

The Saudi Arabian Nursing Students' Lived Experiences With Simulation-Based Learning: A Phenomenological Study

Thurayya Eid (Corresponding author)

RN, PhD Level 3, Building 12, College of Nursing Female City Campus, King Saud University, Riyadh, 11421, Saudi Arabia Email: teid@ksu.edu.sa

Keywords: Patient safety, medical errors, nursing education, phenomenology, simulation-based learning, thematic analysis.	Abstract Following an era of global adaptation of simulation in nursing education, integrating simulation-based learning (SBL) is critical to addressing the demands of the current nursing shortage in the Gulf region through more efficient and secure training pathways. SBL serves not merely as a teaching tool, but as a proactive public health strategy to mitigate medical errors, safeguard patient safety, and improve nurse retention rates within high-stress clinical environments. The purpose of this study was to explore undergraduate nursing students' perceptions of SBL using a descriptive phenomenological approach at a Saudi nursing college. Eight undergraduate female nursing students participated in one-on-one, semi-structured interviews. Data were analyzed strictly adhering to Colaizzi's seven steps descriptive framework. Four distinct themes emerged; Simulation as Preparation for Real-World Clinical Practice; Instructional Strategies and Student Engagement; Curriculum and Institutional Constraints; and Environmental Factors and Resources. The Findings reveal that while students found SBL to be a psychologically safe and confidence-building bridge to clinical practice, its systemic effectiveness was heavily hindered by rigid scheduling, time constraints, and underutilized laboratory resources. Ultimately, these findings emphasize the centrality of student experience in evaluating educational structures. Several targeted educational and structural practices are recommended to enhance the quality and sustainability of SBL, thereby creating more efficient and safer clinical training models for nursing programs across the Gulf region.
---	---

Introduction

Background

Simulation-based learning (SBL) is central to contemporary nursing education, offering realistic, immersive experiences in a controlled environment (Jeffries, 2020). Simulation is defined as "a technique that creates a situation or environment to allow persons to experience a representation of a real event for the purpose of practice, learning, evaluation, testing or to gain understanding of systems or human actions" (Lioce et al., 2020, p. 44). Mental simulation, such as imagination, also contributes to learning (Lioce et al., 2020).

SBL is highly valued in countries with advanced health education systems, including Saudi Arabia. Notably, up to 50% of clinical hours in U.S. programs are replaced with high-fidelity simulations (Bradley et al., 2019). However, replacing clinical hours with SBL is often hindered due to lack of sustained investment in the faculty, inadequate administrative support and human resources to deliver high quality simulation, and heavy facilitators' workload. Additionally, in the Gulf region, emphasizing on psychological and physical safety, fidelity, and structured debriefing priorities for culturally responsive curricula exacerbates the situation. Survey studies have provided baseline data on undergraduate nursing students' perception of SBL and highlighted the gaps. Quasi-experimental studies demonstrated the positive effects of SBL on students'

learning outcomes including improving communication skills, facilitating new graduates' transition, enabling objective competency assessment, and enhancing critical thinking and self-confidence, and improving analytic decision-making (Abdulmohdi & McVicar, 2023; Alshehri et al., 2023; Hussien et al., 2025; Jallad, 2025; Palaganas et al., 2020). Significant improvements in knowledge were observed in scenario-based e-simulation and high learner satisfaction (Bahattab et al., 2024). It has been reported that virtual reality plus skills training improved emergency response capacity and disaster preparedness scores versus conventional training in a quasi-experimental trial (Zhang et al., 2021). Danish and U.S. studies highlight improved professional confidence among simulation-trained students (Alfes, 2011; Fuglsang et al., 2022). Additionally, qualitative studies have further explored undergraduate nursing students' experience with SBL, in which rational and feelings are expressed. Using a phenomenological approach, (Watson et al., 2021) explores 16 student-lived experience with SBL in the undergraduate nursing program. The themes developed by these authors were guided by Colaizzi's descriptive phenomenological method (Colaizzi, 1978). Despite these benefits, ongoing research on SBL is necessary given the rapid technological advances, labor market shifts, diverse educational resources, and stakeholders expectations (Shepherd & Burton, 2019), which all contribute to sustainable of public health. Today's healthcare environment requires nurses who are clinically and professionally competent, demonstrate sound judgment and decision-making, and embody high standards of professionalism. When these expectations are not met, identifying gaps and enablers becomes essential. Importantly, understanding students' perception rather than only facilitators' offers clearer insight into the effectiveness of simulation. Further, limited research has explored student in-depth experiences in Gulf countries like Saudi Arabia, where the integration of simulation into curricula is relatively recent. This study addresses this gap by examining the lived experiences of nursing students engaged in simulation training. This study focuses on how students experience and make sense of learning through simulation and on how simulation is delivered. It explores emotions, reflection, personal growth, and experiential meaning, as well as the role of educators, equipment, or institutional design elements.

Methods

A qualitative descriptive phenomenological approach was employed, using semi-structured interviews for data collection. The study adhered to the Consolidated criteria for reporting qualitative studies (COREQ) 32-item checklist (Tong et al., 2007). Data collection took place at the simulation center of a nursing college within a university in Riyadh. The center comprises laboratories for various nursing specialties, including medical-surgical, pediatric, midwifery, psychiatric, and community nursing, and provides both low- and high-fidelity modalities.

Purposive sampling was used to recruit students who had prior exposure to SBL. This was done via email and course announcements. Eight Saudi female students, aged 19 -22 years and representing various academic levels, volunteered to participate. Students who did not have SBL exposure were excluded. The primary researcher contacted participants via mobile phone to provide an introduction, explain the study's purpose and significance, assure them their insights would be equally valued, and schedule interviews. The interview guide was shared in advance. Interviews were conducted in private rooms at the college, conducted by a female primary researcher, who is a PhD holder trained in qualitative research, and was not involved in teaching or grading this cohort of students.

Sessions lasted 45–60 minutes, were audio-recorded using a Sony digital audio recorder, and no repeat interviews were conducted. Data saturation was reached by the sixth participant when no new information emerged. Additionally, brief field notes were taken during and immediately after each session to capture nonverbal cues, emotional expressions, and contextual details. They were expanded post-interview and used to support data interpretation and enhance the depth and trustworthiness of the analysis. The following interview questions were included:

1. Can you describe your experience participating in simulation-based learning?
2. How do you see the role of simulation in your nursing education?
3. What were the challenges or concerns you faced during simulation training?

4. What would improve your experience with simulation-based learning?

Ethical approval was obtained from the study setting. Participation was voluntary, written consent was secured, and no identifying data were collected. Involvement did not affect course grades. This study was designed to ensure diversity and inclusivity by selecting participants from multiple academic levels and cultural backgrounds representative of the student population in Saudi nursing education. Equity was maintained by promoting an open, respectful dialogue during interviews and ensuring all voices were equally represented in the data. Cultural and linguistic factors were carefully considered to support participant comfort and authenticity of responses. Only the participant and primary researcher were presented during the interviews.

Recordings were transcribed verbatim by a professional transcriber and given to participants for verification. The primary researcher coded and analyzed the data to remain close to participants' lived experiences. To enhance credibility, the researcher maintained a reflexive journal throughout the study to support bracketing and minimize personal bias during analysis.

The seven steps of Colaizzi's descriptive phenomenological method (Colaizzi, 1978) were followed to identify sub-themes and then organize them into four themes. Table 1 demonstrates the detail thematic analysis. For example: Students reported deeper learning when the simulation was realistic and well-facilitated, allowing them to cycle through reflection and abstraction.

Table 1. Mapping of Themes and Sub-Themes to Broad Categories

Themes	Sub-Themes	Participants' Quotes
Simulation as Preparation for Real-World Clinical Practice	Simulation as an ethical and safe learning space	"simulation laboratories with dolls the hospital to learn on patients"
	Confidence transfer from simulation to clinical practice	"I feel confident doing procedure in the hospital because I have practiced in the simulation..."
Instructional Strategies and student engagement	Progressive complexity in simulation scenarios	"The content of the scenarios moved from simple to complex"
Simulation Environment and Resources	Enhancing authenticity through realistic setup and tools	"Increase the equipment. The lab must have a physical layout similar to that in hospitals...."
Curriculum and Institutional Constraints	Scheduling limitations and booking restrictions	"Keep the laboratory openbook on the same day."

The interview questions were validated by the facilitators and tested with students before the actual data collection. Consistency was maintained via a structured interview guide, transcription verification, participant validation, and systematic application of Colaizzi's method.

Results

Four themes were identified reflecting interrelated dimensions of the students' experiences with simulation-based learning. Simulation as preparation for real-world clinical practice; instructional strategies and student engagement; curriculum and institutional factors; and environmental factors and resources.

Theme one: Simulation as Preparation for Real-World Clinical Practice

This theme focuses on skill rehearsal, authentic role-play, clinical decision-making, the emotional realism of life or death scenarios, self-confidence, ethical responsibility and readiness. It addresses how students perceive simulation as helpful in preparing them for real hospital settings involving environmental, interpersonal, and logistical factors.

Subtheme: Enjoyment and satisfaction with the simulation experience

Students perceived SBL as a pleasant experience, highlighting its affective dimension beyond skill or knowledge gains. They described simulation as a student-friendly and welcoming learning approach. Participant 7 stated "It was pleasant; the simulation experience, emphasizing enjoyment and satisfaction with the learning process."

Subtheme: Confidence transfer from simulation to clinical practice

Repeated exposure in a safe environment leads to confidence during actual clinical procedures. It demonstrates the effectiveness of simulation in building real-world readiness. Participant 5 stated "I feel confident doing procedure in the hospital because I have practiced in the simulation laboratories."

Subtheme: Reduces anxiety and emotional preparedness

Students indicated how simulation reduces fear and prepares them mentally. Participant 6 stated, "We were prepared before we went to the hospital, without being afraid. We knew what we would see in the hospital." This reflects a sense of confidence and reduced anxiety by prior simulation exposure.

Subtheme: Simulation as a Realistic Rehearsal for Clinical Practice

Students experienced the consequences of clinical decisions within the safety of simulation, reinforcing its value as an immersive rehearsal, preparing them for the pressure and responsibility of real-life care. This reflects how students engage in high-stakes, emotionally charged scenarios, taking on authentic nursing roles. Participant 5 stated, "We performed big procedures such as code blue. Each one of us would be a nurse with different roles. We anticipated whether the patient would survive or not. If we made a mistake, the patient would die."

Subtheme: Simulation as an ethical and safe learning space

Students valued simulation as an ethical environment where learning does not compromise patient safety. It reflects a growing professional identity and responsibility. Participant 2 stated, "Simulation laboratories with dolls provide a learning opportunity, because the hospital is not a place to learn on patients." This underscores ethical awareness and recognition of simulation as a preparatory, low-risk learning space, in contrast to practicing on real patients.

Subtheme: Wearing uniforms enhances realism and identity

Wearing uniforms simulates real hospital routines, connecting them to the public environment, promoting immersion. It reinforces professional behavior, role assumption, and identity formation. It signals a shift from classroom learning to clinical mindset. Participant 1 stated: "We wear uniforms during the simulation session." While simple, this practice symbolized a shift from classroom learning to a clinical mindset.

Subtheme: Perceiving simulation as a bridge to real clinical practice

This subtheme highlighted simulation as a transitional learning space before facing the unpredictability of real patients. Participant 8 stated, "Simulation is mimicking real life before we go out to clinical practice at the hospital." This reflects the student's perception of simulation as realistic and preparatory.

Subtheme: Recognizing simulation as a practice environment with manikins

This shows student awareness of the contrast between simulated and real-life settings. It affirms the role of simulation with dolls/manikins in preparing for real patient care. It reinforces the view of simulation as a learning phase, not a substitute for real patients. Participant 5 stated, "In the hospital, we have our own patients. In the simulation laboratories, we have dolls instead. Dolls are used to learn." This highlights students' recognition of simulation as a preparatory learning tool using manikins.

Subtheme: Recognizing environmental difference between simulation and clinical realities
Students noted that real clinical settings involve complexities not fully replicated in simulation. Participant 7 stated, "Although the hospital is different from the simulation laboratory...it has other environmental influences." This reflects students' awareness of simulation's limitations compared to the unpredictability of real clinical environments.

Theme two: Instructional strategies and student engagement

This theme focuses on how facilitators used strategies to engage students, structure scenarios, provide feedback, and foster active learning.

Subtheme: Imagination as part of the simulation process
The student engaged in creative visualization as told by the facilitator. Imagining enabled the student to anticipate the simulation learning experience before engaging with the actual simulated clinical procedures. Participant 2 stated; "The instructor told us to imagine, so these things are imagined, not real." This points to a limitation in the simulation experience due to lack of realism or physical cues, and could indicate student dissatisfaction. Participant 7 stated, "Imagining in the simulation session before the procedures is common." This suggested that imagination is frequently relied upon.

Subtheme: Peer learning and mutual correction
Students emphasized the power of active learning, peer observation, and repetition in simulation. This highlights how doing, watching, and discussing errors deepen learning. This active process reinforced long-term retention by allowing learners to apply, observe, and reflect on mistakes. Participant 3 stated, "At level 3, I remembered all procedures because I applied them all and watched others apply them and correct each other's mistakes. These I remembered very well."

Subtheme: Progressive complexity in simulation scenarios
Students sense of growth and development over time supports educational theories of constructivist progression. Participant 3 stated, "The content of the scenarios moved from simple to complex."

Subtheme: Shifting perception of difficulty across academic levels
Students' lived experience of challenge and adaptation increased self-efficacy by third year. This reflects the student's perception of difficulty shifting over time, likely tied to their own growth, readiness, or experience. Participant 8 stated, "On the second year, the procedures were difficult. But on the third level it was fine."

Subtheme: Desire for constructive feedback and realistic practice flow
Students expressed a strong need for more effective and reflective feedback. They expressed the need for uninterrupted practice and more debriefing depth. This suggests a preference for realistic pacing (as in clinical settings) and learning following the completion of the task, not mid-task correction. Participant 1 stated, "I wish the facilitator pointed out to my mistakes and discussed them with me by the end of completing the task. For example, 'Stop – you did wrong. Repeat from the beginning. They did not recommend me to complete the procedure and to see my mistakes at the end. In the hospital, when I do the procedure, nobody stops me or asks me to repeat again. I wished it was like that. I prefer to let me finish and then discuss my mistakes with me and make me repeat (the procedure) from the beginning.'" This highlights student's desire for deeper feedback, autonomy, and realistic practice during simulation.

Subtheme: facilitator engagement during time-constrained sessions
Students voiced disappointed when facilitators, due to time constraints, relied heavily on passive methods such as videos. Limited hands-on guidance was perceived as a barrier to experiential learning. Participant 4 stated, "When facilitators are in a rush ... each student has to apply the procedure on their own. The facilitator just shows us a video and that's it."

Theme Three: Curriculum and Institutional Constraints

This theme addresses how institutional design, course requirements, or academic policies (e.g., mandatory written reports) may hinder students' ability to engage fully in simulation activities.

Other institutional factors, including the language of instruction and curriculum design, reflects students' adaptation or comfort with English in a non-native context, such as Saudi or Gulf nursing education. It captures how structural barriers (e.g., time, scheduling, misalignment) can hinder learning continuity.

Subtheme: Misalignment between clinical and theoretical content

Students identified gaps between theory and clinical practice timing, which affects their learning integration and confidence. It points to a system-level issue where curriculum planning does not adequately align with learning objectives across theoretical and clinical components. Participant 1 stated, "The clinical programme topics are not parallel to the theoretical programme topics. For example, the A clinical course must go with the B theoretical course." Students often entered simulation or hospital settings without prior theoretical grounding, leading to confusion or lack of preparedness. This disconnect undermines the effectiveness of simulation as a reinforcement tool for classroom learning.

Subtheme: Simulation time constraints due to curriculum design

Students indicated a gap between available resources and their actual use, highlighting a mismatch between scheduled hours and students' practical needs. Participant 2 stated, "Each one of us should have performed the procedures, but we could not do that because time was short. The laboratory was from 8:00 am to 11:50 am, which was not enough time. We needed more hours of simulation training." This expresses concerns about time constraints limiting access to individual hands-on practice in simulation labs. It reflects a structural or logistical limitation affecting learning.

Subtheme: Scheduling limitations and booking restriction

Students expressed a desire for more flexible access to simulation labs. Participant 3 suggested, "Keep the laboratory open because, if we want to use it at any time, instead of having to book in advance, we can book on the same day." This highlights students' wish for autonomy and extended practice through on-demand access..

Subtheme: Academic tasks interfere with simulation learning

Participant 5 stated, "The writing of reports takes a lot of time from our learning. I want oral reports instead of written ones. We always suffer from writing." This reflects student frustration with academic workload interfering with practical learning, particularly during simulation-based education. Writing the report occurred at the end of the simulated session.

Subtheme: Comfort with language of instruction in simulation

From the student's perspective, English is similar to Arabic for daily use in communication.

Participant 1 stated, "English language was not a problem." This suggests that, for some learners, language barriers did not interfere with simulation engagement, highlighting individual variation in linguistic adaptation.

Theme Four: Environmental Factors and Resources

This theme reflects how fidelity, equipment availability, and setup affect psychological safety and immersion.

Subtheme: Underprepared simulation environment

It highlights a disconnect between resource availability and actual usage. It suggests a lack of facilitator or staff preparation before student sessions. This signals how this affects student engagement, realism, and satisfaction. Participant 5 stated, "There is a doll that can breathe, but they do not turn it on. They do not prepare the room for us." This reflects student frustration over underused simulation capabilities and lack of environmental readiness, which reduces the effectiveness and realism of the experience.

Subtheme: Perceived Underutilization of Simulation Resources

Students expressed dissatisfaction due to the underutilization of available resources, perceiving a gap between potential and actual learning opportunities. Participant 8 stated, "there are things available at the faculty that we are not using them." This indicates an awareness of available but unused tools, which may lower perceived value or effectiveness. It signals a need for improved planning or faculty engagement in optimizing simulation use.

Subtheme: Enhancing authenticity through realistic physical setup and tools

Students desire realism and authenticity in the simulation environment, including physical setup and equipment functionality. Participant 7 stated, “Increase the equipment. The lab must have a physical layout similar to that in hospitals. All items should be real, as in a real hospital. For example, the draining should be done in full so that the student can see—not everything can be imagined as the exact scenario encountered at the hospital.” This reflects dissatisfaction with simulated shortcuts or imagined components.

Subtheme: Desire for more hands-on practice opportunities

Students felt that the current simulation frequency was insufficient, limiting skill acquisition and confidence. Participant 6 stated, “I will increase the classes in the lab, not one day per week.” This reflects a clear desire for more frequent simulation exposure as part of their learning process.

Discussion

This section interprets the findings of descriptive phenomenological exploration of nursing students' experiences with SBL in Saudi Arabia. The discussion is organized around the four themes Simulation as preparation for real-world clinical practice; instructional strategies and student engagement; curriculum and institutional constraints; and environmental factors and resources. A student SBL model is presented in Figure 1. The SBL as a proactive public health strategy was perceived as a pleasant and satisfying learning tool that enhanced engagement and motivation. Subsequently, sustainable nursing practice, that may contribute to a reduction in medical errors, safeguard patient safety, and improve nurse retention rates within high-stress clinical environments. When facilitators adopted learner-centered and contemporary approaches, students reported greater motivation (MacLean et al., 2019; Papaioannou et al., 2023). Students emphasized that simulation was not only viewed as a technical tool but also as a moral buffer that protects patients ensuring safety. They consistently described simulation as a critical, ethical, and preparatory space distinct from hospital environments, reflecting a growing sense of professional accountability towards the community. Students emphasized the contrast between simulation and clinical settings, particularly the difference between practicing on manikins and interacting with real patients. They expressed discomfort with practicing on real patients. This is consistent with INACSL's emphasis on safety in simulation (Watts et al., 2021). Students affirming simulation's value in developing confidence and competence before clinical placements.

Baayd et al. (2023) recommended culturally informed planning before simulation is introduced; preparatory materials like handbooks or digital media can ease students transition into SBL. Students recognized simulation as a safe space that prepares them for clinical realities. Imagining or mental rehearsal enabled the student to anticipate the simulation learning experience before engaging with the actual simulated clinical procedures. It is human nature to be able to consciously use imagination to simulate reality as well as fictional worlds (Decety & Grèzes, 2006). Imagination is a feature of human cognition; mental simulation of what will or what could be depends on the capacity to imagine (Hamrick, 2019). Using imaginative thinking indicates that facilitators are not treating students like storage devices. Imagination helps increase neuromuscular coordination, leading to the development of speedy and accurate performance. Subsequently, procedures appear more familiar and understandable to students, becoming more automated. Students' engagement with simulation was shaped by instructional design, facilitation, and communication. Scenarios typically progressed from simple to complex, aligning with students' academic level. Martínez-Arce et al. (2024) noted that senior students reported greater satisfaction with simulation programs, possibly due to increased complexity and autonomy. Facilitators in this study adapted scenarios to students' pace, promoting self-directed learning and addressing cognitive errors in real-time. Using a reflection-in-action approach allowed facilitators to provide immediate feedback (Mulli et al., 2022), while group-based reflection-on-action fostered deeper understanding and peer learning (Martínez-Arce et al., 2024; Palominos et al., 2021). Facilitator presence and feedback were crucial to positive learning experiences. Conversely, limited interaction or rushed timelines negatively affected learning outcomes (Bradley et al., 2019). Chavez and Lovecchio (2025) reported that repeated exposure “do-over” to correct mistakes increase students' knowledge and clinical judgment significantly. Furthermore, repeated exposure is linked to increased self-efficacy and professional confidence (Fuglsang et al., 2022; Turner et al., 2023). Although

Arabic was students' native language, they reported feeling comfortable communicating in English during simulations. While students expressed comfort communicating orally in English during live scenarios, the administrative burden of composing written post-simulation reports was perceived as an operational constraint that detracted from experiential, hands-on learning. Streamlining these academic workloads or transitioning to structured oral debriefing models could maximize available lab hours, ensuring that training time is optimally utilized to cultivate clinical reasoning and protect future patient welfare. The participants viewed writing as time consuming and suggested saving time through oral reports but it is an opportunity to strengthen writing skill. Writing is an important academic skill that would ensure smooth public health operation in which the student must be competent before graduating because nursing activities in the real clinical setting involve communication and writing nursing documentation. Students described increased confidence and readiness, perhaps due to supportive facilitators and safe environments to practice and communicate.

Jeffries (2020) emphasized the importance of aligning simulation design with curricular objectives, student readiness, and faculty expertise. Consistent with the theme curriculum and institutional factors recognized in this study; curriculum structure, institutional policies, and environmental resources shaped how students experienced SBL. Students valued simulation as a risk-free space for developing experiential knowledge and teamwork. Yet, student felt disconnected when simulation sessions were infrequent or poorly scheduled. However, infrequent sessions, rigid scheduling, and insufficient practice time left students calling for more flexible lab access. Such constraints limited hands-on opportunities and hindered skill development. Similar challenges have been reported, including limited time, underutilized equipment, and inconsistent facilitation (AlGharibi & Arulappan, 2020). Further, the physical and technological setup of simulation labs directly influenced students' learning. When labs were well-equipped and realistic, students gained greater confidence and skills (Craig et al., 2021). This calls for hospital-standard environments in simulation labs to better mirror real clinical situations. Misalignment caused frustration and diminished learning transfer (Berragan, 2014; Jeffries, 2020). These issues were echoed in student feedback in the current study, highlighting logistical and instructional barriers that reduce simulation effectiveness.

The proposed model functions like a wheel, with theme 1 Simulation as preparation for real-world clinical practice at the central hub. This hub is supported by three interconnected, structural spokes: theme 2: instructional strategies and student engagement; theme 3: simulation environment and resources, and; theme 4: curriculum and institutional constraints.

If any of these supporting spokes are weakened by rigid scheduling, restricted laboratory booking, or rushed sessions, the entire training system destabilizes. From a public health perspective, this systemic instability does not merely hinder classroom learning; it directly compromises the pipeline of clinically competent workforces entering the healthcare sector. When educational structures fail to provide adequate hands-on practice, graduating nurses enter high-stress environments with gaps in preparedness, directly elevating the risk of medical errors and sub-optimal patient safety outcomes at the community level.

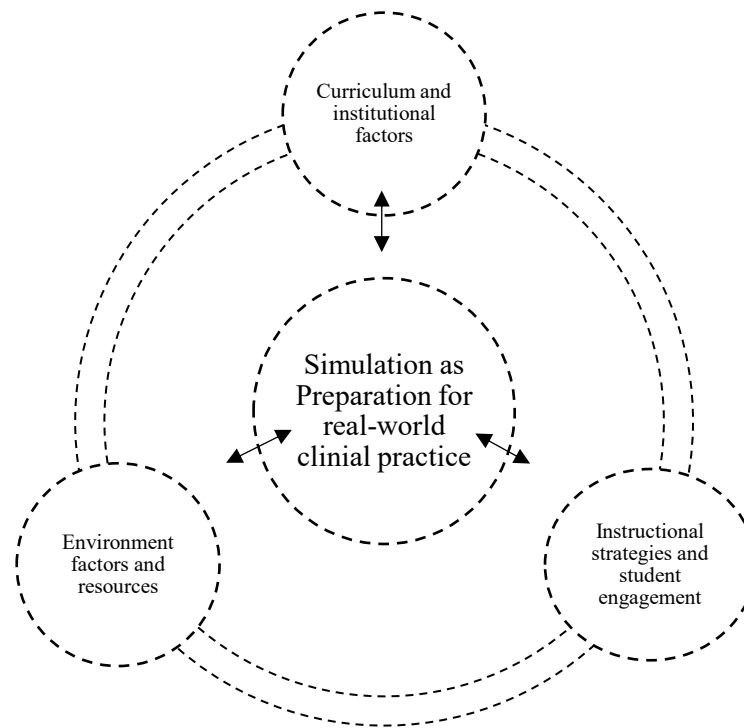


Figure 1: Students' Simulation-Based Learning of Bachelor Nursing Program

Figure 1 illustrates the model of nursing student SBL as an interaction between four themes derived from student experiences. These findings highlighted the ethical and pedagogical importance of investing in SBL. Simulation should not be treated as an ancillary tool but as a core health workforce strategy. Minimizing the logistical barriers identified by students, such as infrequent sessions and underutilized equipment directly prevents educational attrition and boosts professional self-efficacy. By stabilizing these instructional and institutional dimensions, nursing programs can build a resilient, sustainable workforce capable of meeting regional shortages and actively safeguarding patient care profiles across national health systems. Institutions need to ensure that resources, faculty development, scheduling, and simulation design align to maximize educational value and learner engagement. The author argued that implementing the International Nursing Association for Clinical Simulation and Learning 'INACSL' standards simulation practices may sustain SBL.

Conclusion

This study explored undergraduate nursing students' lived experiences with simulation-based learning (SBL) within a Bachelor of Nursing program in Saudi Arabia. Utilizing a rigorous descriptive phenomenological approach guided by Colaizzi's framework, the findings reveal that while students perceive simulation as a psychologically safe, confidence-building pathway to practice, its overall educational efficacy is significantly bounded by systemic constraints, including rigid scheduling, structural curriculum misalignments, and underutilized environmental infrastructure. From a public health perspective, these findings emphasize that the student experience is a foundational metric for evaluating the sustainability of healthcare training systems.

Optimizing SBL environments cannot be viewed merely as an elective clinical teaching choice; it must be prioritized as a proactive public health strategy designed to mitigate medical errors, improve future nurse retention amidst regional shortages, and secure patient safety profiles within high-stress clinical

environments. To realize the full potential of simulation in the Gulf region, institutional leaders and public health policy strategists must systematically harmonize curriculum design with international simulation standards, eliminate logistical and resource barriers, and provide sustained funding for environmental readiness. Ensuring that future nursing workforces transition seamlessly from simulated to real-world clinical practices is essential to fostering long-term health system resilience and community-wide safety.

References

1. Abdulmohdi, N., & McVicar, A. (2023). Investigating the clinical decision-making of nursing students using high-fidelity simulation, observation and think aloud: A mixed methods research study. *J Adv Nurs*, 79(2), 811–824. <https://doi.org/10.1111/jan.15507>
2. Alfes, C. M. (2011). Evaluating the use of simulation with beginning nursing students. *J Nurs Educ*, 50(2), 89–93. <https://doi.org/10.3928/01484834-20101230-03>
3. AlGharibi, K. A., & Arulappan, J. (2020). Repeated Simulation Experience on Self-Confidence, Critical Thinking, and Competence of Nurses and Nursing Students-An Integrative Review. *SAGE Open Nurs*, 6, 2377960820927377. <https://doi.org/10.1177/2377960820927377>
4. Alshehri, F. D., Jones, S., & Harrison, D. (2023). The effectiveness of high-fidelity simulation on undergraduate nursing students' clinical reasoning-related skills: A systematic review. *Nurse Educ Today*, 121, 105679. <https://doi.org/10.1016/j.nedt.2022.105679>
5. Baayd, J., Heins, Z., Walker, D., Afulani, P., Sterling, M., Sanders, J. N., & Cohen, S. (2023). Context Matters: Factors Affecting Implementation of Simulation Training in Nursing and Midwifery Schools in North America, Africa and Asia. *Clin Simul Nurs*, 75, 1–10. <https://doi.org/10.1016/j.ecns.2022.10.004>
6. Bahattab, A. A., Zain, O., Linty, M., Amat Camacho, N., von Schreeb, J., Hubloue, I., Della Corte, F., & Ragazzoni, L. (2024). Development and evaluation of scenario-based e-simulation for humanitarian health training: a mixed-methods action research study. *BMJ Open*, 14. <https://doi.org/https://doi.org/10.1136/bmjopen-2023-079681>
7. Berragan, L. (2014). Learning nursing through simulation: A case study approach towards an expansive model of learning. *Nurse Educ Today*, 34(8), 1143–1148. <https://doi.org/10.1016/j.nedt.2014.03.005>
8. Bradley, C. S., Johnson, B. K., Dreifuerst, K. T., White, P., Conde, S. K., Meakim, C. H., & Childress, R. M. (2019). Regulation of simulation use in United States prelicensure nursing programs. *Clinical Simulation in Nursing*, 33, 9.
9. Chavez, L. S., & Lovecchio, C. (2025). Senior Nursing Students in a Repeating Simulation Experience: A Pilot Study. *Nurs Educ Perspect*. <https://doi.org/10.1097/01.NEP.0000000000001421>
10. Colaizzi, P. (Ed.). (1978). *Existential-Phenomenological Alternatives for Psychology*. Oxford University Press.
11. Craig, S. J., Kastello, J. C., Cieslowski, B. J., & Rovnyak, V. (2021). Simulation strategies to increase nursing student clinical competence in safe medication administration practices: A quasi-experimental study. *Nurse Educ Today*, 96, 104605. <https://doi.org/10.1016/j.nedt.2020.104605>
12. Decety, J., & Grèzes, J. (2006). The power of simulation: Imagining one's own and other's behavior. *Brain Research*, 1079(1), 4–14. <https://doi.org/https://doi.org/10.1016/j.brainres.2005.12.115>
13. Fuglsang, S., Bloch, C. W., & Selberg, H. (2022). Simulation training and professional self-confidence: A large-scale study of third year nursing students. *Nurse Educ Today*, 108, 105175. <https://doi.org/10.1016/j.nedt.2021.105175>
14. Hamrick, J. B. (2019). Analogues of mental simulation and imagination in deep learning. *Current Opinion in Behavioral Sciences*, 29, 8–16. <https://doi.org/https://doi.org/10.1016/j.cobeha.2018.12.011>
15. Hussien, R. M., Khalil, T., Nashwan, A. J., Al-Najjar, H., & Khedr, M. A. (2025). Compassionate care in nursing: The role of simulation-based compassionate care on nurse's caring behavior, self-efficacy

- and compassion competency. *Nurse Educ Pract*, 87, 104470.
<https://doi.org/10.1016/j.nepr.2025.104470>
16. Jallad, S. T. (2025). Effectiveness of Simulation-Based Education on Educational Practices of Communication Skills, Satisfaction, and Self-Confidence Among Undergraduate Nursing Students. *Creat Nurs*, 31(2), 135–143. <https://doi.org/10.1177/10784535241301115>
 17. Jeffries, P. (2020). *Simulation in nursing education: From conceptualization to evaluation*. Lippincott Williams & Wilkins.
 18. Lioce, L., Lopreiato, J., Downing, D., Chang, T. P., Robertson, J. M., Anderson, M., Diaz, D. A., Spain, A. E., & Terminology and Concepts Working Group (2020). *Healthcare Simulation Dictionary*. <https://doi.org/https://doi.org/10.23970/simulationv2>.
 19. MacLean, S., Geddes, F., Kelly, M., & Della, P. (2019). Realism and Presence in Simulation: Nursing Student Perceptions and Learning Outcomes. *J Nurs Educ*, 58(6), 330–338.
<https://doi.org/10.3928/01484834-20190521-03>
 20. Martínez-Arce, A., Rodríguez-Almagro, J., Vélez-Vélez, E., Rodríguez-Gómez, P., Alconero-Camarero, A. R., & Hernández-Martínez, A. (2024). The impact of incorporating a simulation program into the undergraduate nursing curricula: A cross-sectional descriptive study. *Nurse Education in Practice*, 77, 103972. <https://doi.org/https://doi.org/10.1016/j.nepr.2024.103972>
 21. Mulli, J., Nowell, L., Swart, R., & Estefan, A. (2022). Undergraduate nursing simulation facilitators lived experience of facilitating reflection-in-action during high-fidelity simulation: A phenomenological study. *Nurse Educ Today*, 109, 105251. <https://doi.org/10.1016/j.nedt.2021.105251>
 22. Palaganas, J. C., Ulrich, B. T., & Mancini, M. E. (2020). *Mastering simulation* (2nd ed.). Sigma Theta Tau International.
 23. Palominos, E., Levett-Jones, T., Power, T., Alcorn, N., & Martinez-Maldonado, R. (2021). Measuring the impact of productive failure on nursing students' learning in healthcare simulation: A quasi-experimental study. *Nurse Educ Today*, 101, 104871. <https://doi.org/10.1016/j.nedt.2021.104871>
 24. Papaioannou, G., Volakaki, M.-G., Kokolakis, S., & Vouyioukas, D. (2023). Learning Spaces in Higher Education: A State-of-the-Art Review. *Trends in Higher Education*, 2(3), 526–545.
 25. Shepherd, I., & Burton, T. (2019). A conceptual framework for simulation in healthcare education - The need. *Nurse Education Today*, 76, 5.
 26. Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*, 19(6), 9.
 27. Turner, S., Harder, N., Martin, D., & Gillman, L. (2023). Psychological safety in simulation: Perspectives of nursing students and faculty. *Nurse Educ Today*, 122, 105712.
<https://doi.org/10.1016/j.nedt.2023.105712>
 28. Watson, C., Gomez-Ibanez, R., Granel, N., & Bernabeu-Tamayo, M. D. (2021). Nursing students first experience on high fidelity simulation: A phenomenological research study. *Nurse Educ Pract*, 55, 103162. <https://doi.org/10.1016/j.nepr.2021.103162>
 29. Watts, P. I., Rossler, K., Bowler, F., Miller, C., Charnetski, M., Decker, S., Molloy, M. A., Persico, L., McMahon, E., McDermott, D., & Hallmark, B. (2021). Onward and Upward: Introducing the Healthcare Simulation Standards of Best PracticeTM. *Clinical Simulation in Nursing*, 58, 1–4. <https://doi.org/10.1016/j.ecns.2021.08.006>
 30. Zhang, D., Liao, H., Jia, Y., Yang, W., He, P., Wang, D., Chen, Y., Yang, W., & Zhang, Y.-P. (2021). Effect of virtual reality simulation training on the response capability of public health emergency reserve nurses in China: a quasiexperimental study. *BMJ Open*, 11(9). <https://doi.org/https://doi.org/10.1136/BMJOPEN-2021-048611>