INTRODUCING A NEW PEDAGOGY TO THE UNIVERSITY OF BOTSWANA SCHOOL OF NURSING: DISTANCE SIMULATION

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Abstract

The advancement of healthcare education has led to an increasing use of technology for training and practice. Distance Simulation provides a realistic and immersive environment for nursing students to engage in real-world clinical scenarios with peers from across the globe, offering varied perspectives and specialized knowledge. A recent study involving 32 nursing students from four schools, including the University of Botswana and three schools from the United States, highlighted the benefits of distance simulation. It enriches the learning experience and can serve as an alternative for clinical activities or to supplement theoretical content. This underscores the importance of further research and investment in distance simulation as an effective tool in nursing education. In summary, distance simulation offers a practical solution to bridge the gap between theoretical knowledge and practical clinical experience, potentially enhancing the overall quality of nursing education

Keywords: *Simulation, pedagogy, nursing education, debriefing, pre-briefing, SET-M*

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Introduction and background

The healthcare education sector has increasingly adopted technology to improve training and practice. There is a growing need for innovative and effective approaches in nursing and other healthcare training programs. Simulation, replicating real-world scenarios that allow students to perform skills and actively learn, has become an essential component of nursing education (Lavoie et al., 2017). While the World Health Organisation (WHO) also strongly recommends simulation-based nursing education programs to improve and ascertain patient safety (World Health Organization, 2018), simulation-based education remains a challenge for under-resourced settings with minimal investment in technology (Moabi et al., 2022; Msosa et al., 2022). Furthermore, there are variations in simulation tools used per setting, from low-fidelity anatomical models for the demonstration of skills such as injections to high-fidelity mannequins which mimic physiologic functions such as regular and abnormal breathing and to the use of standardised patients (volunteers) by some institutions, to give learners a more realistic clinical experience (Koukourikos et al., 2021).

Technological advancements and the need to improve nursing education have seen distance simulation emerge as a critical tool, particularly in regions facing resource constraints. Distance simulation utilizes digital platforms and virtual environments to simulate clinical scenarios for educational purposes, allowing students and professionals to practice and refine their skills remotely. It involves conducting simulations or training from a physical distance (LeFlore et al., 2014; Lioce, 2020).

Delivering simulations remotely holds many advantages, notably a broader reach to geographical locations and accessibility to experts globally (Sanseau et al., 2021; Vora et al., 2021). One of the primary advantages of distance simulation is its ability to provide consistent and standardized training experiences, regardless of geographical location. This is particularly beneficial for institutions in remote or underserved areas, where access to high-fidelity mannequins, certified simulation educators, and clinical practice opportunities may be limited (Irfanullah et al., 2023; Somerville et al., 2024). Furthermore, distance simulation can ameliorate overcrowding in training facilities and minimise competition for clinical space, as seen in countries like Botswana. Nursing students and other healthcare trainees often struggle to find adequate practice opportunities due to the high demand for limited clinical slots. Distance simulation alleviates this pressure by providing an alternative means of gaining practical experience, complementing traditional clinical training methods (Nagdee et al., 2022).

The implementation of distance simulation faces challenges related to technological infrastructure, educator training, and funding (Yeh et al., 2022)Technical issues such as poor internet connectivity and platform compatibility may disrupt the simulation. Efforts to integrate distance simulation with traditional clinical training show promising potential for improving healthcare education. This transformative approach offers solutions to many of the challenges faced by traditional training methods, which have proven ineffective in meeting the demands of modern medical practice. Students can be exposed to a wide range of clinical scenarios, enhancing their competence and confidence without

the need for physical presence in a traditional clinical setting (Foronda et al., 2020; Lavoie et al., 2017). The collaboration and repeated simulation practice improve students' learning outcomes, enhancing skill retention and transferability to clinical settings (Sato et al., 2024; Wright et al., 2018).

Statement of the problem

Nursing schools are vital in developing highly skilled nurses who can effectively address the current complex health challenges worldwide. Traditional teaching methods, where students passively acquire knowledge, do not adequately develop students' cognitive and problem-solving skills to tackle these health challenges (Ward et al., 2018). In many settings, students practice the skills taught in the lab before applying them to actual patients. However, current research challenges this approach, as what is taught in class sometimes needs to fully align with the experience in clinical settings (Chabrera et al., 2021; Hashemiparast et al., 2019; Mothiba et al., 2020). This mismatch suggests a gap in the transfer of skills from theoretical learning to practical application, which could lead to inadequately prepared professionals in clinical settings. This gap emphasizes educational programs' need to closely align with real-world practices to ensure competence and confidence in clinical environments.

Most health training institutions in Botswana are in the southern part of the country, including medical schools, the School of Nursing, and five other nurse training institutions. Due to this concentration, these institutions need help to find enough clinical space, particularly in a referral hospital. Nursing students from these institutions compete with students from other health professions for clinical practice opportunities (Arkan et al., 2018). Moreover, there is a shortage of nursing staff in Botswana (Mamalelala et al., 2023; Nkomazana et al., 2015), which limits the support available for students from registered nurses. This limited support, compounded by the competing roles of nurses and the occasional lack of competence to assist students with clinical procedures, has a significant negative effect on students' learning (Alshahrani et al., 2018; Arkan et al., 2018; Chen et al., 2020; Zhang et al., 2022). Furthermore, health institutions in Botswana often lack the necessary consumables and functional equipment for patient care procedures and activities. This demotivates and stresses nursing students and this leads to less time dedicated to learning, a hindrance to their competence and confidence (Kgosietsile et al., 2022; Labrague et al., 2018).

Even though the University of Botswana has identified an opportunity for improvement by considering the use of low-fidelity manikins in its nursing skills laboratory, it has become evident that the absence of certified simulation educators and the lack of high-fidelity manikins is a key area that needs to be addressed to enhance the quality of clinical simulations (Koukourikos et al., 2021). However, targeted efforts to integrate simulations with traditional clinical training approaches can lead to remarkable improvements in healthcare education and practice, as outlined by Nagdee et al. (2022). The University of Botswana through the school of nursing collaborated with three universities from the United States of America in a distance simulation project to foster

shared learning and enhance clinical reasoning among nursing students from diverse cultural backgrounds. This collaborative project included faculty members, nurse educators, content experts, and experienced simulationists with a wide array of credentials, and a certified healthcare simulation educator. This diverse expertise held significant promise for developing effective solutions and driving meaningful advancements in healthcare education and practice.

The study aimed to explore the potential of distance simulation as a transformative pedagogy for nursing education at the University of Botswana School Of Nursing. Additionally, it highlighted the role of distance simulations in offering exposure to various clinical scenarios, enhancing nursing students' perspectives and cultural awareness as well as bridging the gap between theoretical knowledge and practical clinical experience in nursing education.

Conceptual framework

Kolb's Experiential Learning Theory (ELT) provided the theoretical framework for the Distance Simulation (GDS), a collaborative effort between three United States of America nursing programmes and the University of Botswana nursing programme. This unique approach, which incorporates distance simulations within the framework of Kolb's ETL, has the potential to revolutionise nursing education by creating engaging and effective learning experiences for nursing students from diverse universities and cultural backgrounds. The GDS fosters communication and collaboration among participants, as highlighted in the study by Poore et al. (2014). According to Kolb's ELT, learning is a multi-stage process involving concrete experiences, reflective observation, abstract conceptualisation, and active experimentation. These stages are interconnected and iterative, with each stage being essential for comprehensive learning to take place. Kolb's Experiential Learning Theory (ELT) underscores the importance of learners applying their previous experiences and integrating new knowledge, making it an ideal framework for designing simulation experiences that effectively support the clinical education of student nurses.

Concrete experiences are built from reality in which learners are willingly involved in new experiences as active participants. Distance simulations are an innovative and effective educational tool and provides learners with a highly realistic and interactive environment. By engaging in scenario-based learning, participants can actively make decisions, solve complex problems, and experience the consequences of their actions within a simulated setting. This hands-on approach fosters a deep understanding and practical application of the material, offering a controlled yet dynamic learning experience. Simulation-based learning in nursing education and debriefing enhance clinical skills, critical thinking, and decision-making abilities (Azizi et al., 2022; Chan et al., 2024; Koukourikos et al., 2021; Saghafi et al., 2024).

Reflections are facilitated through debriefing sessions and discussion forums where learners share their observations and insights. The study nurses who participated mainly were either in their fourth year of nursing degree or had experiences as a nurse. Kolb's

ELT was appropriate as it allows the student nurses to critically reflect on their prior experiences. The debriefing stage allows reflection as it involves reviewing what happened in the video, analysing outcomes, and considering the implications of the actions. Debriefing is crucial in nursing education as it encourages critical reflection and consolidation of learning (Fey et al., 2015). Furthermore, Cheng et al. (2014) emphasise that effective debriefing strategies are essential for translating simulation experiences into real-world clinical skills.

Abstract conceptualisation occurs when a learner uses analytical skills to combine ideas and concepts to frame an experience. This stage follows reflective observation, where learners consider what could have been done differently to improve their learning. It involves reviewing the literature on best practices and consulting colleagues and experts. For instance, students might analyse their simulation experiences by comparing them with established clinical guidelines and evidence-based practices. Abstract conceptualisation plays a crucial role in helping learners integrate theory with practice, thereby enhancing their ability to apply knowledge in clinical settings (Kolb, 1984).

Active experimentation involves using what was learned to direct future practice. In the final stage of active experimentation, the simulation experience provides learners a hands-on opportunity to apply the concepts and skills learned and reflect on actual experiences (Murray, 2018). This phase is critical as it bridges the gap between theoretical knowledge and practical application. Learners test their hypotheses and refine their skills through continuous practice and feedback. Active experimentation ensures that learners are competent and confident in their ability to perform in real-world scenarios (Jeffries, 2012).

Methodology

Study design

The distance simulation study utilised both quantitative and qualitative methods. The Simulation Effectiveness Tool-Modified evaluated the effectiveness of distance simulation through quantitative ratings on learning and confidence and qualitative questions regarding feedback about the simulated clinical experience.

Study context

Students from three United States of America nursing programmes - the University of Connecticut, the University of Central Florida and the University of California Irvine, and the University of Botswana nursing programme participated in the study. The distance simulation was conducted in April 2023. It was ungraded, and participants received feedback to facilitate their learning. Students were gathered in a virtual platform (Webex), where they engaged in introductions and "ice breaker" activities. Following the introductory engagement as a larger group, participants then met in four preset breakaway groups that comprised two students from each participating university and at least two faculty members for the actual distance simulation. The distance simulation consisted of three main sessions: a pre-brief, synchronous viewing of a recorded

simulation, and debriefing facilitated by experienced faculty. After the GDS experience, students completed voluntary evaluation and reflections.

Ethical consideration

Ethical clearance was sought at all participating universities: the University of Connecticut (permit #NHSR22-0087), the University of Central Florida, and the University of California Irvine) and the University of Botswana (permit # UBR/RES/IRB/BI0/352). All student participants completed a consent form before data collection.

Population and sampling

The collaboration brought together faculty members from four universities, comprising nurse educators, leaders, content experts, and experienced simulationists with a wide array of credentials, including certified healthcare simulation educator, Doctor of Education, Doctor of Nursing Practice, and Doctor of Philosophy. Through this collaboration, the simulation experts provided mentorship and guidance, while the faculty offered valuable insights. This collective effort was instrumental in designing an activity that effectively catered for the diverse learning needs of students across different institutions and geographical locations.

Participants for the study were selected through convenience sampling from the nursing programmes at the University of Connecticut, the University of Central Florida, the University of California Irvine, and the University of Botswana. All nursing students who had completed at least half of the nursing curriculum at these universities were invited to participate. Information about the study was provided through leaflets and information sheets, and the first student to approach the researchers was selected to take part in the study after giving consent. Researchers from the respective universities explained the details of the research study to the student nurses during a contact session and invited them to participate.

Study piloting

Two test runs were conducted to ensure smooth operations. In the initial test run, faculty members from the four universities were allocated to rooms with pre-assigned break-out areas. While the break-out rooms generally functioned well, a group encountered low video volume. To address this, the group proactively decided to implement closed captioning in all break-out rooms. Furthermore, they established a protocol to use WhatsApp for reaching out to a technician on call in the event of any technical difficulties during the simulation.

Execution of distance simulation

Pre-brief (20 minutes)

Before the actual distance simulation, an experienced faculty led the pre-briefing session in which the learning objectives, the day's plan, privacy and confidentiality, and the basic

assumption were covered in detail (Jeffries, 2021; McDermott et al., 2021). They were also provided with extra information on technological expectations, including when to use mute, how to fix connection problems, and resources for technical support, which followed McDermott et al.' (2022) guidelines.

Active experimentation (video simulation 15 minutes)
To enhance their involvement with the scenario, students were asked to envision themselves as the named nurse in the video. By putting themselves in the shoes of this character, students were able to more fully immerse themselves in the simulation and engage with the scenario in a more meaningful way (Muckler, 2017).

The distance simulation experience used the nursing simulation scenario, "Assessment: Physical Assessment in Hospitalized Patient," obtained from Montgomery College Simulation Library (Montgomery College, n.d). This library is an open-access resource available to nursing educators. The simulation video was displayed to groups in real-time. One pause occurred in the recorded simulation, allowing students to take notes regarding the handoff report on their student observation documentation worksheet. No discussion or conversation occurred at this time, but these notes were referenced during the debriefing.

Trained simulation faculty conducted the simulation activities and the researcher assisted with participant role assignments during the pre-briefing of each simulation activity. The lecturers gave participants "role cards" that described their participant role and included the QR code to the research survey link.

Debriefing (45 minutes)
The debriefing phase addressed Kolb's element of reflective observation and abstract conceptualisation. Debriefing occurred immediately following the distance simulation. Faculty guided debriefing discussions, provided feedback, and responded to questions. The debriefing phase allowed the learner to link expected outcomes to actual outcomes and to self-evaluate reasoning and actions to further develop clinical nursing judgment.

Instruments/measurement
The project used the Simulation Effectiveness Tool - Modified (SET-M) created to evaluate the effectiveness of clinical simulations. The SET-M tool was rated on a three-point Likert scale (strongly agree, somewhat agree, and do not agree) and consisted of 19 items divided into four subscales: Pre-briefing, Learning, Confidence, and Debriefing. Pre-briefing had two items that could improve confidence and support learning. Learning had six items focusing on empowering clinical decision-making skills, understanding medications, pathophysiology, and assessment skills. Confidence had six items related to prioritizing patient care, communicating with patients and colleagues, teaching, patient safety, and evidence-based practice. Lastly, Debriefing had five items that concentrated on learning, verbalizing feelings, improving clinical judgment, self-reflection, and constructive evaluation (Leighton et al., 2015). The SET-M tool follows the Best Practice, Quality, and Safety Education for Nurses standards, as established by the

International Nursing Association for Clinical Simulation and Learning and the American Association of Colleges of Nursing Baccalaureate Essentials (Leighton et al., 2015). According to a previous exploratory factor analysis, all four subscales of the SET-M tool had acceptable internal consistency. The Pre-briefing subscale had an alpha coefficient of 0.833, Learning had an alpha coefficient of 0.852, Confidence had an alpha coefficient of 0.913, and Debriefing had an alpha coefficient of 0.908 (Leighton et al., 2015).

The project included an open-ended survey to gather more information about participants' experiences with the distance simulation. The survey had five questions about the participants' experience, their reflection on their learning related to others' perspectives, and how they planned to use their learning in the future. Each participant had the opportunity to write their responses in the electronic survey.

Data collection procedure

Students completed a guided reflection and the Simulation Effectiveness Tool-Modified (SET-M) gathered by Qualtrics (https://www.qualtrics.com/) following the virtual debriefing**.** Simulation Effectiveness Tool-Modified SET-M is a tool used to evaluate the effectiveness of clinical simulated experiences. The questions included an open response requesting them to share any general comments related to the experience. Additional questions were focused, asking what they learnt in the debriefing about assessment, about others' perspectives, and what they will do with the information they learnt.

Data analysis

We collected data from the study questionnaire and analyzed it using SPSS version 28 and Microsoft Excel. We also used thematic analysis to study the open-ended survey questions. To manage emerging themes, we utilized the Taguette software (https://www.taguette.org/), following an inductive approach (Rampin et al., 2021). Interview transcripts were analyzed using classic content analysis. Two team members coded the data independently and then collaborated to consolidate themes.

Limitations

During the evaluation, some limitations were identified. The student selection process was inconsistent, and the sample included a few students, who were pursuing master's degrees while the majority were pursuing bachelor's degrees. Additionally, some students faced internet disruptions and limited access to computers, with some students having to share computers.

Results

Demographics

The study involved thirty two (32) nursing students aged 19-45 years (mean 29.1 years). Twenty-nine (29) of the participants identified as female, while the remaining identified as male. Out of the participants, eighteen (18) had previous healthcare experience, with a range of less than one year to 20 years. Most participants had previously participated in simulated learning, both in person and distance simulation formats. Twenty-seven (27)

participants were currently enrolled in a bachelor's degree programme, while five (5) were in a master's entry nursing programme. All the students anticipated completing their programme within one to two years. Participant demographics are summarised in Table 1:

Table 1: Characteristics of study sample

Characteristic	n	%
Gender		
Female	29	90.6
Male	3	9.4
Institution		
University of Botswana	8	25.0
University of California Irvine	7	23.1
University of Central Florida	11	35.9
University of Connecticut	6	22.3
Program currently enrolled in		
Bachelor Program	27	84.4
Masters	4	12.5
Currently licensed as a Registered Nurse		
Yes	27	84.4
No	5	15.6
Previously participated in Simulation		
Yes	21	65.6
No	10	31.3

SET-M results

Most US university students had previously engaged in a simulation learning experience in person or both virtually and in person. In contrast, two out of eight University of Botswana students had simulation learning experiences, one with virtual and one in-person. All the participating students rated the briefing, scenario, and debriefing as effective, evident by a rating of either 2 or 3 (strongly agreed or agreed) on the SET-M (Leighton et al., 2015) in most items, ranging from 34.4% to 93.8%.

The pre-briefing items received high ratings, with 71.9% strongly agreeing that it benefited their learning and increased their confidence. Only 6.3% disagreed. However, all University of Botswana participants strongly agreed that pre-briefing benefited their learning and increased their confidence.

Regarding scenario-based items, most strongly agreed with having confidence in the ability to prioritise care and interventions (n=28, 87.5%), whereas less strongly agreed that they developed a better understanding of medications, and some (n=9, 28.1%)

indicated that the item was not applicable in the given scenario**.** The six debriefing items had the majority of the highest strongly agreed responses, ranging from 78.1% to 93.8%. Debriefing as a constructive evaluation of the simulation received the highest strongly agreed responses (93.8), whereas confidence in using evidence-based practice to provide nursing care received the lowest. (78.1%) (see table 2).

Table 2
Simulation Effectiveness Tool Modified (SET-M), n = 32

Set-M item	Strongly Agree	Some What Agree	Do Not Agree	N/A
1. Pre-briefing increased my confidence	23 (71.9%)	9 (28.1%)	0	-
2. Pre-briefing was beneficial to my learning	23 (71.9%)	7 (21.9%)	2 (6.3%)	-
3. I am better prepared to respond to changes in my patient's condition	25 (78.1%)	5 (15.6%)	2 (6.3%)	-
4. I developed a better understanding of the pathophysiology	16 (50.0%)	12 (37.5%)	4 (12.5%)	-
5. I am more confident of my nursing assessment skills	27 (78.1%)	4 (12.5%)	1 (3.1%)	-
6. I felt empowered to make clinical decisions	27 (78.1%)	3 (9.4%)	2 (6.3%)	-
7. I developed a better understanding of medications	11(34.4%)	10 (31.3%)	2 (6.3%)	9 (28.1%)
8. I had the opportunity to practice my clinical decision-making skills	24 (75.0%)	6 (18.8%)	2 (6.3%)	-
9. I am more confident in my ability to prioritize care and interventions	28 (87.5%)	3 (9.4%)	1 (3.1%)	-
10. I am more confident in communicating with my patient	25 (78.1%)	6 (18.8%)	1 (3.1%)	-
11. I am more confident in my ability to teach patients about their illness and interventions	25 (78.1%)	6 (18.8%)	1 (3.1%)	-
12. I am more confident in my ability to report information to health care team	26 (81.3)	3 (9.4%)	3 (9.4%)	-
13. I am more confident in providing interventions that foster patient safety	26 (81.3)	4 (12.5%)	2 (6.3%)	-
14. I am more confident in using evidence-based practice to provide nursing care	25 (78.1%)	5 (15.6%)	2 (6.3%)	-
15. Debriefing contributed to my learning	28 (87.5%)	4 (12.5%)	0	-
16. Debriefing allowed me to verbalize my feelings before focusing on the scenario	24 (75.0%)	6 (18.8%)	2 (6.3%)	-
17. Debriefing was valuable in helping me improve my clinical judgment	28 (87.5%)	4 (12.5%)	0	-
18. Debriefing provided opportunities to self-reflect on my performance during simulation	28 (87.5%)	2 (6.3%)	2 (6.3%)	-
19. Debriefing was a constructive evaluation of the simulation	30 (93.8%)	2 (6.3%)	0	-

Qualitative findings

The four themes that emerged are: simulation-based learning improves the self-awareness, confidence, and clinical skills of healthcare students; learning from diverse perspectives in healthcare enhances understanding and adaptability; a strong desire for more opportunities to engage in similar simulations in the future; and overcoming technical challenges and embracing diversity in distance simulations.

Theme 1: simulation-based learning improves the self-awareness, confidence, and clinical skills of healthcare students

The students' feedback demonstrated the positive impact of the simulation, revealing its empowering and insightful nature. The simulation bolstered their confidence in clinical performance by providing the means to identify their mistakes, strengths, and weaknesses. It enhanced their awareness of common mistakes made during patient handover and assessment. This newfound knowledge can significantly improve their future practice and patient care. The students' comments reflected a sense of personal growth and development, highlighting the profound influence of the simulation on their clinical skills and professional competence.

Moreover, their testimonials resonate with established literature on the benefits of simulation-based learning in healthcare education. Research by Gaba (2004) emphasises that simulation fosters self-awareness and confidence among students by allowing them to identify areas for improvement in a safe and controlled environment. This aligns with the student's experiences, underlining the relevance and effectiveness of simulation as a tool for skill development and reflection in healthcare education. Some of the students commented that:

> *'It helped me to be more confident about my clinical performance because I was able to find out my weaknesses and strengths.' B6*
> *'It was informative and helped improve my confidence and communication skills.'B1*
> *'The simulation was helpful, sharing on how things are done in each country helped to improve my knowledge'B1*

Theme 2: embracing diversity in global distance simulations

The students found great value in collaborating with and learning from simulationists from diverse backgrounds. They were enlightened by witnessing the different approaches to patient care and data collection across various countries. This experience emphasised the importance of adapting to different client needs and healthcare settings. Despite the differences in practices, the shared goal of delivering high-quality patient care remained the same. Even though methods may vary globally, their collective commitment to promoting and ensuring good health united them. Embracing this perspective enriched their understanding and emphasised the value of adaptability and an open-minded approach in their practice. Some of the students commented that:

'Very very impactful. I learned a lot about different perspectives about my profession from places all around the world that I can use in my own practice to be a better provider.'CF11

'Clients and settings differ from one area to another; therefore, the nurse should always be aware of this and act accordingly. Should also be cognizant of the medicolegal aspects during care giving.'B5

'Though we do our things, but the goal is one, to provide quality care to patients. there are different ways we provide care in the world but what we have in common is the provision and encouragement of good health.'B3

'We are different from different continents and so we should try hard to take that into consideration when providing nursing care.'B1

Theme 3: strong desire for more opportunities to engage in similar simulations in the future.

The students were very enthusiastic about the distance simulation. It was clear that the simulation had a lasting impact on them. The University of Botswana students, being new to this experience, eagerly embraced the opportunity and expressed a strong desire for more such simulations in the future. The distance simulation was valuable, empowering, and a great learning experience. They were eager to engage in similar simulations with peers from diverse backgrounds, recognising the potential for personal and professional growth. They were enthusiastic and appreciative, endorsing more frequent and varied sessions in the future. Some students mentioned that:

'Willing to engage more in the future with my peers from different settings and environments.'B5

'It was my first exposure to the simulation, and I was impressed and really enjoyed. I'm looking forward for more if these simulations as they may help me be a better nurse to deliver better patient care.'B6

'I understand that this was a small simulation, but it would be nice to see more colleges and countries involved in future' CI2

'Please let's have more of them…… Like I said more sessions'B3

Theme 4: overcoming technical challenges

There were some technical difficulties experienced during the virtual distance simulation, and it was difficult to hear some of the participants. Despite the challenges, everyone persevered admirably. Some of the students commented that:

'Many individuals seemed to have technical difficulties during the distance simulation and certain people were very hard to hear. That's unfortunately how the internet is sometimes, but an improved platform would be better for communication.' CI2

I had a wonderful time and I'm impressed that everyone persevered through technical difficulties. In the future, a more complex case should be used to use more clinical judgement skills and see how those differ across the globe. CI7.

Discussion

The integration of distance simulation (GDS) in nursing education, as implemented by the University of Botswana and the three US nursing programmes, demonstrates a novel adaptation to an emerging advancement in teaching methodologies. This innovative approach aligns with Kolb's ELT that emphasises the importance of concrete experiences, reflective observation, abstract conceptualisation, and active experimentation in fostering comprehensive learning (Kolb, 1984). The use of distance simulations within the framework of ELT has proven to be an effective educational tool, providing nursing students with realistic and interactive environments to practice their clinical skills.

The GDS allows for a broader reach and accessibility, which is particularly beneficial for institutions in remote or under resourced areas where traditional high-fidelity simulations and clinical practice opportunities are limited (Sanseau et al., 2021; Vora et al., 2021). This approach addresses the issue of overcrowded training facilities and competition for clinical space (Cant et al., 2023), as observed in Botswana (Mamalelala et al., 2023; Nkomazana et al., 2015) by offering an alternative means of applying clinical skill. These constraints necessitate alternative educational strategies to ensure comprehensive training for nursing students.

The University of Botswana lacks certified healthcare simulation educators (CHSE) and high-fidelity manikins, which hinders the quality of clinical simulations. This challenge is not exclusive to Botswana and is also seen in other LMICs (Irfanullah et al., 2023; Msosa et al., 2022). For instance, research in India underscores the need for specialised training for educators to maximise the benefits of simulation-based learning (Irfanullah et al., 2023). In contrast, high-income countries (HICs) often benefit from advanced simulation technologies and well-trained educators. Several studies in high-income countries demonstrate that high-fidelity simulations, supported by certified educators, result in superior clinical outcomes and greater student satisfaction (Hayden et al., 2014; Khalil et al., 2023). This disparity underscores the necessity of focusing on LMIC educator training programmes and simulation infrastructure to close the gap and improve the standard of nursing education (Nagdee et al., 2022).

The results of the GDS project are promising. Students from the University of Botswana and their US counterparts reported positive experiences and improved learning outcomes. The collaboration between faculty members from diverse cultural backgrounds, each bringing unique perspectives, played a crucial role in designing an activity that effectively catered for the diverse learning needs of students. The partnership with US nursing programmes facilitated the sharing of resources and expertise and thus contributed to the project's success. Other studies have also advocated such collaborative approaches, highlighting their potential to enhance educational outcomes in resource-constrained settings (Irfanullah et al., 2023). The results are comparable to the study in India, where collaboration with local experts led to the advancement of local simulation instruction practices (Irfanullah et al., 2023).

Targeted efforts in integrating simulations with traditional clinical training approaches can lead to remarkable improvements in healthcare education and practice (Nagdee et al., 2022). Moreover, fostering shared learning and enhancing clinical reasoning among nursing students from diverse cultural backgrounds through such collaborative projects can significantly contribute to developing competent and confident healthcare professionals. The integration of distance simulation represents a transformative approach to healthcare education. As technology advances, it will likely play an increasingly important role in preparing healthcare professionals to meet the demands of modern medical practice. The promising results from this study suggest that with continued investment and collaboration, distance simulation can provide an effective solution to many of the challenges faced by traditional training methods, ultimately enhancing the quality of healthcare delivery globally.

Conclusion

The limited clinical space in Botswana, especially for specialty areas like critical care and emergency nursing, necessitates nursing curricula to explore alternative and innovative educational pedagogies and andragogy to support student progression. Distance simulation is one technological pedagogy that can be used as an alternative for clinical activity, clinical makeup, or to supplement didactic content. Leveraging distance simulation opens opportunities for collaboration with experts and educators globally. This can enrich the learning experience by providing diverse perspectives and specialised knowledge to students and faculty at the University of Botswana School of Nursing. Integrating distance simulation with traditional clinical training can optimise the use of resources by reducing competition for clinical placements and mitigating overcrowding in training facilities. However, the introduction of distance simulation may necessitate investments in technological infrastructure, which can have broader implications for advancing digital capabilities in educational settings. There is a need for ongoing research and evaluation to assess the effectiveness and impact of distance simulation on nursing education. This includes studying student outcomes, faculty experiences, and best practices for integrating distance simulation into the curriculum.

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