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ORIGINAL ARTICLE

Nursing faculty perception on simulation-based education: a qualitative exploratory study at public and private nursing schools

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ABSTRACT

Objective: To explore the perceptions of nursing faculty regarding simulation-based education (SBE), and to identify its facilitators and barriers in undergraduate nursing education.

Methods: An exploratory qualitative study was conducted in four nursing institutions (three private, one public) in Pakistan. Faculty members meeting inclusion criteria were recruited through purposive sampling. Data were collected through face-to-face, focus group discussions using a semi-structured, pilot-tested interview guide developed from literature. Discussions were audio-recorded, transcribed verbatim, and analyzed manually using content analysis as described by Creswell and Creswell (2018). Trustworthiness was ensured through member checking, peer review, and detailed contextual descriptions. Ethical approval was obtained from Aga Khan University Ethical Review Committee (Ref: 2023-7968-23860).

Results: Thirty-three participants contributed to the study. Four major themes emerged: (1) nursing faculty viewpoints on SBE, (2) facilitators of SBE, (3) barriers to SBE, and (4) future directions of simulation. Faculty perceived SBE as an effective teaching-learning strategy that enhances clinical skills, critical thinking, and patient safety. Facilitators included student engagement and proactive faculty initiatives. Major barriers were limited financial and material resources, lack of regulatory support, and insufficient faculty training. The fourth theme highlighted the future of simulation, emphasizing faculty development, resource availability, and strengthened institutional and regulatory support for effective SBE implementation.

Conclusion: SBE is recognized as a valuable pedagogical approach in nursing education; however, its implementation is constrained by resource limitations, lack of expertise, and inadequate regulatory frameworks. Strengthening faculty capacity, infrastructure, and policy support is essential to optimize the integration of SBE in nursing curricula.

Keywords: Simulation (MeSH); Simulation-Based Education (Non-MeSH); Education, Nursing (MeSH); Faculty, Nursing (MeSH); Schools, Nursing (MeSH); Perception (MeSH); Simulation Training (MeSH); High Fidelity Simulation Training (MeSH); Patient Simulation (MeSH); Virtual Reality (MeSH); Education, Nursing (MeSH).

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INTRODUCTION

Nursing is the most compassionate, noble, and constantly evolving profession in the world.[1] To deliver high-quality care, nurses must continuously learn about and adjust to changes in healthcare facilities and technology. The goal of nursing education is to generate knowledgeable, skilled, and qualified nurses who can meet the demands of the healthcare system today.[2]

Nursing education comprises both classroom learning and clinical practice in simulated and actual patient care settings. The ability to integrate theory into practice is a significant aspect of nursing education.[3] Simulation is becoming important in the expanding field of nursing education because it helps students become better nurses by enhancing their skill-based competencies.[4] It enables nurses to successfully apply what they learn to patient care areas.[5] In nursing education the role of faculty is very crucial. Therefore, this study aims to investigate the perceptions of nursing faculty members regarding simulation-based education (SBE) and the facilitators of and barriers to SBE.

SBE has been around for many years, from the middle to the late 1800s, but its popularity has increased in recent years due to advancements in technology.

Historically, simulators were initially created to assist midwives in the nursing field. These were made by a doll maker to train nurses in how to dress a patient. With the passage of time and advancements in technology and scientific principles in the 1980s, high-technology simulators were introduced. In the 1990s, the foundation of modern patient simulators was laid, and at that time, simulation as a teaching-learning methodology was added to the curriculum.[6]

There are various types of SBE, including e-learning, virtual reality, and low- and high- fidelity. SBE pedagogy is especially beneficial for those studying healthcare-related domains; compared with traditional teaching approaches, it enables students to obtain practical experience that is much more enabling.[7] Moreover, this type of education provides an effective way of students to learn. However, the efficacy of simulation, like all educational

methodologies, depends on how effectively it is used. It is suggested that simulation be incorporated into the nursing curriculum to improve patient care outcomes.[8] SBE is a technique that allows practicing through simulated scenarios to help train and educate nursing students in a safe, highly controlled atmosphere, giving them the chance to enhance their skills without the risk of consequences related to a patient's life.

Despite the increasing global adoption of SBE, there is limited evidence regarding its implementation within nursing education institutions in Pakistan, particularly from the perspective of faculty who play a central role in its integration. Understanding their experiences and perceptions is essential to inform effective implementation strategies. Therefore, this study was conducted to explore the perceptions of nursing faculty regarding SBE in public and private sector nursing schools, and to identify the key facilitators and barriers influencing its effective adoption in nursing education.

METHODS

Study design: An exploratory qualitative research methodology was used to explore the perception of nursing faculty members regarding SBE. This methodology allows researchers to investigate research questions that have not previously been studied.[9]

Study setting: This study was conducted in three private and one public school of nursing.

Inclusion criteria: Schools of Nursing registered with the Pakistan Nursing Council (PNC) and having at least six nursing faculty members providing undergraduate nursing education were included in this research.

Exclusion criteria: Institutions which denied access to the study sites were excluded from this research.

Study population: The study population included all the nursing faculty members teaching nursing courses at the institutions selected for this research. These participants included both male and female faculty members with qualification of Master of Science in Nursing (MScN), Bachelor of Science in Nursing (BSN) and Post-Registered Nurse Bachelor of Science in Nursing (Post RN BSN).

Consent procedure: Written informed consent was obtained from all individuals who agreed to participate in this study. Before obtaining consent, participants were provided with detailed information about the purpose of the research, the procedures involved, and the voluntary nature of participation. They were informed that this study may not provide them with any direct personal benefits; however, the findings could contribute to improving community health and strengthening the healthcare system. Participants were assured that there were no known or anticipated risks. Confidentiality and privacy of the participants' information were strictly maintained, and data were anonymized.

Data collection: Data was collected using face-to-face focus group discussions (FGDs). For this purpose, access to the study sites was granted with permission of the head of each institution. Privacy was assured by conducting the discussion in a quiet, separate room available only to the participants and the researcher, ensuring that discussions could not be overheard. No personal identities were recorded in the transcripts. All the FGDs were audio recorded, and field notes were taken to capture the nonverbal gestures of the participants.

The interview (guide) for collecting the data was developed from a review of relevant literature. Questions were drafted, reviewed by experts for validity and clarity and were pilot tested. Pilot FGDs was conducted to evaluate the clarity, significance, and sequencing of the interview guide. Based on participants' feedback, minor revisions were made to improve the wording and then the interview guide was finalized. The data from pilot study was not included in the actual study data.

Data analysis: Data analysis was performed manually (without using any software), at the same day of data collection. The FGDs were transcribed, and the transcripts were analyzed by following the steps of content analysis suggested by Creswell and Creswell 2018.

Ensuring trustworthiness: The focus group discussions were audio recorded; the data was transcribed. The Transcripts were cross checked by some of the participants to ensure the credibility and conformability of the data.

Dependability was assured by involving the committee members in the analysis process to access the data and to maintain the uniformity of the findings. Transferability was assured by providing detailed descriptions of the study context, participants, and procedures, allowing readers to assess the applicability of the findings to other settings.

Human ethics: This research was approved by the Ethical Review Committee of The Agha Khan University, Karachi, Pakistan (Reference #: 2023-7968-23860, dated: January 27, 2023). For the study setting, approval was also obtained from the administrative authorities of the Nursing Schools. An informed consent to participate was obtained from all the participants in the study. Their anonymity and confidentiality were well maintained.

Sample size and sampling method: According to the goal of the study, a purposive (nonprobability) sampling methodology was used, which helped in obtaining quality responses by identifying specific participants, enhancing the depth of understanding.[10] The total sample size of the study was n=33 participants; among these, n=6 participants participated in the pilot study. This covered approximately 18% of the total sample. For the FGD, from each institution, 6-8 participants participated.[11]

FGD procedural details: FGD were conducted in which written informed consent was obtained. The discussion was started by a set of open-ended questions. The researcher ensured that all participants must have the opportunity to speak, encouraged deeper exploration of responses through probing, and maintained a neutral stance. Discussions were held in a comfortable setting. Detailed notes and recordings were taken to capture both verbal and non-verbal responses. Confidentiality and anonymity were

maintained, and participants were well informed about their right to withdraw at any time. After that FGD, discussions were transcribed, and findings were analyzed.

Reflexivity: To minimize researcher bias, the researcher introduced herself at the beginning of each focus group discussion, providing information about her identity, qualifications, professional role, and experience. A structured discussion guide was used, and peer review during data analysis was undertaken to further enhance the rigor and reduce potential bias.

RESULTS

The data analysis resulted in the identification of four major themes: nursing faculty viewpoints on SBE, facilitators of SBE, barriers to SBE, and the future of simulation.

The first theme comprised four categories: defining SBE as a descriptive view, simulation as an effective teaching-learning pedagogy, benefits of SBE, and level of fidelity in SBE. The second theme, facilitators of SBE, included two categories: student engagement and faculty initiatives. The third theme, barriers to SBE, encompassed three categories: financial and material constraints, limited stakeholder and regulatory involvement, and lack of faculty expertise. The fourth theme, future of simulation, included faculty development and engagement in SBE, availability and maintenance of resources, and the role of institutional administration and regulatory bodies.

A summary of these themes and their corresponding categories is presented in Table I.

Theme I: Nursing faculty viewpoints on SBE: This theme describes the perceptions of the nursing faculty regarding SBE. It illustrates their understanding of the topic and their awareness of simulation. It also includes the way they are using this pedagogy in their teaching-learning journey and their perception on the level of fidelity in simulation. This theme emerged from four categories: SBE as a descriptive view, simulation as an effective teaching-learning pedagogy, benefits of SBE, and levels of fidelity in SBE.

Category 1: SBE as a descriptive view: This category concerns the description of participants' perceptions of SBE. They described the key characteristics of SBE. Many of the participants said that simulation is a way of learning skills through manikin. One of the participants stated, "When we teach skills to students via manikin, this comes under simulation-based education" "FGD-01, P-01". Another participant expressed, "Simulation-based learning is very essential for the students. If we are performing any skill, we need to do it practically on manikin so that students can learn perfectly" "FGD-02, P- 02".

The participants explained the formation of actual scenarios that can facilitate learning through experiences and help in dealing with similar kinds of situations in the future by developing expertise in students and decreasing the chances of errors.

One of the participants expressed, "In a simulation, students get real-life scenarios and hands-on practice, with the help of this, students can pick their mistakes, as the dummies [manikins] are responsive" "FGD-03, P-07". Another participant added, "Simulation-based education is highly recognized in the medical field, in which participants are involved in a real- life scenario. They can enhance their decision-making and problem-solving abilities in these real scenarios" "FGD-02, P-03".

Category 2: Simulation as an effective teaching learning pedagogy: This category concerns the effectiveness of using simulation as a teaching-learning methodology and how it helps nursing students acquire competencies in skills and engages them such that they can work efficiently in their field. The participants expressed that simulation is an advanced and innovative way of teaching, and for students, it is an interesting way of obtaining knowledge in which they become involved in learning new things. One of the participants stated, "It's important that we should have advanced technology, as today we have an advanced level of education, and that is simulation" "FGD-04, P-08".

Category 3: Benefits of SBE: This category discusses the advantages of SBE and how it has benefited the students in building their cognitive and psychomotor capabilities. It highlights the components of safe and quality care as well. The study participants highlighted that simulation aids in increasing confidence in students by decreasing anxiety and hesitation in performing skills on patients, as it allows them to practice skills multiple times on manikins. One of the participants stated, "It is an advanced learning opportunity. Students will be more confident. Therefore, I think simulation is an important teaching-learning methodology" "FGD-04, P-01".

The participants agreed that SBE helps ensure the delivery of safe and quality care to patients by allowing students to practice their skills in a safe environment so that they can enhance their skills such that it reduces the chances of error. One participant stated, "We are moving towards evidence-based practices. For that, it is very important that the students go through simulation to provide better care to the patients" "FGD-01, P-03".

The participants highlighted that SBE is beneficial, as it allows students to strongly build their theoretical concepts and skills-based competencies by allowing them to practice several times so that they can connect theoretical concepts with practice. One of the participants shared, "Students need to practice first on simulation-based patients; before going to the real patients who will help to develop competency in their skills" "FGD-02, P-02".

Most of the participants said that SBE enables the students to develop a variety of cognitive and communication skills that are an essential part of a nurse's life to provide quality and safe care. One participant stated, "This pedagogy enhances critical thinking in a nurse" "FGD-01, P- 04"

Category 4: Level of fidelity in SBE: This category explains the perceptions of the nursing faculty regarding the levels of fidelity in simulation, in which fidelity denotes the level of realism. The

Table I: Themes, categories and quotes

Theme	Categories	Quotes
Nursing Faculty Viewpoints on SBE	SBE as a descriptive view	"Simulation-based education is highly recognized in the medical field, in which participants are involved in a real- life scenario. They can enhance their decision-making and problem-solving abilities in these real scenarios" "FGD-02, P-03".
	Simulation as an effective Teaching-learning pedagogy	"It's important that we should have advanced technology, as today we have an advanced level of education, and that is simulation" "FGD-04, P-08".
	Benefits of SBE	"We are moving towards evidence-based practices. For that, it is very important that the students go through simulation to provide better care to the patients" "FGD-01, P-03".
	Level of fidelity in SBE	"The simulation includes a low-fidelity simulation and a high-fidelity simulation. In low- fidelity simulations, we usually teach skills such as IV cannulation and NG tube insertion. All of these can be performed well. In high-fidelity simulation, if any patient is going through delivery or a crash situation, the dummies [manikins] respond accordingly" "FGD-02, P-07".
Factors facilitating SBE	Students' engagement	"We have a skill lab were low fidelity simulation is available. We use a checklist of skills related to a theory component to relate both" "FGD-03, P-06".
	Faculty initiatives	"We facilitate students by approaching different institutions who have these facilities so that our students can get the exposure and practice and then they can go to clinical areas well-equipped with skills and knowledge" "FGD-03, P-06".
Barriers to SBE	Materialistic and financial barriers	"The first barrier is the non-availability of simulators; we do not have that large budget. As simulators are very expensive, we cannot buy them. We store them at the proper temperature. Dummies [manikins] melt and become wasted if not kept in favorable conditions" "FGD-04, P-01".
	Lack of stakeholder's involvement and regulatory bodies	"We have some (institutional) policies, but we lack them in implementation. Therefore, if regulatory bodies have given policies, then it is their responsibility to implement these policies in all nursing institutions" "FGD-01, P-06".
	Lack of expertise	"Pakistan Nursing Council and the Higher Education Commission do not have some settled criteria for us to know how much percentage of SBE should be included in the curriculum" FGD-02, P-05".
The future of simulation	Faculty development and engagement in SBE	"Proper training should be conducted for faculty so that they can handle the students. The instructor should be competent and an expert at teaching simulation-based education" "FGD-02, P-04".
	Availability and maintenance of resources	"The faculty should help students make simulations easily accessible. The process of using simulation labs should be very easy; first, you have to give the application to the coordinator or teacher. It should be easily available to students so that they can practice in their own time. Through this, we can promote simulation-based education" "FGD-03, P- 05".
	Involvement of institutional administration and regulatory bodies	"We should be facilitated by the administration to have dummies [manikins] and equipment to facilitate simulation" "FGD-04, P-05".

SBE: Simulation-based-education; FGD: Fouse Group Discussion

study participants reported that low and high levels of fidelity are present in the simulation, in which different kinds of manikins are used to practice skills in a safe environment. Low-fidelity simulation enhances knowledge, but it is less realistic than high-fidelity simulation is One of the participants stated The simulation includes a low-fidelity simulation and a high-fidelity simulation. In low- fidelity simulations, we usually teach skills such as IV cannulation and NG tube insertion. All of these can be performed well. In high-fidelity simulation, if any patient is going through delivery or a crash situation, the dummies [manikins] respond accordingly "FGD-02, P-07".

Theme 2: Factors facilitating SBE: This theme covers some of the factors that facilitate the journey of SBE. The participants described them from the perceptions of both faculty and students. This theme emerged from two categories: student engagement and faculty initiatives.

Category 1: Students' engagement: This category addresses the student's involvement in accomplishing the goal of SBE. They perform different activities that assist them in simulation-based learning.

The participants highlighted that students become involved in pre-briefing activities to perform well in simulation-based activities, such as reading checklists for different procedures. They watch videos through different search engines, role play, or practice peer learning to increase their capacity. One of the participants stated, "We have a skill lab where low fidelity simulation is available. We use a checklist of skills related to a theory component to relate both" "FGD-03, P-06".

Category 2: Faculty initiatives: Faculty members are involved in different activities to increase students' interest. They make a variety of efforts to enhance students' theoretical learning and their skill-based competencies.

The participants shared their practice of collaborating with other institutes that have advanced simulation facilities, and in this way, they tried to expose their students. One of the participants stated, "We facilitate students by approaching different institutions who have these facilities so that our students can get the exposure and practice and then they can go to clinical areas well-equipped with skills and knowledge" "FGD-03, P-06".

Another facilitator that was shared by the participants was generating alternatives to meet the needs of the students, which motivated them and enhanced their competencies. One of the participants stated, "I am teaching health assessment, so, in my class along with lectures, I also ask students to do role play. Therefore, we can use alternate ways to teach our students" "FGD-04, P-07".

Theme 3: Barriers to SBE: This theme covers the barriers and hindrances associated with SBE, which is the SBE in nursing education. This theme emerged from three categories: materialistic and financial barriers, lack of stakeholder involvement and regulatory bodies, and lack of expertise.

Category 1: Materialistic and financial barriers: Materialistic and financial barriers are the major barriers to SBE that hinder students' learning. The participants voiced that the unavailability of resources, including manikins, was greatest barrier. There were many students who had to work on a single manikin, which hindered their learning. Another issue highlighted by them was the mismanagement or mishandling of manikin and equipment. The participant stated:

The first barrier is the non-availability of simulators; we do not have that large budget. As simulators are very expensive, we cannot buy them. We store them at the proper temperature. Dummies [manikins] melt and become wasted if not kept in favorable conditions "FGD-04, P-01".

One of the participants shared, "We have a limited budget in the government setup, and when it is sent for approval, we don't get approvals, so it's difficult for us to do these things without approvals" "FGD-04, P-07".

Category 2: Lack of stakeholder involvement and regulatory bodies: The attitudes and behaviors of stakeholders and the monitoring of regulatory bodies play important roles in the implementation of SBE. This category discusses the behavioral issues of stakeholders and regulatory bodies and their interest in the profession. The participants' comments indicated that most of the stakeholders did not want to invest much in facilities for nursing education. They did not permit the purchase of expensive equipment and resources.

As stated earlier, one participant said, "Many of the institutes are not willing to invest in these sorts of things because they don't give priority to our [nursing] profession that is the reason. They don't invest effort in skilled labs" "FGD-01, P-05". The participants highlighted the lack of policies and guidelines from the regulatory bodies of the nursing profession and their implementation as another barrier. One of the participants stated that "we have some (institutional) policies, but we lack them in implementation. Therefore, if regulatory bodies have given policies, then it is their responsibility to implement these policies in all nursing institutions" "FGD-01, P-06".

Category 3: Lack of expertise: One of the most important barriers was the lack of faculty and clinical instructors. Moreover, those who were present were not well trained to conduct the simulation-based sessions. Many of the participants shared that they were not well trained or experienced in conducting simulation-based sessions, and they highlighted this as the greatest barrier for SBE. One of the participants stated, "Teachers are also not well trained, so they should be trained so that they can decrease students' anxiety and increase their confidence" "FGD-02, P-04".

Another participant stated, "Pakistan Nursing Council and the Higher Education Commission do not have some settled criteria for us to know how much percentage of SBE should be included in the curriculum" "FGD-02, P-05".

Theme 4: Future of simulation: The nursing faculty shared some factors that can facilitate the implementation of SBE. The factors included enhancing the competency of faculty, hiring more faculty, the involvement of regulatory bodies, the availability of advanced resources, and administrative support. This theme emerged from three categories: faculty development and engagement in SBE, availability and maintenance of resources, and involvement of institutional administrative and regulatory bodies.

Category 1: Faculty development and engagement in SBE: This category discusses the need for faculty development, as it is needed for the effective implementation of SBE. If the faculty were competent, they would be able to educate their students accordingly. The study participants highlighted the increase in the number of faculty members and their competencies to enhance the nursing skills of students. One of the participants stated, "Proper training should be conducted for faculty so that they can handle the students. The instructor should be competent and an

expert at teaching simulation-based education" "FGD-02, P-04".

Category 2: Availability and maintenance of resources: This category concerns the availability, accessibility, and maintenance of resources that are used to teach SBE. If the resources are easily available and accessible to the students and teachers, this will facilitate their use of this pedagogy. The participants shared that the availability of a well-developed skills lab and the maintenance of a manikin would allow students to learn easily in a well-equipped environment. One of the participants stated, "There should be a proper skills lab with maintained room temperature" "FGD-04, P-01".

The participants highlighted that all the resources should be easily available to the students so that they can access them to practice in a safe environment. One of the participants stated:

The faculty should help students make simulations easily accessible. The process of using simulation labs should be very easy; first, you have to give the application to the coordinator or teacher. It should be easily available to students so that they can practice in their own time. Through this, we can promote simulation-based education "FGD-03, P- 05".

Category 3: Involvement of institutional administration and regulatory bodies: The successful implementation of SBE requires support and assistance from the administration, stakeholders, and regulatory bodies to implement it properly. The study participants expressed that facilitation by the administration, and the higher authorities of the institute plays a vital role in the implementation of SBE. Their support and positive involvement encourage the team, including faculty and students, to work hard and develop their skills.

One of the participants stated, "We should be facilitated by the administration to have dummies [manikins] and equipment to facilitate simulation" "FGD-04, P-05".

Most of the participants reported that regulatory bodies, including the PNC and the Higher Education Commission, should set criteria regarding the development of skills-based competencies in students and faculty. As stated by a participant, "everything can be applicable if regulatory bodies, such as PNC, have set some standards and if they maintain a check and balance for that" "FGD-01, P-07".

DISCUSSION

The research participants described simulation as a teaching-learning pedagogy through which different clinical scenarios can be practiced via manikin and the required resources in a safe environment, providing a realistic situation. Moreover, they mentioned that simulation has moved from low-fidelity simulation (LFS) to high-fidelity simulation (HFS). Similar findings were reported by Sofer D,[12] who reported that simulation is a teaching-learning strategy that enhances clinical-based competencies through manikin. Compared with the LFS, the introduction of HFS increased the level of realism. It allows students to practice repetitively without the risk of harming patients. This approach allows faculty to shift from traditional to advanced methods of teaching.

The present research findings suggest that SBE facilitated increased confidence in students due to the repetitive practice of skills. Thus, they were able to deal confidently in real clinical settings. These findings are like findings in earlier studies that indicated that simulation enhanced students' confidence and engagement and built their theoretical and skills-based competencies.[13,14]

According to the participants, SBE provided students with an opportunity to practice skills multiple times that ensured quality patient care, developed mastery of skills, and reduced the chances of errors. Similarly, earlier studies have reported that simulation enables profound learning and growth of clinical expertise. It plays a vital role in improving the quality of health care. Moreover, the enhancement of knowledge has also been highlighted.[15] Furthermore, the analysis of the present study also highlighted that simulation facilitated the enhancement of critical thinking skills in students. The same was also reported in the literature.[14-17] The analysis of the current study also revealed that SBE enhanced the decision-making and problem-solving power of students, which led to better patient care and helped them make decisions for the best possible outcomes. The literature also reports that SBE develops clinical skills, critical thinking, problem-solving abilities, and decision-making in nursing students and is recognized as an advantageous method of training.[18]

According to the analysis of this study, HFS is defined as a level of simulation where sophisticated manikins are used to provide the highest sense of reality. Compared with HFSs, LFSs refer to devices that have fewer digital systems and provide a lower level of reality.

Previous studies reported that HFSs have full-scale simulators that provide experience of a higher level of interaction and realism than. LFS.[19-21] In Pakistan's context, most nursing schools have LFSs in their settings, and only a few have HFSs.

One of the facilitating factors reported in this research study was students' engagement in pre-briefing activities. This facilitated their accomplishment of the goals regarding simulation and helped them to become oriented with the simulation activities. The participants highlighted that they used checklists, scenarios, theory discussions, and videos as pre-briefing activities. The use of pre-briefing activities to facilitate simulation-based learning by creating an environment for students to build a base for their simulation activity through different resources has been reported by different researchers.[22-25] In our context, most nursing schools use these activities to help their students compensate for the need for high-fidelity manikin. Another facilitating factor revealed in this study was collaboration with other institutes, where the simulation facilities were available so that the needs of the nursing students could be met and that they could learn the skills more effectively. According to the literature, under resourced nursing institutes must develop partnerships with those institutes that are privileged in SBE

implementation, as this helps them acquire assistance and training regarding SBE.[26,27] Additionally, collaboration between nursing institutes may facilitate the management of the finances required for upgrading SBE.[23] However, in the present study, financial collaboration was not highlighted by the research participants.

This study revealed that barriers to SBE included a lack of resources, either they were unavailable or mismanaged. Sometimes, they are not kept in conducive conditions. Similar barriers were reported earlier by the researchers, as they reported inadequate space and equipment compared with the number of students.[14,28]

Financial constraints are also believed to obstruct SBE. Many of the participants stated that institutes cannot afford expensive manikin and well-equipped simulation labs. Similarly, previous studies reported a high cost for creating space to perform simulation-based activities and for purchasing expensive manikins.[28,29] In the present study context, regulatory bodies do not have a set of rules and regulations, which is the main drawback in the implementation of SBE.

An analysis of the findings of this research study revealed that to build a better future for simulation, faculty development was an essential component. These findings are supported through earlier publications reporting that mentorship should be promoted to foster collaboration between inexperienced and experienced teachers rather than only those teaching through simulation expertise utilizing it in nursing education. Moreover, fostering a supportive environment, by providing enough time and rewards, is also necessary for it to flourish.[30] Other studies suggested that faculty members should take training-trainer courses that include creating curricula, learning to use simulators, exploring new technology, and integrating features that would enhance learning.[15,25] One more factor identified in this research was the availability and maintenance of resources that could help faculty and students learn competency-based skills in a well-equipped environment. Similarly, participants in other studies acknowledged the support they received through the availability of resources, including well-founded simulation laboratories. Thus, all nursing schools must invest money in the construction of suitable laboratories and allocate time for simulation in their curriculum.[25,30]

Another factor identified from the analysis of this study's findings regarding the future of simulation was administration and stakeholders' support. The literature also highlights that one may feel empowered and can promote and integrate teaching practices if they receive support from their organization, whether in the form of connections or resources or as encouragement from leadership.[31]

Another factor that can facilitate the future of simulation derived from this research study is the support of regulatory bodies. Nursing institutes need support and set high standards in nursing education. In Korea, the number of nursing schools has increased over time, but they lack clinical areas for learning clinical practices; thus, the Korean Accreditation Board of Nursing Education proposed the use of simulators as the standard for gaining accreditation in nursing education. This action was followed by the nursing education institutes. Later, many institutes started acquiring high-fidelity simulators to fulfil their institutional needs and to foster effective learning in their students. Through this effort, the burden on clinical areas has also decreased.[32] Another study highlighted that to develop an effective and appropriate nursing education system in a developing country, such as Pakistan, collaboration is essential at the individual, organizational, and government levels so that everyone can work collectively to improve standards and ensure compliance with those standard.[33]

Limitations and strengths of the study

This study included participants from both public and private nursing institutions, ensuring diversity in terms of educational background, professional experience, and academic roles. Such variation enriched the data and enhanced the depth of insights regarding SBE. Additionally, the findings provide valuable perspectives that may inform faculty members about the adoption of innovative teaching pedagogies in nursing education.

However, studying has several limitations. Due to prolonged administrative approval processes and limited institutional responsiveness, only one public sector institution could be included, which may affect the generalizability of the findings. Recruitment of faculty participants was challenging owing to their demanding professional schedules. Furthermore, identifying institutions that met the inclusion criteria was difficult, as many lacked the required number of eligible faculty members. Finally, as data were collected through focus group discussions, some participants may have been reluctant to express their views openly in a group setting, potentially influencing the depth of responses.

Recommendations of the study

To enhance faculty development and engagement in SBE, structured training programs should be implemented to improve awareness, skills, and pedagogical competencies among nursing faculty. Further research is recommended to explore the effectiveness, implementation strategies, and contextual challenges of simulation in nursing education. Additionally, the establishment of professional interest groups, workshops, and conferences on SEB in Pakistan is suggested to promote knowledge sharing, capacity building, and wider adoption among healthcare professionals.

CONCLUSION

According to the study findings, nursing faculty perceive SBE as an effective pedagogical approach that enhances students' clinical skills, critical thinking, and competence in delivering safe patient care. However, its effective implementation is hindered by limited resources, financial constraints, inadequate faculty training, and weak regulatory support. Strengthening faculty development, improving

infrastructure, and establishing clear regulatory frameworks are essential for the sustainable integration of simulation into nursing education.

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The following authors have made substantial contributions to the manuscript as under:

SMAL & SR: Conception and study design, acquisition, analysis and interpretation of data, drafting the manuscript, critical review, approval of the final version to be published

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Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

CONFLICT OF INTEREST

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