Nursing Education Institutions' Readiness to Fully Implement Simulation-Based Education in Lesotho

Pule Solomon Moabi
https://orcid.org/0000-0002-7097-8958
University of KwaZulu-Natal, South Africa
pulemoabi@gmail.com

Ntombifikile Gloria Mtshali
https://orcid.org/0000-0002-4096-8193
University of KwaZulu-Natal, South Africa
Mtshalin3@ukzn.ac.za

Abstract

The use of simulation learning in competency-based nursing education programmes is gaining momentum in an effort to ensure competency among graduates. Nursing education institutions are using various simulation methods, such as low, medium, and high fidelity. Simulation laboratories need to be manned by qualified personnel and the management of the institutions need to create an enabling environment for the implementation of simulation-based education. In Lesotho, nursing education institutions use improvised equipment and supplies, malfunctioning mannequins are not fixed timeously, and simulation laboratories are manned by educators who also conduct demonstrations and do student follow-ups in clinical areas. The aim of the study was to assess the readiness of the four private nursing education institutions in Lesotho to implement simulation-based education and to describe facilitators of and barriers to implementing simulation-based education. A quantitative, descriptive design was used, employing the Simulation Culture Organisational Readiness Survey questionnaire, with 63 nurse educators from the private nursing education institutions. Data were analysed using the Statistical Package for the Social Sciences version 27. Pearson's Chi-square was used to assess the relationship between the variables of interest and frequency distribution was used to assess the distribution of responses. The results show that the institutions are moderately ready to implement simulation-based education (readiness score 134.2 to 136.8). Factors related to administration, management, and human resources have a major influence on institutions' readiness. It is therefore concluded that management should motivate nurse educators to implement simulation-based education and also put policies in place in support of this.

UNISA

Keywords: simulation-based education; nursing education institution; readiness; nurse educator; Simulation Culture Organisational Readiness Survey

Introduction and Background

Unver et al. (2018, 4) define simulation as a strategy that is designed to represent procedures, decision-making skills, and critical thinking, and to help nursing students to learn through simulation of real patient cases. Simulation has been in use from the 19th century (Krishnan, Keloth, and Ubedulla 2017, 84). Learning in a simulated environment offers a number of advantages to nursing students, patients, and the clinical areas. Liaw et al. (2014, 1050) explain that clinical simulation assists nursing students to learn and apply clinical decision-making skills and critical reasoning. Sebold et al. (2017, 4186) add that simulation promotes team work. A safe environment for student practice is also created, as students are able to practise in a simulated environment (Larue, Pepin, and Allard 2015, 134).

Foisy-Doll and Leighton (2017, 3) explain that when nursing education institutions (NEIs) successfully implement and integrate simulation in nursing education, it shows that there is organisational readiness for change. According to Taplay et al. (2014, 4), uptake and readiness to implement simulation-based education (SBE) in most institutions are made possible by the mission, vision, and philosophy statements of the institutions. If the institutional guiding philosophies support change, the institutions are likely to be ready to implement SBE. In England and South Africa, some of the facilitators of SBE include the integration of SBE into the curriculum and allocating enough time for simulation (Dobrowolska et al. 2015; SANC 2005). Martins et al. (2018, 12) explain that for African countries to fully implement SBE, NEIs should adopt or adapt developed SBE models. In most African countries, such as Lesotho, barriers to the full implementation of SBE include the cost of mannequins and a lack of trained simulation personnel (Krishnan, Keloth, and Ubedulla 2017, 86).

NEIs in Lesotho use improvised equipment and supplies during simulation. Malfunctioning mannequins are not fixed timeously, and simulation laboratories are manned by educators who also conduct demonstrations and do student follow-ups in the clinical areas. Various models have been developed to guide simulated learning, but at some NEIs simulation is still not guided by the developed models. There is no formal guidance on how many clinical hours a nursing student needs to spend in the simulation laboratory, and students are only assessed on how to carry out "procedures", while critical thinking, decision making, problem solving, and team work are ignored. According to Martins et al. (2018, 12), if simulated learning is conducted in a disorganised manner, it is difficult to determine the effectiveness of that simulation. In addition, improper simulation design and inappropriate organisation of students in the simulation lead to unsuccessful learning.

Objectives of the study

The objectives of this study were:
1. to assess the readiness of the four NEIs to implement SBE
2. to describe the facilitators of and barriers to the implementation of SBE.

Research Methods

Research Approach and Design

This study adopted a quantitative, descriptive research design to describe the readiness of nurse educators to implement SBE. This design was opted for because not much is known about nurse educators' readiness to implement SBE in Lesotho. This design allowed the researchers to collect participants' responses in a natural environment and it also allowed the researchers to use a large sample. Furthermore, this design allows for rapid and inexpensive data collection (Streubert and Carpenter 2011, 82).

Research Setting

The study was conducted in the four NEIs which fall under the umbrella of the Christian Health Association of Lesotho (CHAL). These institutions are church-owned, use a similar curriculum (which is competency-based), write similar examinations, and run similar programmes. The public NEIs are still using a content-based curriculum and they write different examinations. In addition, some of the public institutions offer a degree programme in nursing, while the highest qualification offered at CHAL institutions is a diploma in nursing.

Population and Sample

The study population consisted of nurse educators (faculty) from the four private NEIs in Lesotho. NEI 1 had 20 nurse educators, NEI 2 had 16, NEI 3 had 17, and NEI 4 had 16. The researchers used the total population sampling method, as the population of educators was small and manageable. Total population sampling is a type of purposive sampling technique where the entire population is selected to participate in a study because they have a particular set of characteristics that the researchers require (Creswell and Creswell 2018, 289).

Ethical Considerations

As this study involved human subjects, ethical approval was obtained from both the University of KwaZulu-Natal (ethical clearance number HSSREC/00001411/2020) and the Ministry of Health of Lesotho (ethical clearance number 88-2020). Gate keepers also provided permission to conduct the study. The participants were given complete information pertaining to the study and they were made aware that participation was voluntary and that they could withdraw at any point (Streubert and Carpenter 2011, 64).

Data Collection

Quantitative data were collected by means of a questionnaire. The researchers adopted a survey tool, developed by Foisy-Doll and Leighton (2017), which is used to assess simulation culture organisational readiness (SCORS). Due to COVID-19 restrictions, the questionnaire was administered online. The questionnaire consisted of the following sections: defined need and support for change; readiness for culture change; and time, personnel, and resources. The questionnaire contained 25 questions and the responses were rated on a five-point Likert scale. This scale had the following options, of which participants chose one per question: none at all (1), a little (2), somewhat (3), moderately (4), and very much (5).

Data Analysis

Data were coded for analysis through the Statistical Package for the Social Sciences (SPSS) version 27. Educators' demographic details; educators' defined need to change; readiness for culture change; and time, personnel, and resources were analysed and presented using descriptive statistics in the form of frequencies, percentages, means, and standard deviation. The Pearson Chi-square test was conducted to assess the relationship between variables, and a p-value of less than 0.05 was considered statistically significant to show a relationship between variables of interest. Foisy-Doll and Leighton's (2017) method of SCORS analysis guided the analysis of the responses.

Validity and Reliability

Validity and reliability ensured the truth value of the study. Content validity has been ensured by presenting the questionnaire to experts in nursing education and SBE for critique. The researchers adopted items used in questionnaires from the SCORS tool, as they have been tested and found valid. To assess the reliability of the items of the Likert scale, the reliability coefficient yielded 0.84, which is an acceptable value, as the range is from 0.8 to 0.9 (Andrew and Halcomb 2009, 125).

Results

In total, 91% (63 out of 69) of nurse educators participated. All items were fully completed, as participants could not submit the questionnaire online without completing all the items. The results are presented in the following order: (1) demographic characteristics of participants; (2) readiness of NEIs in Lesotho; and (3) facilitators of and barriers to the readiness of educators to use simulation.

Demographic Characteristics of the Participants

The majority of the participants (76.2%; n = 48) were females, while 23.8% (n = 15) were males. The majority (76.2%; n = 48) were older than 33 years, 12.7% (n = 8) were 30 years or below, and 7.9% (n = 5) were 32 years of age. In addition, 3.2% (n = 2) were 31 years, while there were no educators aged 33 years. In terms of number of years

as an educator, the majority 44.4% (n = 28) had five or less years of experience, 22.2% (n = 14) had six years of experience, and 20.6% (n = 13) had nine or more years. A small percentage (6.4%; n = 4) of educators had seven years of experience and another 6.4% (n = 4) of educators had eight years of experience. Table 1 presents a summary of the demographic details of the participants.

Table 1: Demographic detail of educators (n = 63)

Item	Variable	Frequency	Percentage (%)
Gender	Female	48	76.2
	Male	15	23.8
	Other	0	0
Age	≤ 30 years	8	12.7
	31 years	2	3.2
	32 years	5	7.9
	33 years	0	0
	> 33 years	48	76.2
Number of years as an educator	≤ 5 years	28	44.4
	6 years	14	22.2
	7 years	4	6.4
	8 years	4	6.4
	≥ 9 years	13	20.6
Institution	NEI 1	18	28.6
	NEI 2	15	23.8
	NEI 3	15	23.8
	NEI 4	15	23.8

The Readiness of the Four Nursing Education Institutions

NEI 1 (135.6), NEI 2 (136.4), NEI 3 (136.8), and NEI 4 (134.2) are moderately ready (109–144) for SBE. This is in reference to the scoring system developed by Foisy-Doll and Leighton (2017, 17), according to which a score of 0–36 is considered "not ready", a score of 37–72 indicates "a little" ready, and "somewhat" ready is considered to be 73–108. A "moderately" ready score is considered to be 109–144, while "very much" is 145–180. Figure 1 shows institutional readiness to implement SBE among the NEIs studied.
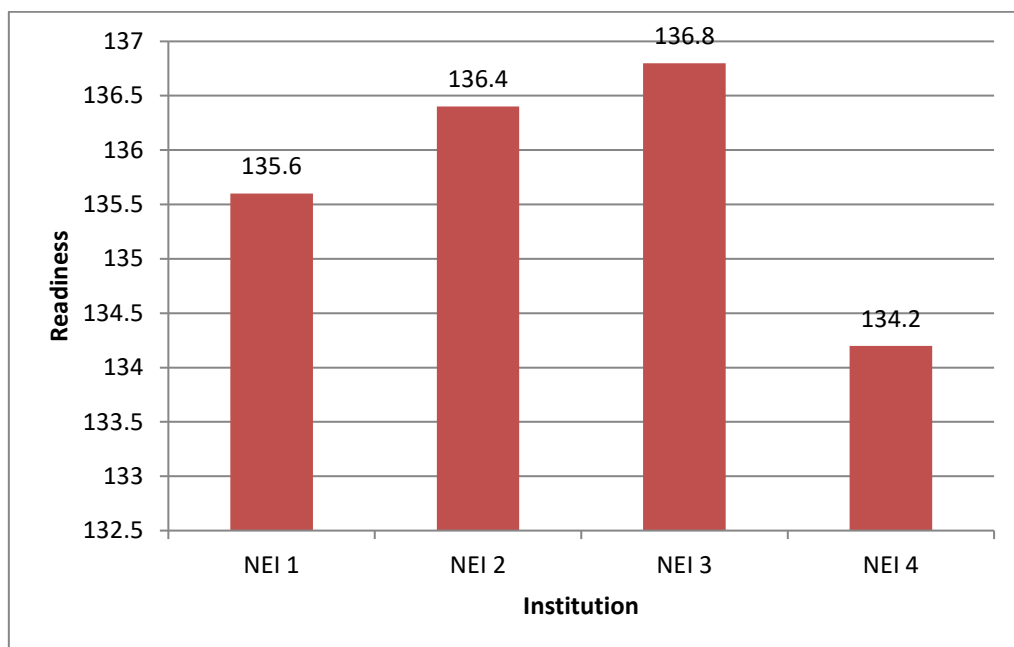
Figure 1: Readiness of the nursing education institutions to implement simulation-based education

Facilitators of and Barriers to Nurse Educators' Readiness to Implement Simulation-Based Education within the Four Nursing Education Institutions

This part is presented according to the four sections of the SCORS instrument (defined need and support for change; readiness for culture change; time, personnel, and resources readiness; and sustainability practices to embed culture). As the institutions started SBE in 2012, the acceptable mean score for each item in this study will be 4; anything below 4 signals the need for an intervention in that specific area (Foisy-Doll and Leighton 2017, 12).

Defined Need and Support for Change

The institutions' clear definition of the need to consider SBE integration (mean 4.44, SD 0.88), the use of SBE as a teaching modality in the institutions (mean 4.62, SD 0.81), and the educators' commitment to SBE integration into the curriculum (mean 4.33, SD 0.92) show that there was a defined need to change. According to the responses of the nurse educators, lack of communication from administrators on a clear strategic vision for SBE (mean 3.51, SD 1.24), a lack of written commitment to SBE by managers (mean 3.17, SD 1.28), and a lack of funding to support commitment to SBE (mean 3.17, SD 1.09) are factors that show a lack of support for change. The Pearson Chi-square shows that there is a relationship between the support for change and written commitment to SBE by managers (p-value = 0.01). When managers provide a written commitment to

SBE, nurse educators become more ready to implement SBE. Table 2 shows the items for the defined need and support for change.

Table 2: Defined need and support for change

Item	Mean	Standard deviation
To what extent are innovation, experiential learning, and quality student experiences clearly described as central to the mission and philosophy of your institution?	4.08	1.01
To what extent has your institution clearly defined the need to consider SBE integration?	4.44	0.88
To what extent have the administrators within your institution communicated a clear strategic vision for SBE?	3.51	1.24
To what extent have the managers within your organisation provided a written commitment to SBE?	3.17	1.28
To what extent have the managers within your institution provided funding to support the commitment to SBE?	3.17	1.09
To what extent does your institution promote the need for SBE based on current evidence, standards, and guidelines?	4.11	0.92
To what extent is SBE currently being used as a teaching modality in your institution?	4.62	0.81
To what extent have the educators you work with articulated a need for SBE integration into the curriculum?	4.05	1.17
To what extent have the educators in your institution verbalised a commitment to SBE integration into the curriculum?	4.33	0.92

Factors Limiting and Enhancing Nurse Educators' Readiness for Culture Change

The majority of factors were limiting the nurse educators' readiness for culture change. The major limiting factors included a lack of trained simulationists to mentor others (mean 3.05, SD 1.31), a lack of graduate-level researchers (mean 3.11, SD 1.19), the unavailability of librarians to help search for simulation resources (mean 3.19, SD 1.22), and the inaccessibility of librarians to search for SBE-related resources (mean 2.86, SD 1.08). On the other hand, enabling factors enhancing readiness for cultural change included the availability of individuals with strong positive attitudes towards SBE (mean 4.14, SD 0.92), the support of management in terms of culture change (mean 4.03, SD 0.98), and the belief that it is the right time to implement culture change to support SBE (mean 4.89, SD 0.36). There was a statistically significant relationship between readiness for culture change in the institutions and the presence of trained simulationists (p-value = 0.01). The institutions that have trained simulationists seemed to be more ready. Table 3 shows the items for readiness for culture change.

Table 3: Readiness for culture change

Item	Mean	Standard deviation
In your institution, to what extent is there a critical mass of professionals who already possess strong SBE knowledge?	3.83	1.01
In your institution, to what extent is there a critical mass of professionals who already possess strong SBE skills?	3.83	1.06
In your institution, to what extent is there a critical mass of professionals who already possess strong SBE-positive attitudes?	4.14	0.92
To what extent does management support culture change, including the efforts required to implement and sustain SBE programme integration?	4.03	0.98
To what extent are there credentialed or trained simulationists who mentor/coach others, including other simulationists?	3.05	1.31
To what extent does your institution have individuals who model SBE best practice?	3.54	1.15
To what extent are staff/faculty proficient in the use of technology? (I.e. computer systems, AV and IT systems)	3.90	0.73
To what extent are there graduate-level prepared researchers available to assist in research to develop new knowledge, as appropriate to your institution's mission?	3.11	1.19
To what extent are librarians available within your organisation to help search for evidence-based practice and related simulation resources?	3.19	1.22
To what extent are your librarians accessible to search for evidence-based practice and related simulation resources?	2.86	1.08
To what extent do you believe that now is the right time to implement culture change to support SBE?	4.89	0.36

Time, Personnel, and Resources

Although the nurse educators agreed that there are enough fiscal resources to support simulation personnel (mean 4.03, SD 0.1) and access to quality technology (mean 4.10, SD 0.93), most of the items in this section indicated that time, personnel, and resources are major constraints to nurse educators' readiness to implement SBE. The constraints included a lack of champions among managers (mean 3.57, SD 1.27), among clinicians (mean 3.17, SD 1.43), among dedicated technology specialists (mean 3.03, SD 1.26), and among administrative assistants and support staff (mean 3.14, SD 1.28). There was a statistically significant relationship between the availability of fiscal resources to support human resources and readiness, as the p-value was 0.00. This implies that when fiscal resources are available to support SBE, the level of readiness increases. Table 4 shows the items for the level of readiness in terms of time, personnel, and resources.

Table 4: Readiness in terms of time, personnel, and resources

Item	Mean	Standard deviation
To what extent are fiscal resources available to support SBE in terms of human resources (simulation personnel)?	4.03	0.10
To what extent are fiscal resources available to support SBE in terms of education?	3.89	0.85
To what extent are fiscal resources available to support SBE in terms of the release time to lead the integration of SBE?	3.95	0.83
To what extent are fiscal resources available to support SBE in terms of the development of physical learning spaces?	3.67	1.06
To what extent are fiscal resources available to support SBE in terms of equipment?	3.95	0.79
To what extent do employees in your institution have access to quality technology, including computers, audiovisual equipment, and other institutional technologies?	4.10	0.93
To what extent is support available to learn and manage technologies that support education?	3.98	0.96
To what extent are there existing champions (people who will go the extra mile to advance simulation) in the current environment among managers?	3.57	1.27
To what extent are there existing champions (people who will go the extra mile to advance simulation) in the current environment among clinicians?	3.17	1.43
To what extent are there existing champions (people who will go the extra mile to advance simulation) in the current environment among educators?	3.97	0.92
To what extent are there existing champions (people who will go the extra mile to advance simulation) in the current environment among technology specialists?	3.03	1.26
To what extent are there existing champions (people who will go the extra mile to advance simulation) in the current environment among administrative assistants and support staff?	3.14	1.28

Sustainability Practices to Embed Culture

In terms of sustainability practices, decisions regarding SBE are influenced by management (mean 4.10, SD 0.89) and nurse educators (mean 4.02, SD 1.16). One limiting factor regarding sustainability practices is a failure to share measurement outcomes as part of the institutions' culture (mean 3.49, SD 1.13). Clinicians have a limited influence on decision making (mean 3.10, SD 1.33). Table 5 shows the items for sustainability practices to embed culture.

Table 5: Sustainability practices to embed culture

Item	Mean	Standard deviation
To what extent is the measurement and sharing of outcomes part of the culture of the institution in which you work?	3.49	1.13
To what extent are the decisions regarding SBE influenced by clinicians?	3.10	1.33
To what extent are the decisions regarding SBE influenced by educators?	4.02	1.16
To what extent are the decisions regarding SBE influenced by management?	4.10	0.89

Summary

Nursing education in Lesotho is currently led by the majority of nurse educators (44.4%; n = 28) who have less than five years of experience as educators. The defined need and support for change require little attention as compared to time, personnel, and resources. This is because 83% of the items in time, personnel, and resources scored below the acceptable mean.

Discussion of Findings

In this section, the findings are discussed by focusing on:
- the readiness of the NEIs to implement SBE
- the facilitators of and barriers to nurse educators' readiness to implement SBE.

Readiness of the Nursing Education Institutions to Implement SBE

The SCORS tool indicated that the NEIs in Lesotho are moderately ready to implement SBE, with a score ranging from 134.2 to 136.8. NEIs located in the highlands scored higher than the ones located in the lowlands of Lesotho. There was a statistically significant relationship between readiness and location of the institution, as the p-value was 0.00. In contrast, a study conducted by Awogbemila (2018, 34) shows that the readiness of the School of Therapeutic Sciences at the University of the Witwatersrand was 107.52; the school was thus somewhat ready, as compared with the NEIs in Lesotho, which were moderately ready.

Facilitators of Nurse Educators' Readiness to Implement SBE

To determine the facilitators, Foisy-Doll and Leighton (2017, 11) explain that there must be an acceptable mean for each item. The acceptable mean for this study is 4, and anything below 4 signals the need for an intervention in that specific area. This section discusses facilitators in terms of defined need and support for change; readiness for culture change; time, personnel, and resources; and sustainability practices to embed culture.

Defined Need and Support for Change

Nursing educators' clearly defined need to consider SBE integration into the curriculum and educators' verbalised commitment to SBE integration into the curriculum show a defined need to implement SBE, as the item means are above 4. In addition, educators articulating the need for SBE integration into the curriculum, the institutional mission including innovation, and quality student experience show a defined need to change, as shown in Table 2 in the results section. SBE can be integrated into the curriculum in various ways. Bryant et al. (2019, 37) explain that when nursing schools replace clinical hours with SBE, the institutions need to develop integrated and sustainable simulation-based curricula. As simulation learning is part of clinical practice, simulation must be allocated time within the clinical hours. Defined need and support for change can be enhanced by integrating simulation into the curriculum. According to Dobrowolska et al. (2015, 8), in England, the amount of clinical hours for the nursing programme is 2 300 and students must spend a maximum of 300 hours in simulation.

The use of SBE as a teaching modality in the institutions also shows a defined need to change. SBE can replace clinical placement or can be used as a teaching methodology. Nursing training institutions have a shortage of clinical sites, because they compete for such sites (Radford 2018). If nursing students are not sufficiently exposed to the clinical areas, they will lack confidence and competence when caring for clients. To remedy the shortage of clinical sites, simulation can be incorporated into nursing curricula in order to provide students with opportunities to provide care to simulated patients in a controlled environment (Radford 2018, 11).

Readiness for Culture Change

The availability of individuals with strong positive attitudes towards SBE, management support for culture change, and educators' belief that it is the right time to implement culture change to support SBE, as shown in Table 3, show readiness for cultural change, as the item means are above 4. If nurse educators have positive attitudes towards SBE, they are more likely to utilise it as one of their teaching methodologies, as they understand that simulation promotes deep learning and clinical decision making in students (Landeen et al. 2015, 488). Educators with strong positive attitudes towards SBE are aware that students need to be supported during simulation-based learning. This makes students more comfortable and promotes their learning (Landeen et al. 2015). Readiness for culture change, according to Landeen et al. (2015, 489), can be ensured by deploying faculty members with positive attitudes towards SBE.

Time, Personnel, and Resources

Educators agreed that there are sufficient resources to support simulation personnel and that they have access to quality technology, as indicated in Table 4, which shows that the item means are above 4. Therefore, if simulation personnel are supported, institutions can be ready for SBE. With the support of developmental partners, each institution was provided with equipped skills laboratories, human resources to man the

laboratories, and information technology equipment such as computers, projectors, and audio speakers (NEPI 2012). According to Krishnan, Keloth, and Ubedulla (2017, 86), the resources that are needed to ensure the smooth running of SBE include medical supplies and mannequins.

Sustainability Practices to Embed Culture

The influence of nurse educators and of management on decisions regarding SBE show that there are sustainability practices to embed culture, as the item means are above 4 (see Table 5). This shows that simulation activities can be sustained even in the absence of developmental partners. Sustainability practices to embed culture can be enhanced by providing continuous administrative and management support (Krishnan, Keloth, and Ubedulla 2017, 86; Larue, Pepin, and Allard 2015, 134).

Barriers to Nurse Educators' Readiness to Implement SBE

As discussed earlier, the acceptable mean is 4. This section discusses the barriers in terms of defined need and support for change; readiness for culture change; time, personnel, and resources; and sustainability practices to embed culture.

Defined Need and Support for Change

Lack of communication from administrators on a clear strategic vision for SBE, lack of written commitment to SBE by managers, lack of funding to support commitment to SBE, as shown in Table 2, indicate that there is a lack of support for change, as the mean scores for all of these items are below 4. For simulation to be successful, the following are key components, according to Bryant et al. (2019, 37): committed leadership, dedicated and appropriate facilities, appropriate educational resources, and availability of simulation policies. If management is not committed to SBE, it will never be implemented effectively. The WHO (2011) explains that improving the quality of nursing education may lead to the strengthening of health systems, and SBE is an integral part of improving the quality of nursing education.

NEIs in Lesotho are resource-constrained institutions, and cost can be among the factors that lead to a lack of funding to support the commitment to SBE by managers. Cost is a disadvantage of SBE (Krishnan, Keloth, and Ubedulla 2017, 86; Larue, Pepin, and Allard 2015, 134). Mannequins—especially high-fidelity ones—are very expensive to buy and maintain. In addition, real medical equipment is used in simulation laboratories, and some nursing schools cannot afford to purchase this type of equipment. This implies that there is a need to include SBE in the institutions' strategic plans and operational plans. As indicated by the p-value of 0.01, when managers provide a written commitment to SBE, nurse educators become ready to implement SBE and also feel the need to integrate SBE into the curriculum.

In order to improve health outcomes in Lesotho, the Nursing and Midwifery Strategic Plan 2010–2015 directed NEIs to adopt a competency-based curriculum (Ministry of

Health 2012). NEIs in Lesotho were awarded a grant by the Global Nurse Capacity Building Program, which supported the development of a competency-based curriculum in nursing and midwifery education (Nyoni and Botma 2018, 73). The grant also supported the institutions in establishing simulation laboratories. However, eight years since SBE has been implemented in Lesotho, there is still limited support from management and administration. Even the regulatory body of nursing education, the Lesotho Nursing Council, is silent about SBE, and provides no guidance to NEIs on how to conduct SBE.

Readiness for Culture Change

The lack of trained simulationists to mentor others, the lack of graduate-level researchers, the unavailability of librarians to help to search for simulation resources, and the inaccessibility of librarians to search for SBE-related resources, as shown in Table 3, all hamper institutions' readiness for culture change, as the mean scores of these items are below 4. Krishnan, Keloth, and Ubedulla (2017, 86) explain that simulation requires a dedicated faculty and that the ideal ratio of instructors to students is 1:3. However, it is difficult to achieve this ratio because of the intakes of the NEIs and limited human resources.

The NEIs lack professionals who possess strong SBE knowledge and skills, as shown in Table 3. This acts as a barriers to readiness for culture change, as the mean scores are below 4. In addition, the lack of individuals who can model SBE best practices and the lack of proficiency among staff in the use of technology also act as barriers to institutions' readiness for culture change. Simulation laboratories are manned by educators who also conduct demonstrations and do student follow-ups in the clinical areas. This leads to work overload. According to Bryant et al. (2019, 37), SBE requires qualified simulation lab personnel. This implies that if simulations are not properly designed, it can have a negative impact on student learning. For instance, if the simulator does not have the physical manifestations that a learner is supposed to assess for, the learner may neglect to assess for those manifestations (Krishnan, Keloth, and Ubedulla 2017, 85).

Time, Personnel, and Resources

The lack of fiscal resources to support SBE in education, the release time to lead integration, the development of physical learning space, and equipment, as shown Table 4, all show that resources are a major challenge, as the mean scores of the items are below 4. Lesotho is classified as a lower-middle-income country by the World Bank, and the use of simulation presents financial challenges for NEIs in Lesotho. There is thus a need for the institutions to institute income-generating projects to supplement the government funds that they receive.

The lack of dedicated technology specialists and the lack of support for educators to learn and manage technologies show that personnel and resources are challenges that

hinder institutions' readiness to implement SBE, as shown in Table 4. The mean scores of these items are below 4. The lack of dedicated technology specialists has a negative impact in terms of controlling the high-fidelity simulators. Programming difficulties is one of the disadvantages of simulation, according to Krishnan, Keloth, and Ubedulla (2017, 86). The high-fidelity mannequins are usually controlled by a computer in order to replicate natural physiological responses. Manipulating the computer might be a challenge for some facilitators, which leads to poor simulation. Van Vuuren, Seekoe, and Goon (2018, 16) explain that these programming difficulties will lead to the underutilisation of simulation, as some facilitators may become frustrated by the technology. There was a statistically significant relationship between readiness in the institutions and the presence of trained simulationists (p-value = 0.01). The institutions seemed more ready if they had trained simulationists.

The lack of champions among managers, clinicians, educators, administrative assistants and support staff, as shown in Table 4, indicates that some personnel in the institutions are not ready for SBE. The mean scores for these items range between 3.03 and 3.97, and are below the acceptable level of 4. Champions are people who will go the extra mile to advance simulation, according to Foisy-Doll and Leighton (2017, 9). The institutions' management teams need to ensure buy-in from the above stakeholders so that they can fully support SBE.

Sustainability Practices to Embed Culture

As shown in Table 5, SBE decisions within the institutions are not influenced by clinicians and the measurement and sharing of outcomes are not part of the culture of the institutions. Foisy-Doll and Leighton (2017, 10) are of the view that although institutions are investing in simulation, they are failing to engage in the sustainable educational practices required to maintain healthy simulation programmes. Sustainable practices could include full stakeholder engagement to maximise the use of simulation; in this regard clinicians are among the stakeholders who need to be engaged. In addition, institutions need to establish clear reporting structures for SBE and all individuals involved should make the sharing of outcomes part of their daily practice.

Limitations

The data were collected during the COVID-19 lockdown. Due to the consequent restrictions on movement, the research instrument (the questionnaire) had to be administered online. This meant that participants were not able to ask for clarification from the researchers if there were any questions they did not understand.

Conclusion

The study highlighted the level of readiness of four NEIs in Lesotho and also described facilitators of and barriers to the implementation of SBE. The study findings reveal that

the integration of SBE as a teaching methodology and the availability of individuals with strong positive attitudes towards SBE act as facilitators of readiness to implement SBE, while a lack of managerial/administrative support and a lack of funding are major barriers to the full implementation of SBE.

This article adds to the body of knowledge in the nursing education field by affirming that administrative and managerial support is crucial in ensuring that SBE is properly and fully implemented. The researchers invite scholars to assess the level of readiness of the public NEIs in order to shed more light on the overall readiness of institutions in the country.

Acknowledgements

References

Andrew, S., and E. J. Halcomb. 2009. *Mixed Methods Research for Nursing and the Health Sciences*. New York: Blackwell.

Awogbemila, T. A. 2018. "Assessing Staff Readiness for Simulation in a Health Sciences Institution." Master's research report, University of the Witwatersrand. Accessed October 13, 2020. https://core.ac.uk/download/pdf/188772041.pdf.

Bryant, K., M. L. Aebersold, P. R. Jeffries, and S. Kardong-Edgren. 2019. "Innovations in Simulation: Nursing Leaders' Exchange of Best Practices." *Clinical Simulation in Nursing* 41: 33–40. https://doi.org/10.1016/j.ecns.2019.09.002.

Creswell, J. W., and J. D. Creswell. 2018. *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*. 5th ed. Los Angeles: SAGE.

Dobrowolska, B., C. Jackson, I. M. McGonagall, and R. Kane. 2015. "Clinical Practice Models in Nursing Education: Implications for Students' Mobility." *International Nursing Review* 62 (1). Accessed August 21, 2019. https://www.researchgate.net/publication/270509384.

Foisy-Doll, C., and K. Leighton. 2017. "Simulation Culture Organisational Readiness Survey. An Adaptation with Permission of the Organisational and Readiness System Wide Integration of Evidence Based Practice Survey." Accessed January 20, 2020. https://sites.google.com/view/evaluatinghealthcaresimulation/obtain-instrument?authuser=0.

Krishnan, D. G., A. V. Keloth, and S. Ubedulla. 2017. "Pros and Cons of Simulation in Medical Education: A Review." *International Journal of Medical and Health Research* 3 (6): 84–87.

Landeen, J., J. Pierazzo, N. Akhtar-Danesh, P. Baxter, S. van Eijk, and C. Evers. 2015. "Exploring Student and Faculty Perceptions of Clinical Simulation: A Q-Sort Study." *Journal of Nursing Education* 54 (9): 485–95. https://doi.org/10.3928/01484834-20150814-02.

Larue, C., J. Pepin, and E. Allard. 2015. "Simulation in Preparation or Substitution for Clinical Placement: A Systematic Review of the Literature." *Journal of Nursing Education and Practice* 5 (9): 132–40. https://doi.org/10.5430/jnep.v5n9p132.

Liaw, S. Y., S. P. Palham, S. W. Chan, L. F. Wong, and F. P. Lim. 2014. "Using Simulation Learning through Academic-Practice Partnership to Promote Transition to Clinical Practice: A Qualitative Evaluation." *Journal of Advanced Nursing* 71 (5): 1044–54. https://doi.org/10.1111/jan.12585.

Martins, J. C. A., R. C. N. Baptista, V. R. D. Coutinho, M. I. D. Fernandes, and A. M. Fernandes. 2018. *Simulation in Nursing and Midwifery Education*. Copenhagen: WHO.

Ministry of Health (Lesotho). 2012. *Nursing and Midwifery Strategic Plan 2010–2015*. Maseru: Government Printers.

NEPI (Nursing Education Partnership Initiative). 2012. *Nursing Education Partnership Initiative Assessment Report*. Maseru: Government Printers.

Nyoni, C. N., and Y. Botma. 2018. "Implementing a Competency-Based Midwifery Programme in Lesotho: A Gap Analysis." *Nurse Education in Practice* 34: 72–78. https://doi.org/10.1016/j.nepr.2018.11.005.

Radford, M. E. 2018. "Overcoming a Barrier to Rural Nursing Education through Simulation." *I-Manager's Journal on Nursing* 8 (1): 11–14. https://doi.org/10.26634/JNUR.8.1.14235.

SANC (South African Nursing Council). 2005. *Bachelor's Degree in Nursing and Midwifery Qualification Framework*. Pretoria: Government Printers.

Sebold, L. F., J. E. W. Boell, J. B. R. Girondi, and J. L. G. dos Santos. 2017. "Clinical Simulation: Development of Relational Competence and Practical Skills in Nursing Fundamentals." *Journal of Nursing* 11 (10): 4184–90.

Streubert, H. J., and D. R. Carpenter. 2011. *Qualitative Research in Nursing: Advancing the Humanistic Imperative*. 5th ed. Philadelphia: Lippincott.

Taplay, K., S. M. Jack, P. Baxter, K. Eva, and L. Martin. 2014. "Organizational Culture Shapes the Adoption and Incorporation of Simulation into Nursing Curricula: A Grounded Theory Study." *Nursing Research and Practice* 2014: 1–12. https://doi.org/10.1155/2014/197591.

Unver, V., T. Basak, S. Tastan, K. Kok, G. Guvenc, A. Demitras, H. Ayhan, G. Kose, E. Iyigun, and N. Tosune. 2018. "Analysis of the Effects of High-Fidelity Simulation on Nursing Student's Perceptions of Their Preparedness for Disasters." *International Emergency Nursing* 38: 3–9. https://doi.org/10.1016/j.ienj.2018.03.002.

Van Vuuren, V. S., E. Seekoe, and D. T. Goon. 2018. "The Perceptions of Nurse Educators Regarding the Use of High Fidelity Simulation in Nursing Education." *Africa Journal of Nursing and Midwifery* 20 (1). https://doi.org/10.25159/2520-5293/1685.

WHO (World Health Organization). 2011. *Strengthening Nursing and Midwifery*. Geneva: WHO.