional bodies, regulator, and members of the public. [2-4]

In Zambia, radiography students' clinical performance is assessed using both formative and summative methods. Formative assessments are done through direct observation, clinical log books, and skills checklists to provide continuous feedback and ensure ongoing clinical performance improvement. Radiography clinical educators, commonly known as clinical tutors appointed by Higher Education Institutions (HEI), conduct formative assessments at the designated placement sites in conjunction with academic educators. On the other hand, summative assessments, such as clinical competency evaluations through direct observation, OSCEs, oral examinations, clinical case presentations, and feedback from clinical sites, are employed to evaluate overall competence at key stages. In both formative and summative, radiography students are mostly assessed on real patients during imaging practice. Detailed rubrics and rating scales guide these assessments to ensure

consistency and impartiality.

In the last decade, there have been concerns about the incompetence of newly qualified health professionals raising questions about the effectiveness of clinical assessments during their training. This includes radiographers. This resulted in the Health Professions Council of Zambia (HPCZ), introducing licensure examination competency tests before registration of health professionals. In radiography, research conducted by Sichone et al.,[8] also found that most newly qualified radiographers and radiography technologists lacked competence. The question is "*What are the challenges experienced by clinical educators in assessing undergraduate students?"* This study aimed to review the challenges experienced by clinical educators in the assessment of nursing students and apply the findings to radiography in Zambia. Both professions have similar clinical education practices.

METHODS

Literature search

A literature review was conducted to explore the challenges experienced by clinical educators of nursing students in the assessment of their clinical competencies. A literature review is an analysis and synthesis of work that has been undertaken in a particular area. [9]The scoping literature review found no published research on this topic in radiography. Therefore, the searches focused on nursing literature as per the aim of the study. In March 2024, an electronic search of the literature was conducted in three databases: Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed/MEDLINE, and Science Direct. The search terms include "challenges", "nurse mentor", "clinical educator", "clinical competence", "assessment" and "clinical placement". The search terms were combined with Boolean operators "AND", "OR" and "NOT". Both a nurse mentor and clinical educator were included in the search terms because these titles are used interchangeably to mean a practitioner who facilitates the learning process of students. Additional search was also conducted in the nursing journals: British Journal of Nursing, Nursing Open, Nurse Education in Practice, Nursing Research and Practice, Nursing Management, Journal of Nursing Education, and Africa Journal of Nursing and Midwifery. The reviewers also conducted a Google search, citation tracking, searched the reference lists of the identified studies, and performed author searching to avoid missing any relevant research.

Inclusion and exclusion criteria

The inclusion criteria for this study were qualitative studies because the reviewers were interested in getting a deeper understanding of the challenges experienced by nurse mentors (clinical educators) and qualitative design produces a detailed description of participants' experiences and interprets the meaning of their actions.[10,11] Studies published in the English language since 2000. This was the time when concerns were raised about nurse mentors (clinical educators) failing to fail nursing students who do not meet the clinical performance standards. [12] Table 1 shows the summary of inclusion and exclusion criteria.

Table 1: The inclusion and exclusion criteria for the review

Inclusion criteria	Exclusion criteria
Studies describing challenges experienced by nurse mentors (clinical educators) in the clinical assessment of nursing students	Studies not describing challenges experienced by nurse mentors (clinical educators) in the clinical assessment of nursing students
Nursing studies conducted using a qualitative research design	Nursing studies that used quantitative and mixed methods
Published in the English language since 2000	Studies published before 2000
Studies related to undergraduate clinical assessment	Studies related to postgraduate clinical assessment

Searching and screening of the literature

The literature search was conducted by the first (OB) and second (BC) reviewers. Any disagreement was resolved by the involvement of the third reviewer (NS). The initial search from databases and other sources returned a total of 46 articles. The title and abstract of each article were read to determine the relevance against the inclusion and exclusion criteria (Table 1). After conducting this initial screening, 11 articles remained for full-text screening. Four of these articles did not meet the inclusion criteria: 3 used quantitative methodology,[13-15] and one qualitative study[16] was not related to challenges experienced by clinical educators in clinical assessments. This is shown in the PRISMA flow diagram (Figure 1).

Study characteristics of the included studies

Table 2 shows the characteristics of the identified and included studies in the literature review. The six (6) eligible primary research studies were conducted in the United Kingdom (N=3), and Norway (N=3).There was no published study identified during the literature search from other parts of the world. The studies were published between 2003 and 2023.

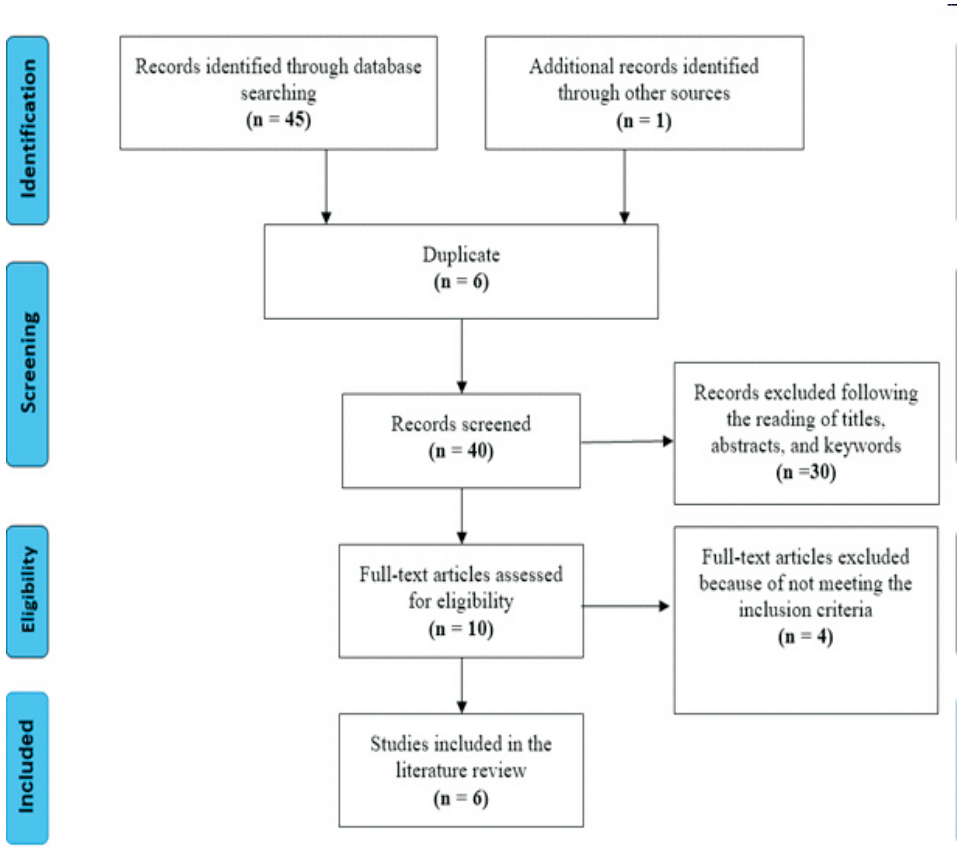

Figure 1: Screening process of studies included in the literature review

Table 2: **Characteristics of included primary research studies (N = 6)**

	Duffy[12]	2003	Failing students: a qualitative study of factors that influence the decisions regarding assessment of students' competence in practice	• More students failing theory than practice • Interference from academic educators to pass underperforming students • Higher education institutions failed to value practice	UK
	Jervis & Tilki[17]	2011	Why are nurse mentors failing to fail student nurses who do not meet clinical performance standards?	• Complexity of assessing students • Difficulty with assessing attitudes • Confidence in assessment decisions	UK
	Sandy[18]	2014	Factors affecting assessment of student nurses' clinical practice: a phenomenographic exploration of the experiences and understanding of mentors of a mental health service in England	• Difficulty in understanding learning outcomes • Lack of refresher workshops • Assessments and associated anxieties • Appropriate student population and adequate placement duration	UK
4	Christiansen et al.,[19]	2020	Challenges in the assessment of nursing students in clinical placements: Exploring perceptions among nurse mentors	• Mismatch between learning outcomes and the learning environment • Clinical educators playing a passive role in the midterm and final assessment	Norway
5	Finstad et al.,[20]	2022	The paradox of an expected level: The assessment of nursing students during clinical practice - A qualitative study	• Difficult to understand the assessment form • Uncertainty as to how to define the expected level of competence	Norway
6	Natterøy et al.,[21]	2023	Nurse mentors' experiences with suitability assessments in clinical placement: A qualitative study	• Borderline student performance • Importance of support from academic educators	Norway

Data extraction and analysis

The first(OB) and second (BC) reviewers extracted data from the included research studies using a data extraction form for subsequent analysis. The information extracted included the author (s), year of publication, the title of the research, main findings, and participants' quotes. Thematic analysis was used to identify the themes and sub-themes (Table 3) by reading and re-reading the extracted data. [10,11, 22] The third reviewer (NS) counterchecked the coding, and sub-themes and themes emerged.

Ethical considerations

No ethical approval was required from the research ethics committee because this literature review used secondary data that is publicly accessible. [9,23] However, the reviewers adhered to the principles of conducting a literature review and all the processes involved in this study have been described in detail.

RESULTS

Following data analysis, four themes and ten sub-themes emerged (Table 3).

Table 3: Themes that emerged from the review of the studies

Themes	Sub-themes	Exemplary quotes
Theme 1: Training and support in clinical education	Difficulties in understanding learning outcomes and assessment forms	*"I have been mentoring students for many years, but I* still find it hard to understand some learning *outcomes." ([18] p. 60)*
	Experience and confidence	*Now that I'm getting more experience, I understand. if people are not fit to work…you know you have to fail them…." ([12] p. 60)*
	Support from experienced clinical educators	*"I think it's very good that there are two: a primary and a secondary mentor. It means that you can discuss things together and meet afterward." ([21] p. 4)*
Theme 2: Failing to fail underperforming students	Difficulties in assessing professionalism	*"Without a caring attitude, you could pass them clinically, but they could fail the patient." ([17]p. 385)*
	Personal implications	*"…I didn't want her chucked off the course…that would have been the end of her." ([12] p.52)*
	Providing the benefit of the doubt	*"..there had been an improvement…. But we discussed whether you know she should continue, and the general feeling was to give her, as I say, the benefit of the doubt." ([12]p. 68)*
Theme 3: Differing objectives between clinical and academic educators	Lack of focus on clinical assessments	*"…the university doesn't give enough focus on clinical assessment'. ([12] p. 23)*
	More fail theory than practice	*"Every professional she worked with wrote the report and we failed her. But the university kept her, saying there was time to improve.." ([17] p. 585)*
Theme 4: Unfavourable conditions for clinical placements	Suitable student cohort	"*Last semester, I had three students to mentor, but hardly made contact with them." ([18] p. 62)*
	Sufficient duration of placements	*"The three-week placement is too short for students to familiarise themselves with clinical areas and for clinical educators to carry out comprehensive assessments." ([18] p. 63)*

THEME 1: TRAINING AND SUPPORT IN CLINICAL EDUCATION

This theme underscores the multifaceted nature of student evaluation and facilitation of the student learning process, highlighting the importance of clinical educator training and collaborative support structures. The theme is made of three subthemes namely; understanding learning outcomes and assessment forms, experience and confidence, and support from experienced clinical educators.

Sub-theme 1: Difficulties in understanding learning outcomes and assessment forms

This finding suggests a persistent issue with clinical educators finding it difficult to understand learning objectives within the context of clinical education.

"I have been mentoring students for many years, but I still find it hard to understand some learning outcomes." ([18] p. 60)

Clinical educators also noted that ambiguity in learning outcomes frequently resulted in doubt regarding which criteria to utilise when evaluating students' performance. The absence of concordance between learning outcomes and assessment criteria is a fundamental problem in clinical education evaluation.

"Not understanding the learning outcomes equates to not knowing what to look for when assessing students." ([18] p. 60)

"I think it is unclear on most points, what lies in most points, what level they should be at."([12] p. 4)

Other clinical educators found it difficult to understand the assessment form. This was attributed to a lack of training in clinical education and guidance from academic educators.

"We spend a lot of time just trying to understand the assessment form."([20] p. 4)

"The assessment form gives us less guide on the assessment of the student's competencies in the clinical learning environment."([19] p. 1073)

Sub-theme 2: Experience and confidence

This finding highlights the potential impact of inadequate continued education and professional development opportunities on clinical educator's confidence and effectiveness in guiding students. The participant's uncertainty underscores the importance of ongoing training to ensure clinical educators remain knowledgeable, engaged, and effective in their roles.

"I have not attended any update workshops since my mentorship in practice training four years ago. So, I am not sure of my role as a mentor (clinical educator)."([18] p. 61)

"One's expectations and what it takes for the student to pass, it becomes…it is characterised by one's competence." ([20] p. 4)

However, participants also highlighted the gradual evolution of clinical education competency, with experience playing an important part in acquiring the confidence and judgment required to assess and fail underperforming students.

"Now that I'm getting more experience, I understand that you have to, if people are unsatisfactory and if people are not fit to work, are not suitable to work, you know you have to fail them… But I think a lot of that comes with experience and I think for junior kind of mentors(clinical educator) then that would be difficult." ([12] p. 60)

Sub-theme 3: Support from experienced clinical educators

This sub-theme emphasises the possible difficulties that less experienced clinical educators may face while making these complicated assessment issues of pass or fail decisions, emphasising the significance of clinical educator support, and ongoing professional development to improve their ability to successfully evaluate student achievement.

"I think it's very good that there are two: a primary and a secondary mentor(clinical educator). It means that you can discuss things together and meet afterward." ([21] p. 4)

Some participants expressed the challenges and anxieties faced by clinical educators as they transition into the facilitation of learning roles, further highlighting the need for support to help individuals navigate this shift with confidence and competence.

"I felt that I was still a student myself. When I had my first student, I still thought it was scary to lock myself into a medicine room. It still felt uncomfortable that the card worked in the lock. I felt that I should have been accompanied and then I was the one accompanying. It felt uncomfortable." ([21] p.4)

THEME 2: FAILING TO FAIL UNDERPERFORMING STUDENTS

This theme focuses on the intricacies and obstacles that clinical educators confront when assessing and failing students in healthcare education. Three subthemes were identified, difficulties in assessing professionalism, personal implications, and providing the benefit of the doubt.

Sub-theme 1: Difficulties in assessing professionalism

The findings highlight the complexity of student assessment, suggesting that while students may meet technical competencies, their lack of social proficiency presents a barrier to comprehensive success.

"Without a caring attitude, you could pass them clinically, but they could fail the patients." ([17] p. 385)

"They don't necessarily fail on competencies...but on a social level, interacting with people they are not good. So, you can't fail them completely." ([17]p.385)

Furthermore, the findings provide light on the issue that clinical educators have when grading students who demonstrate great technical competencies but lack other crucial skills or attributes. This shows that evaluation choices may elevate technical proficiency over other critical characteristics of healthcare practice.

"..having a caring attitude is not brought into question as pass or fail behaviour." ([17]p. 385)

Sub-theme 2: Personal implications

The findings demonstrate the complicated decision-making processes and emotional considerations involved in evaluating and failing students in clinical placements. Participants exhibited deep concern and unwillingness to fail students, even when there were major flaws in performance due to the consequences of their failing.

"...I didn't want her chucked off the course...that would have been the end of her." ([12]p.52)

Additionally, participants shared instances where external factors, such as the student's proximity to graduation, influenced assessment decisions.

"Yes…and the sister said, 'Oh I wouldn't want to jeopardise the student's future she's nearly finished'. Missing the whole point….instead of worrying, this is girl is qualifying in a couple of weeks, would I be happy that she looked after me or someone that I cared about." ([12] p.53)

Furthermore, the findings demonstrate a sense of responsibility and empathy for the student, implying a reluctance to be the one to give the ultimate blow, which could have long-term ramifications for the student's academic and career journey.

"I wasn't going to put the final nail in her coffin." ([12] p.54)

Sub-theme 3: Providing the benefit of the doubt

The findings indicate a nuanced approach to student assessment, with an emphasis on striking a balance between satisfying basic criteria and considering the larger context of student achievement. Participants reported a readiness to give the benefit of the doubt, especially when there was evidence of progress or when students were near to attaining the needed requirements.

"…there had been an improvement towards the last week or two. But we discussed whether you know she should continue, and the general feeling was to give her, as I say, the benefit of the doubt." ([12] p. 68)

"So, I feel that if they're just about meeting the lowest criteria, I try to work it out, make it borderline…ask them to work a little bit harder to let them pass…I'm not going to say, well they've been unsatisfactory. Most of the time, I feel that well, I should let them move on." ([12] p. 69)

THEME 3: DIFFERING OBJECTIVES BETWEEN CLINICAL AND ACADEMIC EDUCATORS

This theme emphasises a mismatch between the university's aims and clinical educators' expectations of the significance of student clinical assessment. Two subthemes were identified: a lack of emphasis on clinical assessments and more fail theory than clinical practice.

Sub-theme 1: Lack of emphasis on clinical assessments

Participants' perspectives highlight a recurring subject of inadequate emphasis on clinical assessment within the university setting. The sentiment is that the university prioritises retaining students at the expense of upholding clinical competency.

"…the university doesn't give enough focus on clinical assessment'. ([12] p. 23)

'It's bums on seats, purely academic." ([12] p. 25)

"The university is bums on seats. Whenever a student fails clinical assessments and then appeals, 100% of the time they come back." ([12]p.25)

Sub-theme 2: More fail theory than clinical practice

Participants emphasise a disturbing trend in which the emphasis on clinical placements, combined with the different objectives of universities and clinical educators, results in a higher number of students failing theory tests than in clinical assessments. This disparity highlights a key issue in the educational system that requires attention and possible

adjustment to ensure a balanced and effective approach to student assessment in healthcare education.

"Every professional she worked with wrote the report and we failed her. But the university kept her, saying there was time to improve..." ([17] p. 585)

"... it is clearly stated in our programme, in our document that a student must be satisfactory theoretically, clinically and professionally. And so, you know, I mean the clinical is as important as those other two things. And we know that. I just don't think the university sees it that way necessarily. They've got different desires for the student population." ([12] p. 25)

"The problem with the link lecturer is being pushed to pass the student. They find reasons to make you pass..." ([17] p. 585)

"It is the lecturer who chairs the meeting. I feel a bit left out; the assessment is something going on between the student and the lecturer." ([19] p. 1074)

"I do have concerns ...well every theoretical assessment, there's a few will come down and some will come down and resit again, but the majority get through these practice assessments". ([12] p. 23)

THEME 4: UNFAVOURABLE CONDITIONS FOR CLINICAL PLACEMENTS

This theme emphasises the problems and limits associated with clinical placements, notably the availability of time and resources required to adequately assess and support students during their clinical training. Two themes were identified, namely, the suitable student cohort and sufficient duration of placements.

Sub-theme 1: The suitable student cohort

Participants report major issues with clinical supervision and placement availability. One participant admitted to failing to maintain contact with three students, highlighting the challenges clinical educators experience in providing enough support and direction to their students. The absence of constant supervision might impede student learning and progress in clinical practice.

"Last semester, I had three students to mentor, but hardly made contact with them." ([18] p. 62).

Sub-theme 2: Sufficient duration of placements

Another participant's observation about the diminishing number of placements and the inability to accommodate rising student demand reveals a systemic issue that jeopardises the quality of clinical assessments. The limited availability of placements makes it difficult to provide students with the necessary hands-on experience for professional development.

"What some of us don't realise is that the number of placements has reduced, and will continue to do so. We do not have enough of them to cope with the student numbers." ([18] p. 62).

"The three-week placement is too short for students to familiarise themselves with clinical areas and for clinical educators to carry out comprehensive assessments." ([18] p. 62)

DISCUSSION

The study aimed to review the challenges that clinical educators face while assessing nursing students and apply the findings to radiography education in Zambia. Although there is little published research on this specific topic in

radiography, the parallels drawn between nursing and radiography in terms of clinical education practices provide valuable insights into the radiography field.

The theme of training and support in clinical education underscores the critical importance of ongoing professional development for clinical educators. Challenges such as understanding learning outcomes and assessment forms, lack of expertise and confidence, and limited support from academic educators highlight the necessity for structured training programs and continuous support for clinical educators.[12, 17-21] The reflective element of clinical education training should encourage clinical educators to learn from experience, analyse critical incidents, and discuss concerns or limitations in a safe and supportive environment with colleagues, managers, and lecturers.[17] By addressing these challenges, the quality of student assessment and facilitation of learning in radiography education can be significantly enhanced.With regard to training, the Professional Code of Conduct for Radiographers in Zambia requires clinical educators to have knowledge and skills in teaching and assessment of students.[24] However, there is no clinical education course to support radiography clinical educators. Globally, existing literature points out that many radiography clinical educators lack formal training in clinical education,[25-27] and this is the same in Zambia[28] despite the widely recognized benefits of clinical educator training in improving learning effectiveness and student experiences. [6,29] This gap in clinical educator training poses a significant obstacle to improving radiography education standards in Zambia and further research is therefore warranted.

The theme of failing to fail underperforming students sheds light on the complexities involved in assessing professionalism, dealing with personal implications, and providing the benefit of the doubt. [12, 17-21] There have been concerns raised, particularly within clinical departments, about the possibility of inadequate radiography students completing their radiography education programs and becoming registered radiographers. [5] However, the repercussions of failing to fail underperforming students are significant. A student who is allowed to pass despite inadequate skills may go on to become a radiographer who is not fully equipped to carry out their duties safely and effectively.[5]This could have serious implications for both the public and the individual in question. Such situations can create tensions between clinical placements and educational institutions. [4,12] It is crucial to acknowledge that some students may need to fail. Conducting thorough clinical assessments of radiography students can help uphold professional standards, ensuring the safety of patients and the public. [5] One of the strategies reported in the literature for overcoming the challenges involved in assessment is identifying students who are failing as early as possible in their learning, and support provided as soon as is practicable.[3,4] However, in the context of Zambia, further research is required to develop a context-specific good practice model for supporting failing students.

The emotional and ethical dilemmas faced by clinical educators when assessing students' performance, particularly in cases where technical competencies overshadow other essential skills, emphasise the need for clear assessment criteria and support systems to guide decision-making processes.[17]Although specific tools can help, clinical education training needs to discuss how empathy, respect, sensitivity, and dignity might be expressed in the clinical setting. In the area of attitudes in particular, clinical educators should be encouraged to explore their own beliefs, expectations, and prejudices to ensure the judgments they make are as fair, objective, and appropriate as possible.[17] Literature suggests that these issues of professionalism should be assessed separately based on the Professional Code of Conduct for Radiographers. [30] In the current practice, educators focus on radiographic techniques, and less attention is paid to professionalism.

The theme of differing objectives between clinical and academic educators revealed a disconnect between the priorities of universities and clinical educators in student assessment. [12, 17-21] The emphasis on theory over clinical practice assessments and the lack of focus on clinical competencies within the university setting pose challenges for ensuring comprehensive student evaluation. Addressing these discrepancies requires collaboration between academic and clinical settings to align assessment practices with professional standards. The College of Radiographers [31] recommends the appointment of a link academic educator to link the HEI with clinical departments/educators. The link academic educator should visit the clinical departments regularly and be easily contactable should a query arise about the issues related to the clinical education of radiography students.

The theme of unfavourable conditions for clinical placements highlighted the constraints faced by educators in providing adequate support and assessment opportunities for students during clinical placements. [12, 17-21] A prior study conducted in Zambia highlighted the complex roles of clinical educators, who face the challenge of balancing patient care responsibilities with the need to support students' learning processes.[32] Moreover, research in similar contexts has identified various challenges in clinical placements, such as a lack of imaging equipment, an increasing student population, and a shortage of qualified radiographers. [33-35] These issues emphasise the critical need for adequate resources and infrastructure to support effective clinical education. Enhancing the availability of clinical education resources can significantly enhance the quality of learning experiences for radiography students in Zambia.

LIMITATIONS OF THE REVIEW

The primary research studies identified and included in this review were conducted in developed countries. However, the challenges experienced by clinical educators in the clinical assessment of students may differ in limited resource settings like Zambia. The exclusion of primary research studies not published in the English language also would have resulted in missing other relevant studies.[36] There were no published studies found during the literature search on this subject in radiography to compare our findings with.

RECOMMENDATIONS

The following are recommendations made based on the findings of this literature review.

- Establishment of clinical education courses for medical, nursing, and allied health professionals in Zambia. There is evidence that training of clinical educators improves their knowledge and competence in the facilitation of students learning. This includes overcoming challenges related to clinical assessment of students. A clinical education training programme developed in Australia improved clinical educators' effectiveness in the facilitation of nursing students. [37] This resulted in the expansion of the training to medical and allied health professionals in Australia.
- Conduct primary research on challenges experienced by radiography clinical educators in the assessment of students' clinical performance to get a local context.
- Develop a framework for not only structured training and support but also remuneration for clinical educators and inclusion of this position in the radiography career pathway in Zambia. Dedicated clinical educators who are responsible for the clinical training of students improve the quality of clinical education. This is the practice in developed countries. [26,37,38]

CONCLUSION

The study's findings shed light on the challenges experienced by clinical educators in assessing students that contribute to the incompetence of newly qualified healthcare professionals. This

includes radiographers. By addressing issues such as training and support, student assessment practices, objective alignment between academic and clinical educators, and improving clinical placement conditions, the radiography education system can improve the quality of student assessment, benefiting the future radiography workforce. The HPCZ introduced licensure examination competency tests because of concerns about the incompetence of newly qualified health professionals. Therefore, the application of this review findings is not limited to radiography, but to other health professionals as well.

Most of the challenges identified in this study can be overcome by the establishment of a clinical education course that can also benefit medical, nursing and other allied health professionals in Zambia and similar settings. The course content can include educational theories related to clinical education, creating a conducive CLE, clinical teaching methods, simulation of clinical experiences, professionalism, giving feedback on clinical performance, assessment of clinical performance and competence, supporting students with learning difficulties, leadership and management in clinical education, course design and evaluation, and research in clinical education.[1,4,26,37,39]

COMPETING INTEREST

No conflict of interest to declare

AUTHORS' CONTRIBUTIONS

The first (OB) and second (BC) authors, conceptualised this literature review, extracted and analysed the data. The third (NS) author provided information on the Zambian radiography system and proofread the manuscript. All authors prepared the manuscript for publication.

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