



THE AGA KHAN UNIVERSITY

eCommons@AKU

Theses & Dissertations

10-27-2023

Nursing faculty perspective on simulation based education: A qualitative exploratory study at public and private nursing schools in Karachi, Pakistan

Saira Mehboob Ali Lalani
Aga Khan University

Follow this and additional works at: https://ecommons.aku.edu/theses_dissertations



Part of the [Nursing Commons](#)

Recommended Citation

Lalani, S. A. (2023). *Nursing faculty perspective on simulation based education: A qualitative exploratory study at public and private nursing schools in Karachi, Pakistan* (Unpublished master's dissertation). Aga Khan University, Karachi, Pakistan.

Aga Khan University

School of Nursing and Midwifery

***NURSING FACULTY PERSPECTIVE ON SIMULATION BASED EDUCATION: A
QUALITATIVE EXPLORATORY STUDY AT PUBLIC AND PRIVATE NURSING
SCHOOLS IN KARACHI, PAKISTAN***

By

SAIRA MEHBOOB ALI LALANI

A thesis submitted in partial fulfilment of the requirements for the degree of

Master of Science in Nursing

Karachi, Pakistan

27th October, 2023

© Copy right

Saira Mehboob Ali Lalani

Aga Khan University

School of Nursing and Midwifery

Submitted in partial fulfilment of the requirements for the degree of
Master of Science in Nursing

Members of the Thesis Evaluation Committee appointed to examine the
thesis of
Saira Mehboob Ali Lalani

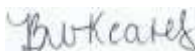
find it satisfactory and recommended that it be accepted



Chair, Thesis Evaluation Supervisor Dr. Salma Rattani



Co-Supervisor, Thesis Committee Ms. Zohra Khurji



Member, Thesis Committee Dr. Barbara Wilson Keates



Member, Thesis Committee Ms. Sadaf Zindani

External Examiner

External Examiner

27th October, 2023

Dedication

I would like to dedicate this dissertation to my dearest husband, Mr. Saleem Surani, who stayed by my side at every step of my whole journey. His continuous support and boundless love has motivated me during all the difficult times.

I would also like to dedicate this thesis to my beloved daughter, Ms. Ayat Saleem, my parents in law, Mr. Sadruddin Surani and Mrs. Naseem Surani, and my parents, Mr. Mehboob Lalani and Mrs. Anila Mehboob. Their love, support, and motivation has always given me the strength to believe in myself, and encouragement to choose the correct path in my personal and professional endeavors. I would not have been able to achieve this without all of their support.

Abstract

Background

Simulation-based education (SBE) provide novice and proficient student nurses a platform to learn and practice skills in a simulated environment, to become safe and competent nurses. This pedagogy is especially beneficial for those studying healthcare-related domains, as it permits students to gain hands-on expertise that is much more real and facilitating than the traditional methods of teaching. The role of nursing faculty is crucial in this process.

Purpose

The purpose of this study was to investigate the perceptions of nursing faculty members regarding SBE, as well as the facilitators and barriers of SBE.

Research Methods

An exploratory qualitative research methodology was used to explore the nursing faculty perspectives on simulation based education in nursing schools. These included one public and three private schools, offering undergraduate nursing (BScN) program. Thirty-three nurse academics participated in face-to-face focus group discussions. The focus group discussions were transcribed, and these transcripts were analyzed by following the steps of content analysis suggested by (Creswell & Creswell, 2018) .

Findings

The study revealed four major themes: (i) Nursing Faculty Viewpoints on SBE, (ii) Barriers of SBE, (iii) Factors facilitating SBE and (iv) The future of Simulation. The participants reported simulation as an effective pedagogy and highlighted its benefits, such as enhancing confidence and critical thinking skills; the barriers of SBE, including high expenses; lack of opportunities and interest in faculty; and limited availability of equipment. The facilitators of

SBE were students completing pre-simulation activities and collaboration with other institutions. The future of simulation included faculty development, equipment availability, and involvement of higher authorities.

Conclusion

The study explored faculty views, and facilitators and barriers of SBE. The inclusion and promotion of facilitators as well as easing of barriers will help to support and assist faculty in teaching SBE and in enhancing students' learning.

List of Abbreviation / Acronyms

BON	Board of Nursing
CMW	Community Midwives
ERC	Ethical Review Committee
FGD	Focus Group Discussion
HEC	Higher Education Commission
HFS	High-Fidelity Simulation
LFS	Low-Fidelity Simulation
PICO	Patient, Intervention, Comparison, Outcome
PNC:	Pakistan Nursing Council
SBE	Simulation Based Education
SBL	Simulation Based Learning
VR	Virtual Reality

Acknowledgements

First of all, I am thankful to Almighty Allah, who gave me the strength to achieve this goal and blessed me with the best.

Secondly, I am grateful to my supervisor, Dr. Salma Rattani, whose scholarly advice, help, and constant encouragement have contributed significantly to the completion of this study.

Thirdly, I wish to thank my dissertation co-supervisor, Ms. Zohra Khurji and committee members, Dr. Barbara Wilson Keates and Ms. Sadaf Zindani for their critical input in my study.

Lastly, I would like to thank Ms. Fatima shahbuddin for their facilitation in editing my work. I also wish to thank the management, staff, faculty members, my fellow students of AKUSONAM and the study participants for their invaluable input and for being a great source of support to me during my study.

Declaration

I declare that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university and to the best of my knowledge it does not contain any material previously published or written by another person, except where due reference has been made in the text.

The editorial assistance provided to me has in no way added to the substance of my thesis which is the product of my own research endeavors.



(Signature of Candidate)

27th October, 2023

Date

Contents

Dedication.....	iii
Abstract.....	iv
Background.....	iv
Purpose.....	iv
Research Methods.....	iv
Findings.....	iv
Conclusion	v
List of Abbreviation / Acronyms.....	vi
Acknowledgements.....	vii
Declaration.....	viii
List of Tables.....	xv
List of Figures.....	xvi
Chapter One: Introduction	1
Introduction.....	1
Background.....	2
Simulation-Based Education.....	3
Low and High-Fidelity Simulation	4
Faculty Perspective on Simulation-Based Education	5
Problem Statement.....	6
Personal Experience and Observation	6

Research Aim	7
Research Questions	7
Study's Significance	7
Summary of This Chapter	8
Chapter Two: Literature Review	9
Search Strategy	9
Theoretical Framework	11
Simulation-Based Education.....	12
Types of Simulation	13
<i>Low-Fidelity Simulation</i>	13
<i>High-Fidelity Simulation</i>	14
Application of Simulation.....	15
<i>Global Context</i>	15
<i>Asian Context</i>	15
<i>Pakistan's Context</i>	16
Scope and Significance of Simulation-Based Education in Nursing.....	17
Perspectives of Nursing Faculty	18
<i>Global Perspective</i>	18
<i>Asian Perspective</i>	20
<i>Pakistan's Perspective</i>	20
Barriers to Simulation Based Education.....	21
<i>Global Perspective</i>	21
<i>Asian Perspective</i>	22

<i>Pakistan's Perspective</i>	22
Impact of Facilitators	23
<i>Global Perspective</i>	23
<i>Asian Perspective</i>	24
<i>Pakistan's Perspective</i>	24
Gap Analysis	25
Summary	25
Chapter Three: Methodology	27
Study Design.....	27
Study Setting and Population.....	28
Selection Criteria	28
<i>Inclusion Criteria</i>	28
<i>Exclusion Criteria</i>	29
Sample Size and Sampling Method	29
Recruitment Plan.....	30
Data Collection Process	30
Interview Guide	32
Process of Data Entry and Analysis	32
<i>Data Organization</i>	33
<i>Reflexivity</i>	33
<i>Data Coding</i>	33
<i>Categories and Themes Generation</i>	33
<i>Representation of Data</i>	34

<i>Data Interpretation</i>	34
<i>Credibility</i>	34
<i>Dependability</i>	35
<i>Confirmability</i>	35
<i>Transferability</i>	36
<i>Confidentiality</i>	36
Ethical Consideration.....	36
Summary of the Chapter	37
Chapter Four: Results	38
Demographics	38
Themes	40
Theme 1: Nursing Faculty Viewpoints on SBE	42
<i>Category 1: SBE as a Descriptive View</i>	43
Code 1: Learning Skills Through Manikins.....	43
Code 2: Creating Real Life Scenarios to Build Experiential Learning Opportunities.....	43
<i>Category 2: Simulation as an Effective Teaching Learning Pedagogy</i>	44
Code 1: Simulation as an Advanced Method of Acquiring Knowledge.	44
<i>Category 3: Benefits of SBE</i>	45
Code 1: Reducing Anxiety and Hesitation, Building Confidence.	45
Code 2: Ensuring Safe and Quality Patient Care.	46
Code 3: Building Theoretical Concepts and Skill-Based Competencies	46
Code 4: Enhancing Decision Making, Problem Solving and Critical Thinking	46
<i>Category 4: Level of Fidelity in SBE</i>	47

Code 1: Low and High Fidelity Simulation	47
Theme 2: Barriers to SBE	48
<i>Category 1: Materialistic and Financial Barriers</i>	49
Code 1: Unavailability or Mismanagement of Resources.	49
Code 2: High Expenses and Limited Budget.....	50
<i>Category 2: Lack of Stakeholders Involvement and Regulatory Bodies</i>	51
Code 1: Lack of Stakeholders' Interest Towards the Profession.....	51
Code 2: Lack of Standardization and Compliance.	51
<i>Category 3: Lack of Expertise</i>	52
Code 1: Untrained or Inexperienced Faculty Leading to Lack of Competency in	52
Theme 3: Factors Facilitating SBE	53
<i>Category 1: Students' Engagement</i>	53
Code 1: Students Completing Pre-Briefing Activities	53
<i>Category 2: Faculty Initiatives</i>	54
Code 1: Collaboration with Other Institutions.....	54
Code 2: Faculty Creating Alternatives to Motivate Students.....	54
Theme 4: The Future of Simulation.....	55
<i>Category 1: Faculty Development and Engagement in SBE</i>	56
Code 1: Faculty Training Programs to Enhance Their Competencies	56
<i>Category 2: Availability and Maintenance of Resources</i>	57
Code 1: Skills Lab with Enough and Maintained Manikins	57
Code 2: Easy Accessibility for Students	58
<i>Category 3: Involvement of Institutional Administration and Regulatory Bodies</i>	58

Code 1: Proper Focus and Facilitation by Administration.....	58
Code 2: Pakistan Nursing Council (PNC) and Higher Education Commission (HEC) Should Set Some Criteria.....	59
Summary of the Chapter	59
Chapter Five Discussion	60
Nursing Faculty Viewpoint on SBE.....	60
Barriers of SBE	62
Factors Facilitating SBE	63
The Future of Simulation	64
Strengths of the Study.....	66
Limitations of the Study.....	66
Recommendations of the Study	67
Conclusion	67
References.....	68

List of Tables

TABLE 1 PARTICIPANTS CHARACTERISTICS (N = 27)	39
TABLE 2 THEMES, CATEGORIES, AND CODES	41

List of Figures

FIGURE 1 PRISMA DIAGRAM	10
FIGURE 2 THEME 1	42
FIGURE 3 THEME 2	49
FIGURE 4 THEME 3	53
FIGURE 5 THEME 4	56

Chapter One: Introduction

This chapter briefly describes the concept of Simulation-Based Education (SBE) and the perspective of faculty members regarding this teaching-learning method. It covers the introduction, background, Simulation based education (SBE), Low and high fidelity simulation, Faculty perspective on SBE, problem statement, researcher's personal experiences and observations, research aim, research question, significance, and summary of the chapter.

Introduction

Nursing is the most compassionate, caring, noble and fastest growing profession in the world (Vandali, 2017). It is a constantly changing and evolving discipline (Fukada, 2018). It includes advancement in technology and healthcare facility that requires nurses to constantly learn and adapt these changes to provide quality care (Dykes & Chu, 2021). The aim of nursing education is to produce qualified, competent, critical, and knowledgeable nurses who can serve according to the current healthcare needs (Vandali, 2017).

Nursing education comprises both classroom learning and clinical practice in simulated and actual patient care setting. Moreover, it is a discipline of practice (Mackey & Bassendowski, 2017). The utmost goal of nursing education is to integrate theory into practice (Yaseen Fathi & Ibrahim, 2023). It makes it possible for nurses to apply what they learn, to patient care areas effectively (Greenway et al., 2019).

In education, classroom learning or didactic learning mainly focuses on the theoretical content that is taught in a classroom setup through different teaching-learning methodologies, under the supervision of educated and qualified faculty members (Albaradie, 2018).

Another component of nursing is proficiency in skills and practice. This is the most significant part of a nursing student's learning phase that helps them to learn about the practical application of theoretical content, thus facilitating them in crossing the bridge between theory and practice. Learning nursing care related skills creates a professionally sound and competent nurse who can provide quality care to individuals who are in dire need of support and care. In the growing world of Nursing Education, Simulation is becoming significant, as it serves to prepare nursing students to render excellent patient care outcomes (Crowe et al., 2018) .

Background

Simulation based education has been around for many years, from the mid to late 1800s Maura (2020), but its popularity has increased in recent years due to advancements in technology. In history initially simulators were made to assist midwives in the nursing field; these were made by a doll maker to train nurses how to dress a patient. With the passage of time and advancement in technology and scientific principles in the 1980s, high technology simulators were introduced. Then, in the 1990s, modern patient simulators foundation was laid and at that time simulation was added as a teaching learning methodology in the curriculum (Iben, 2023).

There are various types of SBE, including E-learning, virtual reality, and low and high fidelity. The SBE pedagogy is especially beneficial for those studying healthcare-related domains, compared to traditional teaching approaches, it enables students to obtain practical experience that is much more enabling (Korayem et al., 2022). Moreover, this type of education provides an effective way for students to learn. However, the efficacy of simulation, like all educational methodologies, depends on how effectively it is used. Simulation is suggested to be

incorporated into the nursing curriculum for improving patient care outcome (Murakami et al., 2023).

Hussein et al. (2022), said simulation based education 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 patient's life. Chang et al. (2021) said that, it is an instructional method that uses technology to create a realistic demonstration of a concept or process. It is commonly used in healthcare domains, military, and aviation, but it can also be added in many of other fields as a teaching-learning methodology (Rojas-Sánchez et al., 2023).

In healthcare, simulation is a collection of activities that share an extensive purpose to increase the safety, effectiveness, and competence of healthcare professionals. According to Alinier and Oriot (2022), it can be used to teach skills, such as clinical decision-making, problem-solving, critical thinking, communication, the use of medical devices and instruments, and patient care, as well as to provide an immersive learning experience. SBE has been shown to enhance the quality of care, safety, reduce the risk of medical errors, increase knowledge retention and experiences that lead to lifelong learning (Aebersold, 2018).

Simulation-Based Education

Simulation is referred to as a teaching-learning pedagogy that helps in acquiring skills in a well-equipped and well-developed environment that facilitates student's to learn skills in a safe and effective manner, without causing any harm to the actual patients (Raemer et al., 2018). Simulation-based nursing education is a progressively growing approach. It offers the learners a variety of chances to boost their clinical competencies and decision-making power by dealing with numerous real-life scenarios (Labrague, 2021).

Simulation based education in the field of nursing can expedite the learning of novice nurses as well as of those who have limited bedside experience. It is to nurture their growth, and enhance their clinical competencies. It allows them to practice situations related to patient care in a well-found simulated environment, where they are free from the stress of harming or hurting the patients, as it is executed on mannequins in a particularly prepared setting. This teaching pedagogy provides competency, strength, confidence, insight, and feedback which helps multiple, real life-threatening situations (Ruslan & Saidi, 2019).

Labrague (2021), stated that simulation based education is a platform prepared to provide real clinical case scenarios. It is an authentic methodology to empower nursing students to get a good command of the skills and enhance their decision-making expertise. By using this approach, repetitive rehearsal of skills can be performed to make oneself comfortable, more efficient, and to know the errors and get several chances to correct them before applying them to the live patients. The SBE practices can be amalgamated with the theoretical part of the nursing curriculum in a very efficient manner, which can assist students to grasp the ideas and support the mentor to easily convey the information without distress. Moreover, this provides space to adjust the difficulty of tasks and opportunities to personalize learning.

Low and High-Fidelity Simulation

Low-fidelity simulation (LFS) is a fundamental part of nursing education. It is suitable for imparting skills used in nursing and other disciplines to demonstrate complex procedures and a wide range of scenarios such as taking vital signs, in a non-dangerous and genuine environment. As stated by Wenlock et al. (2020), it can be used to train nurses to deal with variety of emergency situations as well. It requires basic inexpensive equipment, such as mannequins, and task trainers to demonstrate a process or provide an intervention. The learners

can utilize their understanding and capabilities to advance their skills and practice interventions (Aarkrog, 2019).

High-fidelity simulation (HFS) promotes practice-based learning and holistic patient care with the help of advanced technology in a situational prepared environment. In this, the focus is on decision-making, problem-solving, prioritizing, and responsiveness to personal feelings or attitudes. It facilitates the overall preparedness of the students in their field (Thompson, 2021) .

Faculty Perspective on Simulation-Based Education

Students must be trained on how to consider, prioritize, and perform nursing skills in a systematic manner so that the patient's safety is not threatened. For this reason, simulation is used as a pedagogy for enhancing patient safety and decreasing risk (Aebersold, 2018).

Simulation based education is a methodology through which educators or faculty members can render skill-based competencies to nursing students to enhance their expertise. According to the faculty members, the simulation process includes pre-briefing, scenario performance, and de-briefing. Pre-briefing is a preparatory activity through which instructions are given to the students prior to performance, essential information is provided to learners before the simulation based experience. Then, students perform the scenario in a simulated setting. Lastly, de-briefing is carried out in which the performed actions are reviewed and reflected upon to make the practices more perfect (Chang et al., 2021).

This methodology of teaching enables the faculty members to enhance their capabilities in delivering productive feedback on an instant and intermittent basis (Coggins et al., 2022). They can facilitate students to enhance their competencies, lower their anxiety levels, and correct their doubts, so that when the students go to the bedside, they can give appropriate care to their

patients. It is essential to dig out the perspective of faculty members as they are partners with students in acquiring learning. There are perspectives, and experiences regarding SBE.

Problem Statement

Franklin and Blodgett (2020), highlighted the recent challenges in nursing is exactly how to successfully incorporate SBE into the nursing curriculum. The faculty perspective on SBE is the central element to consider, as faculty members are the ones who create, implement, and evaluate the effectiveness of such methodologies. This is the main thing that requires work as, if the faculty is well aware about this pedagogy then, even after having many barriers, they will not compromise on their students' learning, but will facilitate it even with low resources.

Karacay and Kaya (2020), stated that faculty members realize the worth of using SBE technology for its probable initiative to improve patient care outcomes and the safety of human beings, but they also express concerns about its time and cost. It is important to explore these concerns, and the faculty's perspectives on SBE, and their perspectives on how to address the issues, barriers, and facilitators in the use of SBE.

Personal Experience and Observation

As a nursing faculty for the last two years, I have personally observed the positive impact of SBE among nursing students. Simulated setting facilitates them to learn more effectively, as it reduces their anxiety, helps them get acquainted with new technology and procedures, boosts their confidence, and enhances their knowledge. As beginners, sometimes they are very shy, anxious, and uncomfortable with different skills. Hence, simulation provides students with a platform to overcome their hesitation and makes them well aware of the work that they have to actually perform in the patient care setting. As a faculty member, this pedagogy supported me to

strengthen my students' learning, and to make them skilled and knowledgeable nurses. learning and practicing in a simulated environment was also feasible for students.

Research Aim

1. The aim of this study was to find out the perspectives of nursing faculty members regarding SBE.
2. Explore the perspectives of nursing faculty members regarding the facilitators in using SBE.
3. Explore the perspectives of nursing faculty members regarding the barriers in using SBE.

Research Questions

1. What are the perspectives of nursing faculty members regarding SBE?
2. What is the understanding of the nursing faculty members regarding the barriers in using SBE?
3. What is the understanding of nursing faculty members regarding the facilitators in using SBE?

Study's Significance

This research helped in identifying the faculty's thoughts, experiences, and understanding regarding simulation. It provided an insight into best practice guidelines for teaching through simulation-based pedagogies. It also provided some understanding about promoting this valuable teaching methodology. Moreover, the research helped the researcher in identifying the barriers that obstruct the teaching process and the facilitators that make the teaching-learning process more productive. This can enhance the abilities of the faculty to teach simulation-based nursing education, and to provide constructive feedback to the students to make them confident enough to deal with various situations in real clinical areas.

Summary of This Chapter

Simulation is a teaching-learning method through which many nursing skills can be gained in a well-settled, safe environment. Simulation has different fidelity levels that ensure learning on a practical basis. Hence, it should be considered as an important component in order to prepare highly competent nurses according to the advancement of time and technology.

Chapter Two: Literature Review

This chapter presents knowledge on Simulation-Based Education (SBE) and provides insight into research problems or gaps in existing literature. This chapter provides a general overview, search strategy, theoretical framework, literature review on SBE and its types, including low and high fidelity, its application, scope, and significance, perspective of Nursing faculty members, facilitators and barriers of simulation, changes that faculty observed in their students through this approach, gap analysis, and a summary of this chapter.

Search Strategy

In the initial stages the research question was defined and explained; this helped in identifying the relevant keywords and terms to use in this search. Furthermore, relevant databases were identified according to the topic. Some of the commonly used databases for literature-based research include Google Scholar, JSTOR, PubMed, and Scopus. Once it was identified which databases needed to be used, a list of keywords and search terms related to the topic was developed.

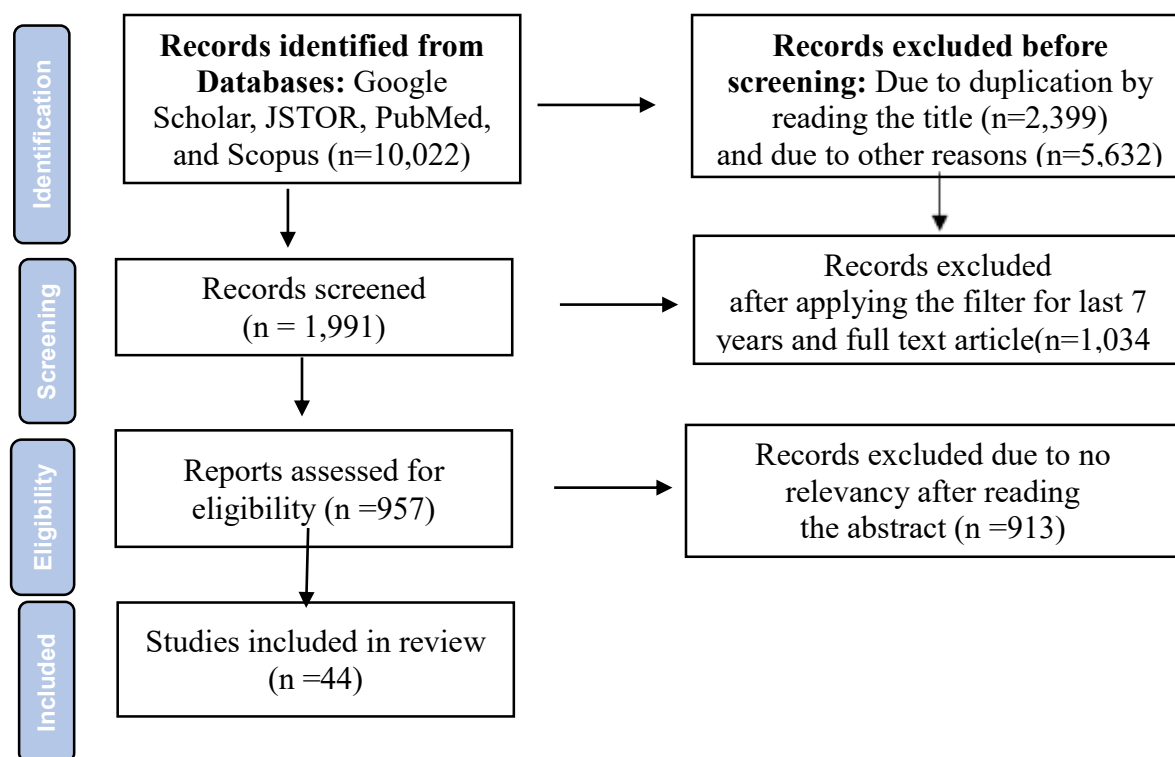
The research showed that systematic reviews examined the effect of using “Patient, Intervention, Comparison, Outcome” (PICO) model as a tool for search strategy in qualitative literature exploration. The purpose of a study by Eriksen and Frandsen (2018), was to evaluate the effectiveness of PICO. The findings suggested that PICO was a useful tool that has improved search quality and helped to identify relevant articles. Boolean Operators were used, such as AND, OR, NOT, for specific and comprehensive search. The Mesh terms included in the search from the various databases were “Simulation-based education” OR “Simulation-based nursing education”, “Faculty perception” OR “Faculty perspectives”, “Teaching methodology” AND

“Curriculum development”, “Types of simulation” AND “learning outcomes”, “Faculty perspective on simulation” AND “Barriers of simulation” AND “Facilitators of Simulation”.

The articles related to the topic that were published between 2017-2023 were searched. This search was carried out in the month of May, 2023. Articles were evaluated and read to determine their relevance to the research question. Moreover, the researcher took notes of the key findings and themes in each article.

In total, 10,022 papers were researched, out of which, 8,031 articles were excluded because of duplication. Then 1,991 were left, out of which, 1,034 articles were excluded because their content was not relevant. After that, 957 were left, from which 913 were excluded after reading their abstract and finding no relevance to the topic. This information is presented through the “Preferred Reporting Items for Systematic Reviews and Meta-Analyses” (PRISMA) (Page et al., 2021) (see Figure-1). Lastly, 44 research papers were selected which include original research (qualitative and quantitative) and review articles. A brief about these research papers is included in (Appendices G).

Figure 1 Prisma Diagram



Theoretical Framework

Simulation Based Education is a methodology that provides a simulated experience of learning. It is commonly used in fields like medicine, aviation, and military trainings, to provide learners hands-on experience in a safe and highly controlled environment. In recent years, SBE has gained admiration in other fields as well, including education and business. To make the most of it, faculty members must understand the learning process involved in this approach. The model that could be helpful in this regard is Kolb's Experiential Learning Cycle.

According to Kolb and Kolb (2018), there are several important components in this cycle. The findings of this article summarized the concepts of this cycle and their practical implications for learning and education. Learning is a process that involves four stages: concrete experience, reflective observation, abstract conceptualization, and active experimentation. In the perspective of SBE, each of these stages is essential and facilitates effective learning experiences.

The first stage of this model is concrete experience. In SBE, this includes creating a realistic experience for learners. Its goal is to allow learners to experience the situation first-hand, in a way that it would be very close to the real scenario.

The second stage is reflective observation. According to, Davitadze et al. (2022), Simulation- via Instant Messaging- Birmingham Advance (SIMBA), utilized Kolb's theory on 40 participants. The aim was to assess the usefulness of the SIMBA program. It was found that it improved participants' confidence and competencies. After the simulation experience, the faculty encourages learners to reflect on the process and facilitates them to make sense of their experiences.

The third stage is abstract conceptualization. In this, the learners use their reflections and develop new ideas that help them better understand the experience (Kolb & Kolb, 2018). Faculty

members facilitate this stage by guiding learners in analyzing their reflections and identifying key concepts.

The fourth stage is active experimentation, Morris (2020), has conducted a systematic review on the experiential learning cycle and Kolb's model. The findings suggested the need for a revision of Kolb's model, to include social and emotional learning, cultural diversity, and technological advancements. In this stage, learners apply new ideas and create new experiences. The faculty facilitates in this stage by providing learners with additional simulation experiences, so they can learn and implement more.

Simulation-Based Education

Simulation is a teaching learning methodology that engages learners in a simulated experience that is designed to replicate real-clinical circumstances in a safe and controlled environment. The goal is to get the learners engaged in these scenarios and make them learn, before dealing with real patients.

As stated by Crowe et al. (2018), SBE has a great influence on confidence and knowledge of nurses , and on patient care outcomes. It has facilitated in several ways, including teaching skills, allowing nurses to practice scenarios that they do not encounter frequently , and providing a safe environment to learn. A study conducted by Kang and Kang (2020), in South Korea, on a sample size of n= 89, third year nursing students. This study evaluated the effectiveness of SBE on clinical reasoning competence, clinical competence, and educational satisfaction. The findings suggested that SBE could improve all three. The goal of SBE was to provide learners with hands-on experience. By doing so, learners developed competency in the skills and knowledge that they needed to perform effectively in real-world situations.

Simulation Based Education (SBE) through team training had improved clinical outcomes, reduced errors, and enhanced teamwork (Shah et al., 2019). Through this approach, learners were permitted to practice and develop their skills in a realistic, safe environment, without the risk of consequences. They received feedback on their performance, which could support them to improve their practices (Shah et al., 2019). A review conducted by Cook et al. (2018) explored the effectiveness of SBE in physician education. The goal of the study highlight the benefits of SBE in improving patient outcomes, reducing costs, and enhancing training efficiency. The study concluded that SBE was an efficient tool for training and could have a significant impact on healthcare. It could be a highly effective approach for teaching and learning, particularly in fields where hands-on experience was essential.

Types of Simulation

Simulation is a pedagogy that creates a real situation, in a safe environment, to analyze, understand, and predict behaviors and consequences. There are different types of simulation that vary in their fidelity or level of application.

Low-Fidelity Simulation

According to Ritter et al. (2023), Low-fidelity simulation (LFS) is a type of simulation that facilitates learners to enhance their knowledge and practices in a less real scenario than in a high fidelity simulation. Moreover, LFS is a useful approach that takes less time to be performed. This allows the learner to repetitively practice the simulated scenario, making them more perfect. LFS is also less complex, so it gives minimal cognitive burden. Hence, participants with limited experience can also get engaged with LFS. Using a Quasi-experimental design, Brauneis et al. (2021), explored the effectiveness of LFS in enhancing confidence and knowledge, in a

pharmacology course of pre-licensure nursing students, n= 44. The results showed that the participants knowledge and confidence increased by using LFS.

As stated by Findik et al. (2019),LFS is an approach that enhances skills and promotes active learning in nursing students. They feel satisfied with this educational methodology. Through this, the students believed that they could enhance their competencies. A Quasi-experimental study was conducted by Angelina et al. (2021), in a primary health care setting in Tanzania, with a sample size of n=172. The purpose was to test the effectiveness of LFS training interventions that enhanced knowledge and skills in nurses. The findings suggested that LFS training showed positive changes in nurses' knowledge and skills. The effects were obvious even after six months.

High-Fidelity Simulation

High fidelity simulation (HFS) provides exposure to a near to real scenario, to practice and enhance individual competencies in a well-equipped, simulated environment. HFS has positive effects, as it enhances the level of thinking in nursing students, and generates higher order thinking (Hanshaw & Dickerson, 2020). Using a Quasi-experimental design, the research of Guerrero et al. (2022), identified and compared the efficiency of HFS learning on n=30 nursing staff and students. The findings reported that both the groups showed high levels of satisfaction, confidence, and enhanced critical thinking and knowledge retention.

According to Thompson (2021), HFS has shown lowering down anxiety in nursing students. As anxiety is the biggest cause of error in clinical settings, simulation-based approaches could allow students to practice skills in a safe environment and make them competent enough to mitigate errors in clinical settings, like medication errors. A Phenomenological study was conducted by Watson et al. (2021), explored the perceptions of n=16 undergraduate nursing

students regarding their first exposure to HFS. The findings showed that HFS had a great impact on nursing students; it prepared them for their clinical rotations in a safe environment, boosted their confidence, and helped them reduce the chances of errors.

Application of Simulation

Simulation has become an increasingly popular teaching-learning pedagogy in nursing education, due to its ability to provide a safe and controlled learning environment, where students can improve their skills. The research by Meum et al. (2020), aimed to understand how SBL affects the learning process of nursing students. A systematic review was conducted and the findings proposed that SBL should be an integral part of the bachelor's program in nursing, as it positively affects learning.

Global Context

Simulation has been widely adopted in the global context as a means of enhancing student learning and engagement. In the USA, e-learning simulation in nursing education, helped the students in involving with the content and enhanced their self-learning, regarding pediatric simulation (Logan et al., 2021). Moreover, a Survey was conducted by Kamińska et al. (2019), that investigated the application of virtual reality (VR) in education. Its purpose was to provide an overview of VR technology in education. The findings suggested that VR had a significant potential for enhancing learning outcomes and engagement, particularly in science and medical education, and developing critical thinking, clinical reasoning, and decision-making, and promoting teamwork and communication.

Asian Context

A study conducted by Baayd et al. (2023), found that SBE was well implemented and it gave a wide range of benefits to nursing education and practices. However, for the application of

SBE, it was suggested that stakeholders should be involved and cultural values should be incorporated. The students were found to be more excited to learn via this new methodology than with traditional learning. A research study conducted in Taiwan, by Hung et al. (2021), stated that various changes were found in students due to SBE. The purpose of this study was to find out the changes in nursing students' competency, self-efficacy, and learning satisfaction after multiple exposures to simulation-based session. The repeated measurement experimental design was used with n=79 nursing students. The findings showed that faculty observed significant changes in the competency level, self-efficacy, and learning satisfaction scores in nursing students after repeated exposures to simulation.

The application of simulation in nursing is essential in terms of reducing the anxiety of students. The safe environment in simulation facilitates, students in improving their knowledge and skills and lowering down their anxiety, so that they can perform well in the real clinical scenarios (Vural. & Zengin., 2020) . A study by Lee and Park (2020), in Korea, showed the changes that faculty members observed in their students after SBE. The purpose of this study was to find out the views of nursing students and faculty about SBL. Using the Q-methodology, nursing students, n=46, and instructors, n=38 were involved. The results suggested that SBE was an effective educational methodology that improved students' competence, skills, knowledge, motivation, critical thinking, and problem-solving skills. These were some of the obvious characteristics that they found in their students.

Pakistan's Context

The application of simulation in the Pakistani context, has been gaining attention from researchers and educators in recent years. The effectiveness of Simulation-Based training with Community Midwives (CMW) has shown improvement in skills and knowledge retention,

regarding helping babies breathe through resuscitation, those who are born with birth asphyxia (Mubeen et al., 2021). Moreover, a Quasi-experimental study design, with pre and post-test was used by Rattani et al. (2020), that aimed to measure the effectiveness of HFS in teaching the end of life care in a palliative course, in the undergraduate nursing program at the Aga Khan University, School of Nursing and Midwifery Karachi, Pakistan. The sample size was n=42 nursing students. The findings showed that students attitudes towards providing care improved and that they were also able to handle their emotions, through the use of HFS.

Additionally, a literature review conducted by Saleem and Khan (2023) , stated that, in Pakistan, simulation was an essential component of education, which has flourished in the last couple of years and was highly acknowledged by the teachers as a way to advance skills and knowledge in healthcare, that can lead to better patient care outcomes.

Scope and Significance of Simulation-Based Education in Nursing

A quote by Confucius states that “I hear and I forget, I see and I remember, I do and I understand”. SBE has become highly significant in nursing, because it has facilitated student nurses to cross the bridge between theory and practice. Nursing students were facing a lot of problems to practice theoretical concepts in clinical settings, however, simulation has facilitated their learning and they can now practice skills in a safe environment, which has boosted their confidence, and self-esteem, and enhanced their clinical skills and decision making power. Thus, learning is promoted (Koukourikos et al., 2021).

A descriptive study by Karlsaune et al. (2023), stated that simulation substantially groomed nursing students’ critical thinking and decision making skills. It facilitated the creation of a secure environment for patients and helped reduce the chances of errors. It made nursing practices more effective, leading to better healthcare outcomes. Moreover, simulation promoted

an adult learning approach, as it gave an opportunity to participate actively, which stimulated the learning process and attained better learning outcomes.

With the increased complexity of health care, nurses should be skilled and highly knowledgeable in order to work effectively in clinical settings. This shows the need for continuous professional development, as this can help nurses compete with the complex scenarios. For this interactive learning methods are used, as these enhance learning, including simulation, that helps nurses gain experiential learning about how to deal with the complexity of the task (Cant et al., 2020). A review by Masooth Mohamed (2023), highlighted the scope of simulation in nursing education, stating that simulation has provided a real environment for the nurses to practice and enhance their skills. Moreover, it has provided a platform for nurses where they can develop all domains of learning including the cognitive, affective (attitude, behavior, emotions), and psychomotor domains. It has developed confidence in nurses to work effectively in healthcare settings.

Perspectives of Nursing Faculty

Simulation based education has been increasingly adopted by nursing educators worldwide (Salifu et al., 2022). According to faculty members, SBE is a very effective pedagogy to develop different skills in students. It is an effective way to enhance clinical skills and decision-making, in a safe and organized environment.

Global Perspective

Across the world, simulation has been found to be an effective methodology that incorporates theory into practice and leads to better student outcomes. A comparison was carried out, through a Cross-sectional mixed method study, to identify the efficacy of simulation in clinical practice, from the perspective of faculty, simulation facilitators, and students. The

findings showed that the knowledge and skills of faculty and facilitators had a great impact on students' learning and if they were well trained, they could develop that expertise in their students as well. On the other hand, they found a lack of consistency in simulation based activities, due to lack of preparedness. They also noted that cost, time and administration support were key challenges to simulation-based education (Egan et al., 2023).

A Qualitative case study was conducted in the USA, by Howell (2017), highlighted the perspective of nursing faculty members. The purpose of this study was to explore the perceptions of nursing faculty regarding integration of HFS in undergraduate nursing programs. The participants were n=22 Nursing Faculty. The findings suggested that HFS should be integrated in the nursing curriculum, and efforts should also be made to improve its applicability by enhancing faculty capability and through provision of other assets. The faculty highlighted that they felt, that they were supposed to learn simulation by themselves. However, they reported that they needed ample time to develop, plan, and deliver SBL. Furthermore, administration support was vital for making SBE successful.

According to Bryant et al. (2020), a summit was conducted at the Columbia University School of Nursing, in which n=15 simulation specialists were invited from different areas of the world. The panel discussed the future of SBE, the latest trends in research regarding simulation, and its integration for better patient outcomes. They highlighted some important aspects; like Simulation was a major component of education in health care and was advantageous for practicing health care providers as well. Moreover, simulation required trained professionals, who can develop and conduct simulation based sessions with the support of the administration of the institute. They further added that simulation has shown increased self-confidence, and

enhanced knowledge and satisfaction in students. Furthermore, they suggested that shared researches should be carried out to develop more innovations in simulation.

Asian Perspective

The perspectives of nursing faculty, regarding their readiness to integrate SBE in the nursing programs, was explored in a study conducted at a university located in Asia. Their perceptions depicted that integration of SBE depended upon the higher degrees of faculty members, years of experience, and years of using simulation in teaching practices. Furthermore, they suggested some factors that need to be incorporated, in SBE; these included understanding the need for simulation, institutional support, sustainability of this practice through the development of culture, enough time, faculty and resources, readiness, and availability (Almotairy et al., 2023). Another study conducted in Nepal by Piryani et al. (2019), highlighted the perceptions of nursing faculty on SBE. This was evaluated through a workshop. A semi structured pre-test and post-test questionnaire was used, that had Likert scales and open-ended questions. Total participants were n=20, but 17 filled the consent and participated. All participants mentioned that integration of SBE in nursing was significant to develop professional capacity, which could result in better quality of care.

Pakistan's Perspective

There are very few studies that have highlighted the perspectives of nursing faculty in the Pakistani context. In the era of the pandemic, the nursing faculty highlighted that with online studies simulation could be the best methodology to equip nursing students virtually, through online simulated patients, or role plays that could help them learn about history taking, clinical reasoning, and communication techniques (Mukhtar et al., 2020). An exploratory mixed-method study was conducted, at twelve nursing institutes, in five cities of Pakistan, by A. Younas et al.

(2019). This study explored the perspectives of nurse educators about clinical and academic teaching and its challenges. They took a sample of 124 educators. The study findings suggested that the educators faced several challenges. These included excessive workload, time constraints, inadequate student-faculty ratio, underdeveloped curriculum, insufficient resources, lack of clinical teaching space for skills and simulation labs, and professional development was not encouraged. They also reported lack of autonomous decision making and educational research.

Barriers to Simulation Based Education

SBE is an effective teaching strategy in nursing education. However, there are several barriers that prevent its widespread adoption and implementation in different contexts.

Global Perspective

Nurse educators face many barriers regarding simulation based teaching. They are not well trained to facilitate SBE sessions. They should be educated theoretically and practically as well, so that they can support and teach their students appropriately. Other barriers that they reported were lack of resources and lack of preparation in students (Luo et al., 2021). A Qualitative case study was conducted in the USA, by Howell (2017), which highlighted the perspective of the nursing faculty members. The purpose of this study was to explore the perceptions of nursing faculty regarding integration of HFS and its related barriers in undergraduate nursing programs, n=22 nursing faculty participated in this study. The findings highlighted some barriers, which that included time to plan and execute SBE, untrained faculty, financial constraints, and lack of space for students practice. Moreover, the faculty personally felt uncomfortable, and sometimes they felt this was a learning experience for them as well.

Moreover, a qualitative phenomenological study was conducted in Midwestern USA and the Caribbean. This study explored the experiences of faculty members regarding the integration

of simulation into teaching practices. They expressed that, they were not internally motivated to learn this unique method of teaching, the clinical areas had limited space, and they needed evidence-based instructions to adopt simulation. They thought it was difficult to integrate simulation with teaching (Hernandez-Acevedo, 2021).

Asian Perspective

Perspectives of the nursing faculty, regarding the barriers in integrating simulation in teaching process, included untrained faculty, infrastructure issues, lack of equipment's and lack of organizational and stakeholders support to implement programs. They highlighted some of the above issues as the biggest obstacles in the integration of simulation in nursing education (Almotairy et al., 2023). A Cross-sectional descriptive study was conducted by Luo et al. (2021), in China with n=136 nurse educators . This study explored the perceptions of nurse educators towards simulation based teaching. Through this study they highlighted several barriers, like, lack of faculty team-building for simulation, lack of professional capacity in faculty, lack of preparedness and motivation in students, lack of experience and knowledge of faculty, lack of faculty development opportunities and time constraints.

Additionally, a qualitative study was conducted by Alshehri et al. (2023), in Riyadh. The participants were n=10 faculty members. The findings of the study highlighted some of the barriers of SBE, like, lack of trained faculty, high expense of simulators, and most of the faculty had no experience to conduct Simulation based sessions.

Pakistan's Perspective

Very few studies were found in the Pakistani context regarding barriers to use of simulation in nursing. Some of them are discussed below.

According to the nursing faculty members, there were plenty of challenges at the level of Pakistan, as well. These included unstructured policies, that could hinder the improvement of the teaching learning process. Moreover, heavy workload of the faculty, lack of space, and untrained faculty members were also highlighted as barriers (Younas. et al., 2019). Furthermore, a Qualitative descriptive exploratory study was conducted by (Asad, 2018) , that explored the perceptions of nursing students about the pedagogies implemented in nursing schools in Karachi, Pakistan. It was conducted, with 14 Nursing students (seven from 4th year BScN and seven from the MScN program). The findings suggested that while shifting from traditional to strategic teaching learning pedagogies, like SBE, the barriers were untrained faculty, time constraints, faculty's hectic schedule, and lack of institutional and leadership support.

Impact of Facilitators

SBE helps nursing faculty to develop better teaching practices; it provides a safe environment to practice and learn. Some of the key facilitators of SBE in nursing include, the availability of simulation resources and techniques, faculty training on the use of simulation, adequate preparation and support for faculty, and the presence of a knowledgeable facilitator. Additionally, having an effective assessment and evaluation system in placed was essential for ensuring the success of SBE.

Global Perspective

Simulation based education has a great impact on nurses. It has improved nurses' confidence and knowledge, that facilitates them to work efficiently in the health care settings, which can eventually lead to best patient care outcomes. A study showed that these impacts were sustainable for a long time (S. Crowe et al., 2018). Furthermore, a Mixed-method study was conducted in Spain, by Carrero-Planells et al. (2021), assessed the implementation of

HFS as a teaching tool for fundamental nursing procedures and highlighted the perspectives of students and teachers related to the impact of HFS. It was conducted with n=91 students and faculty. The results of the study showed some impacts of the facilitators of HFS. It brought students closer to real-life scenarios, bridged the gap between theory and practice, developed insight, helped to communicate therapeutically, and developed emotional and ethical relationships with patients.

Asian Perspective

Alshehri et al., (2023), explored the perceptions of nursing faculty members' regarding SBE. The authors reported that, the faculty appreciated the use of simulation in improving patients' safety, as it gave a risk-free environment to practice. It portrayed the working environment and identified the gaps between theory and practice. A study by Baayd et al. (2023), identified the impact of facilitators of simulation in nursing and midwifery schools. In-depth individual interviews were carried out, with 14 simulationists. The findings showed that SBE had a great impact on learners and helped deliver better outcomes. Furthermore, students were found to be excited to learn via the new methodology, which meant that it had gained students' interest as well.

Pakistan's Perspective

Very few studies were found in the Pakistani context. One study, conducted by Hussain et al. (2019) , explored the facilitators of simulation and skill learning in nursing education. A Quasi-experimental design was used, with pre and post intervention. The sample size was n=133 students. The findings depicted that simulation had a great impact on nurses, it is a valued tool to gain knowledge, skills, competency, and confidence, which are essential for performing in clinical settings.

Gap Analysis

The use of SBE in healthcare education has become increasingly popular in recent years. However, despite its widespread adoption, there is a need for better understanding the faculty perspectives on SBE. To address this gap, a gap analysis was conducted to identify areas for improvement in the literature with regards to faculty perspectives on SBE.

The gap analysis identified several areas that require further investigation. Firstly, there is a need for better understanding the faculty perspectives on the use of SBE in nursing, as only some studies have focused on the nursing profession. Specifically, in the Pakistani context, there are very few studies in this research area. Secondly, there is a need for research that explores the impact of faculty development and trainings to conduct SBE sessions. Thirdly, there is a need for research that examines the facilitators and barriers in the implementation of SBE in nursing education, especially in the Pakistani context. Finally, there is a need for research that explores the use of SBE in continuing education and professional development.

Overall, the gap analysis highlighted the need for more research that explores faculty perspectives on SBE in nursing education. The findings of this analysis can help guide future researchers, and help understand faculty perspectives regarding SBE, to inculcate adoption of this approach in nursing to help ensure quality patient care.

Summary

Simulation in nursing education involves the use of simulated scenarios that replicate real-life situations and create effective learning experiences. Through simulation, students can practice and become competent in nursing skills. They can enhance their critical thinking, decision making, teamwork, communication skills, and confidence. Through simulation, immediate feedback can be received, to reduce the chances of error.

Simulations could range from simple to complex experiences. Faculty members have observed drastic changes in students, when they were exposed to SBE. Although there are many barriers that make the approach difficult but faculty members are devoted to making their best efforts for their students, as their main goal is to enhance learning that will lead to best patient outcomes.

Chapter Three: Methodology

This chapter provides details about the methodology used in this research study. The chapter starts with the study design, study setting and population, eligibility criteria that includes inclusion and exclusion criteria, followed by sample size and sampling method, recruitment plan, data collection process, interview guide, process of data entry and analysis, study rigour (including credibility, dependability, conformability, transferability, and confidentiality), and ethical considerations. Finally, the summary concludes this chapter.

Study Design

In this study, the exploratory qualitative research methodology was used to explore the perspective of nursing faculty members regarding simulation based education (SBE). This methodology allowed to investigate research questions that have not previously been studied in-depth (Swedberg, 2020). The purpose of this study was to derive in-depth details regarding SBE, and it explored the facilitators and barriers in using SBE. For this reason, face to face and detailed discussions through focus group sessions, were conducted. Since, very few studies on this topic have been conducted in the Pakistani context, this study design facilitated in obtaining detailed understanding of the topic. Moreover, this methodology facilitated discussion on simulation based education, its facilitators and barriers in a very diverse manner, by obtaining various thoughts, ideas, and opinions through detailed focus group discussions (Rendle et al., 2019).

Furthermore, detailed discussion through the question answer strategy used in focus group discussion, helped in identifying the comprehensive thoughts of the nurse educator and gave better ideas and solutions (Nyumba et al., 2018).

Study Setting and Population

The study was conducted in four nursing education institutions, registered with the Pakistan Nursing Council (PNC), and providing the undergraduate nursing education in Karachi, Pakistan. Those nursing schools were selected which have at least 6 nursing faculty members who are fulltime employed. These included three private and one public institutions. Iqra University Nursing College, Murshid School of Nursing and Midwifery, and the Horizon School of Nursing and Allied Health Sciences are private, whereas the College of Nursing Female Dr. Ruth Pfau Civil Hospital, Karachi, is a public institution.

Prior to the actual data collection, pilot testing was conducted at the Murshid School of Nursing and Midwifery, with a different group of participants than the actual study group. Face to face focus group discussions were conducted to check the content validity of the interview guide, and to see if participants could understand the questionnaire or it needs to be reworded. The audio recorder was also checked for its proper working.

The study population was all the nursing faculty members, teaching the nursing courses in these institutions. These included MScN, BSN, and Post RN BSN qualified faculty. Both male and female faculty members were a part of this study.

Selection Criteria

Inclusion Criteria

Faculty members who met all the following criteria were included in this study. The criteria included:

1. Those who were employed as a fulltime nursing faculty members were enrolled in this research.

2. Those who were teaching a nursing course at the study setting, the nursing curriculum (BSN and Post RN BSN program) included both nursing and non-nursing courses (see Appendix A). These courses were Fundamentals of Nursing, Adult Health Nursing, Health Assessment, Mental Health Nursing, Pediatric Health Nursing, Critical Care Nursing, and Clinical Practicum courses.
3. Those faculty members who provided consent were a part of this study.

Exclusion Criteria

Faculty members who were unable to meet the inclusion criteria were not included in this research study. The exclusion criteria for this study were:

1. Faculty who were not registered with the institution, those who were not on board faculty members, either they were part timers or visiting faculty.
2. Faculty who were teaching English, Pakistan Studies, and/or Islamiat.
3. Those faculty members who did not sign the consent.

Sample Size and Sampling Method

According to the goal of the study a non-probability sampling (purposive sampling) methodology was used. Participants were recruited from four institutions, providing undergraduate nursing education, either through a four year BSN program or two years Post RN BSN program (which is after the three years of general nursing diploma and one year of specialization or midwifery). Purposive sampling facilitated non-random selection, which helped in getting quality responses by identifying specific participants, enhanced the depth of understanding, and reduced the chances of error (Campbell et al., 2020).

All the nursing faculty members, who fulfilled the inclusion criteria, were invited to participate in this research study. The total sample size of the study was $n=33$ participants, in which

$n=6$ participants participated in the pilot study that was conducted at the Murshid School of Nursing and Midwifery. This covered about 18% of the total sample.

For the focus group discussion, 6-8 participants were taken from each institution (Mishra, 2016). Accordingly, participants from each study settings were enrolled; eight participants were from College of Nursing, Female, Dr. Ruth Pfau Civil Hospital, Karachi, seven from the Horizon School of Nursing and Allied Health Sciences, six from the Iqra University Nursing College, and six from the Murshid School of Nursing and Midwifery. For these details (see Appendix B).

Recruitment Plan

The process that was followed to recruit participants consisted of getting approval from the Ethical Review Committee (ERC) of the Aga Khan University (see Appendix C). Then, about ten nursing institute were approached, from which four nursing institutes were finalized, including three private and one public institute, according to the inclusion criteria of the study. Then a formal permission letter was given to the gate keepers, that is, the director/principal of the institution (see Appendix D).

Written permissions were obtained from all the institutes on official letterhead. Then all the gatekeepers were contacted for setting up the date and time of focus group discussion, according to the institution and participants' feasibility. Only those participants were selected who met the inclusion criteria. Through support from the institution heads, a separate setting was arranged for the data collection. Informed written consent was obtained from individuals, which was followed by the focus group discussion (see Appendix E).

Data Collection Process

The data was collected through focus group discussions. In each institution, one focus group was formulated. This method of data collection was cost effective, saved time it allowed

more than one participant to be interviewed at a time, gave in-depth data, enhanced group dynamics and generated new ideas (Setia, 2017). A room was prepared prior to the discussion. A group comprised 6- 8 participants. In the start of each focus group discussion the researcher introduced herself and informed the participant regarding her identity, qualification, occupation, gender and experience (Tong et al., 2007). The researcher conducted the focus group discussion until the saturation was achieved (Saunders et al., 2018). The duration of each focus group discussion was between 60-minutes to 90 -minutes. These discussions were audio recorded, with the consent of the participants. The discussion was conducted in English as all the participants were faculty members who knew English and were able to easily understand and speak the language. Therefore, there was no need to translate the interview data. Thus, the meaning was not distorted (Smith et al., 2008).

For content validity, the interview guide was pilot tested with one focus group discussion in a setting similar to the setting that was selected for this research. No changes were required in the interview guide after pilot testing, as it was understandable and relevant to the study topic. To enhance the trustworthiness, an audit trail was performed throughout the research process. Moreover, the researcher in her field notes noted the nonverbal gestures of the participants during the focus group discussion, to minimize the chances of error (Earnest, 2020).

The participants were first asked to introduce themselves, then the focus group discussion was started, using open ended questions, along with probing to facilitate the discussion. All the probes are mentioned (see Appendix F). The focus groups were audio recorded. The researcher took field notes about the non-verbal gestures of the participants. Additionally, the researcher documented personal reflections after discussion, to minimize the bias. At the end of discussion,

the researcher summarized the key points and thanked all the participants for their participation and for sharing their perceptions and experiences about SBE.

Interview Guide

An interview guide was developed for the focus group discussions informed by the prior knowledge of the researcher and review of the literature. This interview guide was reviewed by the experts including thesis supervisor and committee members (see Appendix F). This guide included three main questions, with some probes inserted that generated the discussion and built relationships between the concepts. The first question included faculty perspectives about SBE, what they understood by this term and how they used it as teaching learning pedagogy and their understanding about low and high-fidelity simulation. Then, in the second question, they were asked to share their perspectives and experiences regarding the barriers in using SBE. That included the availability of simulation labs and the equipment required for simulation, and other barriers.

Thirdly, they were asked to share their perspectives and experiences regarding the facilitators in using SBE. That included, availability of resources required for clinical teaching, using SBE to teach any specific skills, and building students' competencies to be safe practitioners. At the end they were asked to share any other points, that they would like to add related to this research.

Process of Data Entry and Analysis

Data analysis was performed manually (without using any software), at the same day of data collection (Polit & Beck, 2012). The focus group discussions were transcribed, and these transcripts were analyzed by following the steps of content analysis suggested by Creswell and Creswell (2018). These steps are discussed underneath.

Data Organization

Firstly, after conducting the focus group discussions, the researcher secured the data in lock and key and recordings in password protected computers. Participants anonymity was maintained by removing their names and participant identity numbers were given to them. The focus group discussions were conducted in English language as all the participants were Nursing faculty members who knew English and were able to easily understand and speak the language. Therefore, there was no need to translate the interview data.

Reflexivity

To avoid researcher's personal biases, the researcher in the start of each focus group discussion introduced herself and informed the participant regarding her identity, qualification, occupation, gender and experience and revised the reflective notes as well (Tong et al., 2007). A reflective note contains details about the actions, emotions, and thoughts of the researchers during the data analysis process (Olmos-Vega et al., 2023).

Data Coding

It is a phenomenon of breaking down data into smaller pieces that reflects participant's responses to the questions asked. To create codes, a researcher must go deep in the data (Kleinheksel et al., 2020). Following this process, the researcher transcribed all the interviews on word document; each document was read two times to identify the key concepts, and quotes having similar meaning were taken together to develop a code.

Categories and Themes Generation

Once the researcher has identified the codes, all the similar codes were then sorted into categories which helped in further organization of the data. After that, two or more similar

categories were used to develop themes (Kleinheksel et al., 2020). All of these were mentioned in separate column that developed clear understanding of the data.

Representation of Data

The researcher showed the demographic data in a tabular form to comprehensively present the study findings. However, the themes were showed in hierarchical form, separated into categories and then into codes for proper reporting of the study findings.

Data Interpretation

The last part is data interpretation. This included the interpretation of codes, categories and themes derived from the data. This was performed with the help of thesis supervisor, co-supervisor and committee members.

Study Rigor

The term trustworthiness has been used by Lincoln and Guba (1985), for confirming the rigor in qualitative research studies. The trustworthiness criteria that were proposed by Lincoln and Guba (1985), consist of credibility, dependability, conformability, and transferability.

Credibility

Credibility in a qualitative research study includes examining the reality and truthfulness of the data, whether the data collected during interviews was correct or not. For preserving the credibility of the study, the researcher continued until saturation was achieved i.e. no new information or data was forthcoming (Saunders et al., 2018). Moreover, cross checking of the data was carried out, by sharing the transcripts with participants in each focus group. From which responses were received from two focus groups, out of these two from one focus group two participants responded and from another group three participants provided their review. In one of the institute the transcripts were shared with the head of the institute as there was no direct

access to the participant so at this point confidentiality of the participants may have breached. The participants confirmed that all the information had been included in the transcript. Thus this process of reading the transcripts by participants ensured that their viewpoint has been captured. This ensured the complete delivery of information. Furthermore, the participants' non-verbal expressions were also noted in the researcher's notes to record both verbal and nonverbal communication aiding interpretation of meaning and through this the rigor of the study was assured. The researcher followed the bracketing process to minimize the chances of preconception, own beliefs, prior assumptions and the researcher's influence on the participants point of view (Lincoln & Guba, 1985; Polit & Beck, 2012)

Dependability

Dependability, in a qualitative study, assesses the uniformity the data analysis Lincoln and Guba (1985). It involves the assessment of the results, interpretations and recommendations of the research study, to ensure that all the information gathered is supported by the data, obtained from the participants. In this research study, the committee members participated in the analysis process to access the information gathered, through which the uniformity of the findings was maintained, so it can be practically implemented in other similar situations.

Confirmability

Confirmability in a qualitative study is estimates the content of the data through audio audits, and participant checks Lincoln and Guba (1985). The researcher took notes and recorded personal reflections. The discussions were audio recorded. A consistency was found between two or more independent participants regarding the accuracy, relevance, or significance of the data after reading the transcripts. They confirmed that all the information was incorporated in the transcript, and nothing was missed (Lincoln & Guba, 1985; Polit & Beck, 2012).

Transferability

This refers to the transfer the findings of the research to be transferred from one group to another group, it is equivalent to external validity. The study has provided a rich description that can allow the readers to decide whether the findings can be replicated to other institutions having the same characteristics and population. For example, in this study, whether the findings derived from the public sector institute could be transferred to any other eligible public institute meeting the inclusion criteria.

Confidentiality

Focus group discussions were carried out in the respective institutes, and the mode was in person, face to face. For this purpose, separate venues were booked prior to the discussion with the help of gatekeepers of those institutes. In each session confidentiality was ensured. Moreover, the researcher informed the participants that the session was being audio recorded and requested not to share the things discussed in the group with anyone else outside this room, to maintain the confidentiality. They were also informed that the data can be discussed with the research team for analysis. Furthermore, the identity of the institute and individual participant was kept confidential with identifying features removed. However, the entire data was accessible to the entire research team, and it could be audited by the ERC quality assurance team. Hard form of data in this research was secured under lock and key and the soft data was password protected and secured in a computer.

Ethical Consideration

This research study was initiated after the review and approval of the ERC. After their approval, the researcher officially visited the settings to meet with the authorities in the nursing institutions, and got their approvals and agreements to be enrolled in the study. The nursing

faculty of those institutions who agreed to be enrolled in this research and who met the inclusion criteria were approached for enrollment in the study. The date, time, and venue for the focus group was finalized with mutual agreement of the participants and the researcher. This process was started by providing the study purpose and its details, and responding to queries. The researcher obtained voluntary informed consent for participation in the study. Once they all agreed to contribute to the study, then they were involved in the study.

There were some risk factors, such as the possibility of breach of confidentiality or participants becoming emotionally upset while expressing their opinions during the focus group discussion. But, this was well managed, as the researcher maintained a comfortable environment so that every participant could take part without any anxiety and hesitation. No incentive was offered, except that enhancement and generation of knowledge on this topic was expected. Participants' confidentiality was maintained throughout.

Summary of the Chapter

This chapter discussed the methodology used in the research study. It started with the study design, settings where the study was conducted, and the population of the study. Then, it covered the eligibility criteria (inclusion and exclusion both). Sample size and sampling method were discussed. Then the recruitment plan, data collection process, interview guide, process of data entry and analysis, study rigour, and ethical considerations were discussed. This chapter highlighted the overall process of data collection and analysis.

Chapter Four: Results

This chapter presents the results of the study. The first part covers the demographic data of all the participants in this study. The second part presents codes, categories, and themes derived from this study, with participants' narrations.

Demographics

The participants involved in this study were twenty-seven nursing faculty members from four different nursing institutions. Among them thirteen were males and fourteen were females. The ages of the participants ranged between 20 to 50 years, in which nine were between 20-30 years of age, seven were between >30-40 years of age, two were between >40-50 years of age and there were nine participants who refused to disclose their age. The qualification of the participants ranged from BScN/PostRN BScN (undergraduate) level to master's level, in which fifteen were BSN/PostRN BSN qualified and twelve were masters prepared faculty members.

According to the designation, eleven faculty were working as lecturers, four were working as senior lecturers, three were working as Assistant Professors, six were Clinical Instructors and three were Nursing Instructors. These participants' years of experience ranged between 1 to 13 years. In which twelve faculty members' experience ranged between 1-5 years, four had between 6-9 years of experience, and eleven had between 10-13 years of experience. All the participants' demographics are (presented in Table 1).

Table 1 Participants Characteristics (n = 27)

Variables		Frequency	Percentage
Age	20-30 years	9	33.33%
	>30-40 years	7	25.92%
	>40-50 years	2	7.40%
	Refused to disclose.	9	33.33%
Gender	Male	13	48.14%
	Female	14	51.85%
Educational Status	BScN/PostRN BScN	15	55.55%
	Masters	12	44.44%
Designation	Lecturer	11	40.74%
	Senior lecturer	4	14.81%
	Assistant Professor	3	11.11%
	Clinical Instructor	6	22.22%
	Nursing Instructor	3	11.11%
Years of Experience	1-5 years	12	44.44%
	6-9 years	4	14.81%
	10-13 years	11	40.74%

Themes

The researcher analyzed the data and extracted four themes. These are: nursing faculty viewpoints on SBE, barriers to SBE, factors facilitating SBE, and the future of simulation.

The first theme emerged from four categories, which are: 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, barriers to SBE, has three categories, which are materialistic and financial barriers, and lack of expertise. The third theme, factors facilitating SBE contains two categories, which are: students' engagement and faculty initiatives. The fourth theme emerged from three categories: faculty development and engagement in SBE, availability and maintenance of resources, and involvement of institutional administration and regulatory bodies (please refer to Table 2).

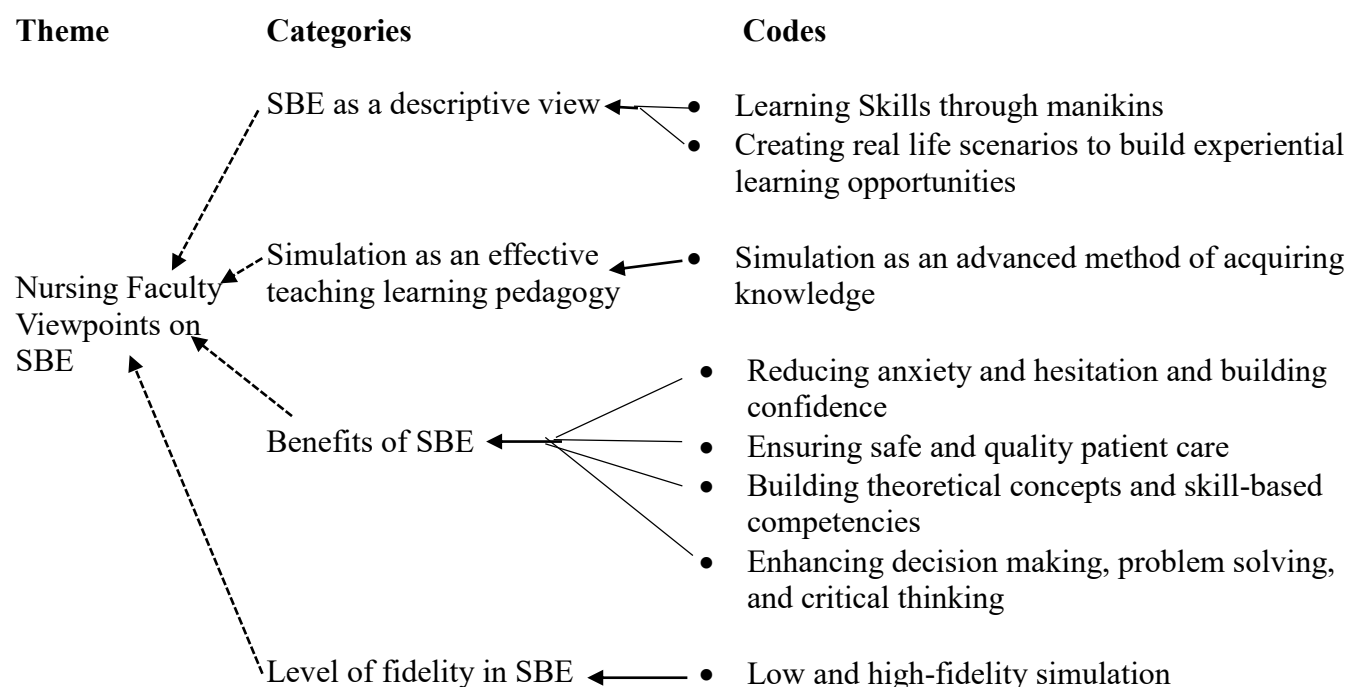
Table 2 Themes, Categories, and Codes

Theme	Categories	Codes
Nursing Faculty Viewpoints on SBE	SBE as a descriptive view	<ul style="list-style-type: none"> • Learning Skills through manikins • Creating real life scenarios to build experiential learning opportunities
	Simulation as an effective teaching learning pedagogy	<ul style="list-style-type: none"> • Simulation as an advanced method of acquiring knowledge
	Benefits of SBE	<ul style="list-style-type: none"> • Reducing anxiety and hesitation, building confidence • Ensuring safe and quality patient care • Building theoretical concepts and skill based competencies. • Enhancing decision making, problem solving, and critical thinking
	Level of fidelity in SBE	<ul style="list-style-type: none"> • Low and high-fidelity simulation
Barriers to SBE	Materialistic and financial barriers	<ul style="list-style-type: none"> • Unavailability or mismanagement of equipment /resources • High expense and limited budget
	Lack of stakeholders involvement and regulatory bodies	<ul style="list-style-type: none"> • Lack of Stakeholders' Interest Towards the Profession
	Lack of expertise	<ul style="list-style-type: none"> • Lack of standardization and compliance • Untrained or inexperienced faculty leading to lack of competency in students
Factors facilitating SBE	Students' engagement Faculty initiatives	<ul style="list-style-type: none"> • Students completing pre-briefing activities • Collaboration with other institutions • Faculty creating alternatives to motivate students
The future of simulation	Faculty development and engagement in SBE	<ul style="list-style-type: none"> • Faculty training programs to enhance their competencies
	Availability and maintenance of resources	<ul style="list-style-type: none"> • Skills lab with enough and maintained manikins. • Easy accessibility for students
	Involvement of institutional administration and regulatory bodies	<ul style="list-style-type: none"> • Proper focus and facilitation by administration • Pakistan Nursing Council (PNC) and Higher Education Commission(HEC) should set some criteria

Theme 1: Nursing Faculty Viewpoints on SBE

This theme describes the nursing faculty views and perceptions regarding SBE. It illustrates their understanding of the topic and their awareness about simulation. It also includes the way they are using this pedagogy in their teaching learning journey and their perspective on the level of fidelity in simulation. This theme is 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 (shown in figure 2).

Figure 2 Theme 1



Category 1: SBE as a Descriptive View

This category is about the description of participants' understanding and perceptions about SBE. They described the key characteristics of SBE. This category is further divided into two codes: learning skills through manikins and creating real life scenarios to build experiential learning opportunities.

Code 1: Learning Skills Through Manikins. Many of the participants said that, simulation is a way of learning skills through manikins. One of the participants stated, "When we teach skills to students via manikins this comes under simulation-based education" (FDG-01, P-01).

Another participant expressed, "Simulation based learning is very essential for the students. If we are performing any skill so we need to do it practically on manikins so that students are able to learn perfectly" (FDG-02, P-02). One more participant added, "Simulators are manikins on which we demonstrate skills to the students. So that they can apply those skills on patients" (FDG-04, P-01).

Code 2: Creating Real Life Scenarios to Build Experiential Learning Opportunities.

The participants explained about the formation of actual scenarios that can facilitate in 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 simulation students get real life scenarios and hands on practice, with the help of this students are able to pick their mistakes, as the dummies are responsive" (FDG-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, problem-solving abilities in these real scenarios” (FDG-02, P-03).

Category 2: Simulation as an Effective Teaching Learning Pedagogy

This category is about the effectiveness of using simulation as a teaching learning methodology and how it facilitates nursing students to acquire competencies in skills, and engages them such that they can work efficiently in their field. This category has one code, that is, simulation as an advanced method of acquiring knowledge.

Code 1: Simulation as an Advanced Method of Acquiring Knowledge. Participants expressed that, simulation is an advance and innovative way of teaching and for students it is an interesting way of obtaining knowledge in which they get involved in learning new things. One of the participants stated, “It’s important that we should have advance technology, as today we are having advance level of education, and that is simulation” (FGD-04, P-08). Another participant expressed:

SBE gives a good sense of learning and sometimes when you are teaching theory many concepts are not clear to the students. When that is conveyed through simulation it gives a perfect experience. There are many other procedures that can be easily taught to students via simulation. It is easy for learning and gaining concepts. (FDG-03, P-01)

Category 3: Benefits of SBE

This category discusses the advantages of SBE, how it has benefited the students to build their cognitive and psychomotor capabilities. It highlights the component of safe and quality care as well. This category is divided into four codes: reducing anxiety and hesitation, building confidence, ensuring safe and quality patient care, building theoretical concepts and skills based competencies, enhancing decision-making, problem-solving, and critical thinking.

Code 1: Reducing Anxiety and Hesitation, Building Confidence. Study participants highlighted that, simulation aids in boosting confidence in students by decreasing the 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. So, I think simulation is an important teaching learning methodology” (FDG-04, P-01).

Another participant expressed:

If I take an example of a novice nurse who was going for the first time through the process of clinical, they have no idea about how the patient will respond to certain things; like if they are going to pass the NG tube for the first time, and they have never gone through that procedure before, so, they may get nervous, anxious or confused, so there is a possibility of making a mistake that could be harmful for the patient. So, if we initially build their (students’) confidence, we facilitate them and make things easy for them. So, this would be very much beneficial for them when they encounter the real scenario with a real patient. Their anxiety will reduce, they will feel more confident, and they will know how the patient feels, they will know how to respond (to patients). So, it will be helpful for them and make things possible, and in a better way. (FDG-01, P-06)

Code 2: Ensuring Safe and Quality Patient Care. The participants agreed that, SBE helps in ensuring 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. A 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” (FDG-01, P-03).

Another participant added, “Simulation-based teaching is more effective, because it has digitalized manikins, which can respond, so we can teach our students regarding safe practices in the nursing field” (FDG-01, P-02). One more participant said, “SBE is an advanced and good technique. Students are novice, so they cannot directly go to the patients as it can be risky for the patient, so SBE will teach them safe and effective care” (FDG-02, P-04).

Code 3: Building Theoretical Concepts and Skill-Based Competencies. Participants highlighted that, SBE is beneficial as it allows students to strongly build their theoretical concepts and skills-based competencies, by letting them practice several times, so they are able to connect theoretical concepts with practice. One of the participants shared, “Students actually need to practice first on Simulation based patients; before going to the real patients that will help to develop competency in their skills” (FDG-02, P-02).

Another participant stated, “In SBE the most important component is hands on practice. Without hands on practice students’ learning can’t be effective. It helps to enhance students’ learning” (FDG-03, P-03). Another participant added “It is making nurses competent, skillful, and logical” (FDG-04, P-03).

Code 4: Enhancing Decision Making, Problem Solving and Critical Thinking. 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, in order to provide quality and safe care. One participant stated, "This pedagogy literally enhances critical thinking in a nurse" (FDG-01, P-04). Yet another participant stated, "When the dummy responds, it enhances critical thinking in students. As students have a scenario, the patient is also responding, and they are doing hands on work as well" (FDG-02, 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 actually denotes the level of realism. This category includes one code that is low and high-fidelity simulation. It explains the characteristics of LFS and HFS.

Code 1: Low and High Fidelity Simulation. Study participants shared that, low and high are the levels of fidelity in 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, as compared to high fidelity simulation. One of the participants stated:

Simulation contains low fidelity simulation and high fidelity simulation. In low fidelity simulation we usually teach skills like IV cannulation, NG tube insertion, catheterization all this can be practiced very well. In high fidelity simulation if any patient is going through delivery or a crash situation, the dummies respond accordingly. So it is easy to integrate things for the students. (FDG-02, P-07)

Another participant stated, "Everyone does not have high fidelity manikins, but low fidelity manikins are available. I think high fidelity simulation is done through live sophisticated manikins" (FDG-03, P-01). One more participant added, "Low fidelity simulation and high fidelity simulation are a part of demonstration and without demonstration we can't teach the

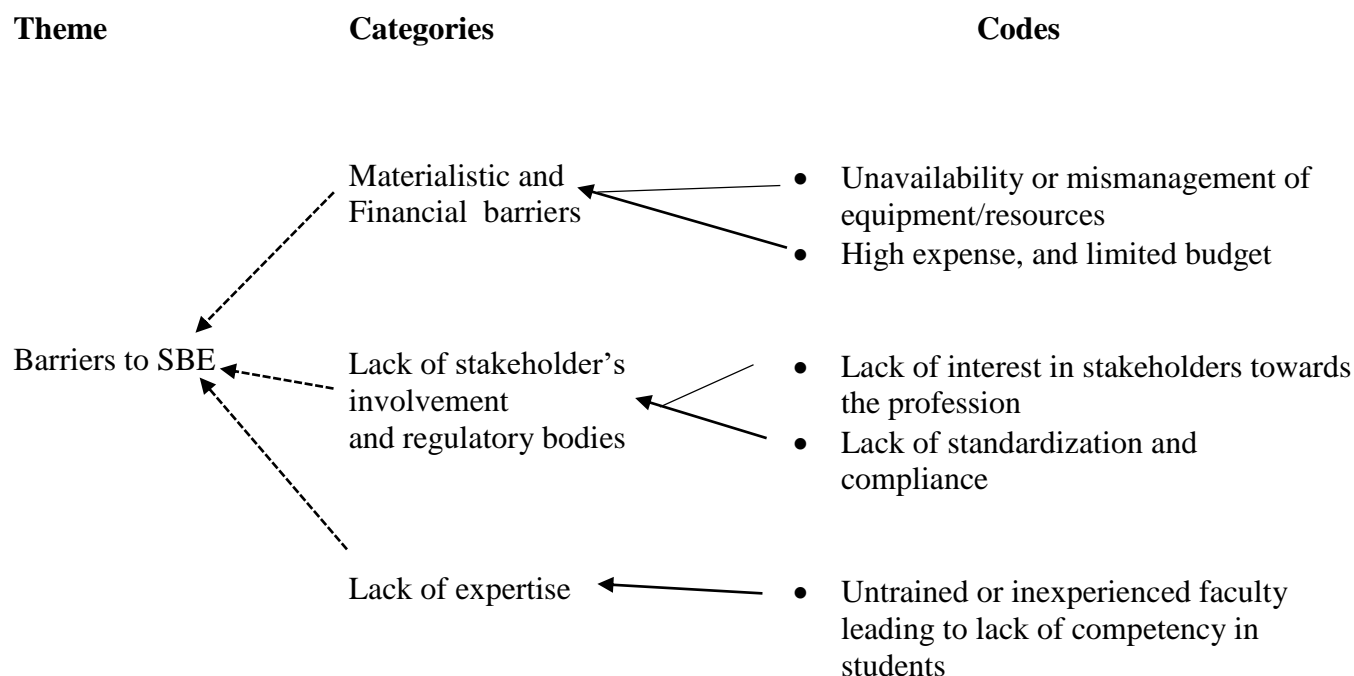
students about the nursing care skills” (FDG-03, P-02). Another one stated, “High fidelity simulation provides greater exposure to the students. It is based on high levels of reality, and it builds students’ confidence” (FDG-03, P-03). Yet Another participant said:

Basically, low fidelity simulation manikins are those devices which have a low level of digital system, meaning they have no emotional responses and other things that we could actually practice on the patient. If we talk about the high-fidelity manikins, these are the ones who can speak, who can respond, who can basically behave. So, through these we can develop another skill of the student, that how they can manage a patient in a real situation. (FDG-01, P-07)

Theme 2: Barriers to SBE

This theme covers the barriers and hindrances that come in the way of SBE, that is SBE in nursing education. This theme emerged from three categories: materialistic and financial barriers, lack of stakeholder’s involvement and regulatory bodies, and lack of expertise (shown in figure 3)

Figure 3 Theme 2



Category 1: Materialistic and Financial Barriers

Materialistic and financial barriers are the major barriers in the way of SBE that hinder students' learning. This category contains two codes: unavailability or mismanagement of equipment/ resources and high expenses and limited budget.

Code 1: Unavailability or Mismanagement of Resources. Participants voiced that the unavailability of the resources including manikins was the biggest barrier. As there were large number of students, who had to work on a single manikin, which hindered their learning. Another issue highlighted by them was the mismanagement or mishandling of manikins and equipment. A participant stated:

The First barrier is the non-availability of simulators; we don't have that much budget. As the simulators are very expensive, we can't buy these. We store them at proper temperature. Dummies start melting and get wasted if not kept in favorable conditions. (FDG-04, P-01)

Another participant stated, "Sometimes mismanagement also leads to barriers, like if we have all proper things and if we have faculty, but we cannot manage these in a proper way, so, this is also an obstacle that leads to failure" (FDG-01, P-03). One other participant added, "If we have a big number of students and fewer manikins so it will hinder students' learning" (FDG-03, P-02). Another participant shared: "Many of the resources are not available in the government sector" (FDG-04, P-04). Yet another participant said, "Due to non-availability of manikins or less availability there is a crowd of students working on one dummy; because of that they are unable to learn properly" (FDG-03, P-05).

Code 2: High Expenses and Limited Budget. According to the study participants' high expenses was one of the main reasons obstructing SBE, as the manikins are very expensive. Most of the institutions do not have enough budget to afford expensive digital manikins. Even if the institution's first line of middle management agrees to support, the higher management does not approve the budget. As one participant shared, "We have 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" (FDG-04, P-07). Another one added, "Affiliated institutes don't have this much budget that they can financially afford it" (FDG-02, P-02).

One of the participants stated, "The first thing that comes in my mind is that our society or our resources are not that high that we can afford the simulation-based manikins and dummies to practice" (FDG-01, P-06). Yet another participant added, "Financial barrier is the key barrier. Many of the institutions are not willing to invest on these sorts of things because they don't give

priority to our profession; that is the reason. They don't invest efforts in skills lab" (FDG-01, P-07).

Category 2: Lack of Stakeholders Involvement and Regulatory Bodies

The attitude and behavior of the stakeholders and the monitoring of the regulatory bodies play an important role in the implementation of SBE. This category discusses the behavioral issues of the stakeholders and the regulatory bodies, and their interest towards the profession. It has two codes: lack of stakeholders' interest towards the profession and lack of compliance and standardization.

Code 1: Lack of Stakeholders' Interest Towards the Profession. The participants' comments indicated, most of the stakeholders did not want to invest much in facilities for nursing education. They did not permit purchasing of expensive equipment and resources.

As stated earlier one participant said: "Many of the institutes are not willing to invest on these sorts of things because they don't give priority to our profession, that is the reason. They don't invest efforts in skills lab" (FDG-01, P-07). Another participant added:

In the government sector, the biggest barrier is that when we have resources, the people who have authority do not allow us to use them. They keep them hidden somewhere.

When they are asked for that they either say that there is a risk of losing that equipment or say it will be damaged, so they are not allowed to use it. As students are not allowed to touch them, then how will they learn. (FDG-04, P-05)

Code 2: Lack of Standardization and Compliance. The participants highlighted the lack of policies and guidelines from the regulatory bodies of nursing profession and their implementation as another barrier. The regulatory bodies do not have any specific rules that could standardize the application of simulation in the nursing curriculum in each institute, so that

the level and quality of education given in each institution can be standardized. One of the participants stated,

We have some (institutional) policies, but we lack in implementation. So, if they (the regulatory bodies) have given policies, then it is also their responsibility to get these policies implemented in all the nursing institutions. If we have policies but they are not implemented in our institution so, obviously, this is a barrier in teaching (FDG-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. This category contains one code, that is, untrained or inexperienced faculty leading to lack of competency in students.

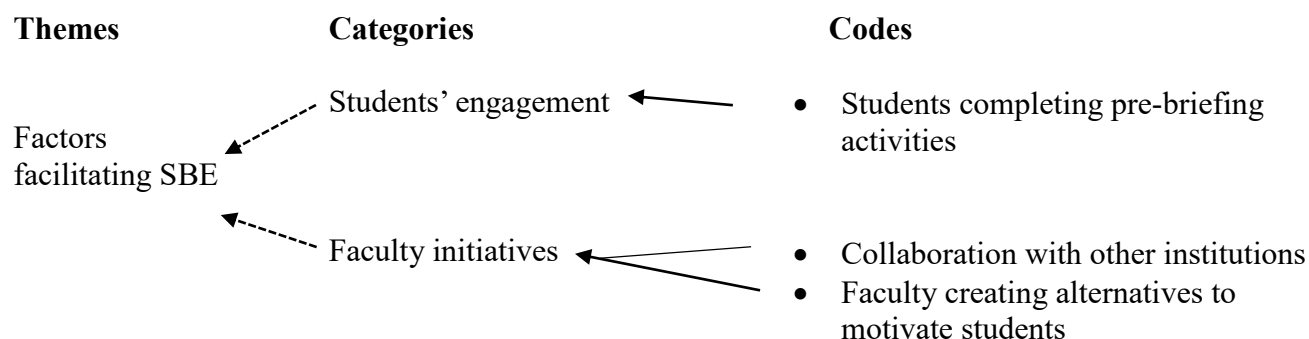
Code 1: Untrained or Inexperienced Faculty Leading to Lack of Competency in Students. Many of the participants shared that, they were not well trained or experienced to conduct simulation-based sessions and they highlighted this as the biggest barrier for SBE. One of the participants stated, “Teachers are also not well trained, so they should be trained so that they can decrease students’ anxiety and enhance their confidence” (FDG-02, P-04). One more participant added: “The barrier is the lack of full-time faculty” (FDG-01, P-04). Another participant shared: “Faculty is not trained well to work on this (simulation based education) easily” (FDG-03, P-04). One other participants stated, “We have barriers, such as incompetent faculty for teaching skills, for making it possible for our students” (FDG-01, P-06).

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” (FDG-02, P-05).

Theme 3: Factors Facilitating SBE

This theme covers some of the factors that facilitate in the journey of SBE. The participants described them from both the perspectives faculty and students. This theme emerged from two categories: students' engagement and faculty initiatives (presented in figure 4)

Figure 4 Theme 3



Category 1: Students' Engagement

This category deals with the students' involvement in accomplishing the goal of SBE. They perform different activities that assist them in simulation-based learning. This category contains one code, that is, students completing pre-briefing activities.

Code 1: Students Completing Pre-Briefing Activities. Participants highlighted that, students get 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, or role play, or practice peer learning to enhance their capacities. One of the participants stated:

In our practice, firstly, we use PowerPoint to develop knowledge. If there is any activity or procedure like vital signs, so first, we teach them the theory (students), then we show them videos on multimedia, so that they know how they have to perform this procedure

step by step, and to develop their interest. Then we allow them to perform in pairs, so that they can get an idea, and then we take them to the real patients under supervision. (FDG-02, P-03)

Another participant added, “We have skills lab where low fidelity simulation is available. We use a checklist of skills related to a theory component, to relate both” (FDG-03, P-06).

Category 2: Faculty Initiatives

Faculty members are involved in different activities to enhance students’ interest. They make a variety of efforts to enhance students’ theoretical learning and their skill-based competencies. This category contains two codes: collaboration with other institutions and faculty creating alternatives to motivate students.

Code 1: Collaboration with Other Institutions. The participants shared their practice of collaborating with other institutes that have advanced facilities of simulation and, in this way, they tried to give exposures to their students. One of the participants stated: “We facilitate students by approaching different institutions who are having 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” (FDG-03, P-06). Another participant stated:

If we don’t have these facilities in our institution so it’s our responsibility to manage those resources from somewhere else. We manage days with other institutions and give our students an exposure of high fidelity simulation so that they can gain that knowledge and experience. In this way we can manage resources from other institutes as well. (FDG-01, P-05)

Code 2: Faculty Creating Alternatives to Motivate Students. Another facilitator that was shared by the participants was generating alternatives to meet the needs of the students,

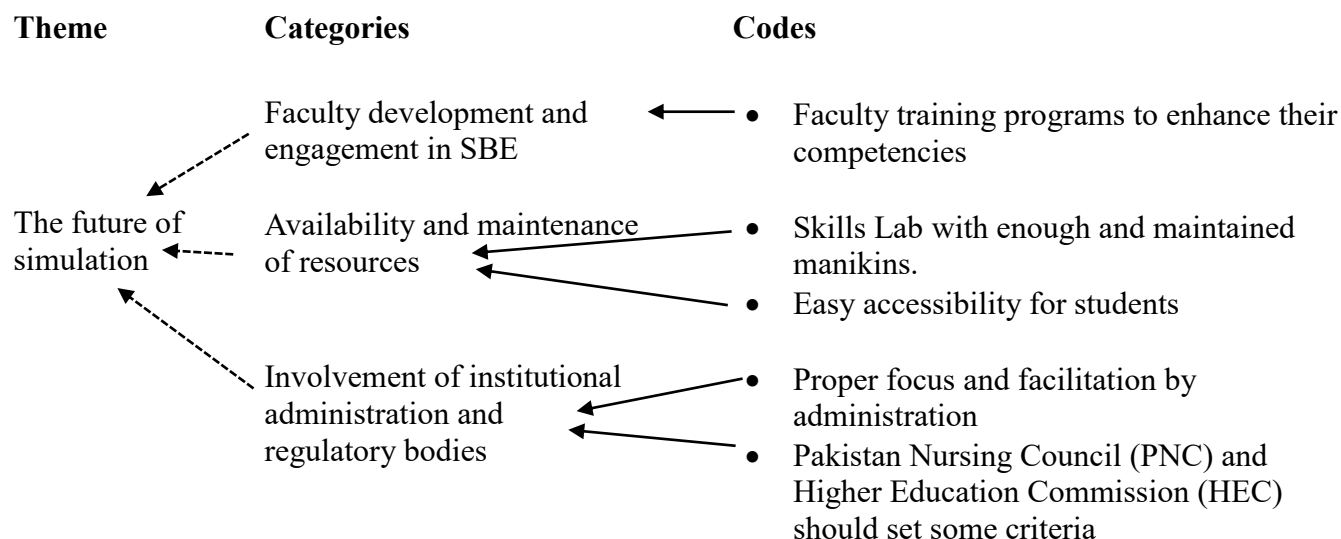
which motivated them and enhanced their competencies. One of the participants stated: “I am teaching health assessment, so, in my class along with lectures I also ask students to do role-play. So, we can use alternate ways to teach our students” (FDG-04, P-07). One of the other participants shared:

We can generate our own resources as well. If I am going to teach my students how to administer IM injection and I have no resources, I can utilize some other kind of resources or generate some resources. Like, I can teach them on any sponge or on orange. How can we insert IM injection, what would be the angle, and how you can assess the area? So, we can utilize these kinds of things, if we have lack of resources. (FDG-01, P-06)

Theme 4: The 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, involvement of regulatory bodies, availability of advance 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 (as shown in figure 5).

Figure 5 Theme 4



Category 1: Faculty Development and Engagement in SBE

This category discusses the need for faculty development, as it is required for the effective implementation of SBE. If the faculty would be competent, they would be able to educate their students accordingly. This is one code in this category: faculty training programs to enhance their competencies.

Code 1: Faculty Training Programs to Enhance Their Competencies. The study participants highlighted the enhancement in the number of faculty members and their competencies, to enhance the nursing skills in students. One of the participants stated, “Training programs should be conducted for faculty” (FDG-02, P-05). Another participant stated, “Proper trainings 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” (FDG-02, P-04). One other participant added, “People should be trained for maintenance and operation of simulators” (FDG-04, P-01).

One of the other participants shared:

We need to train our teachers as well. If we get enough knowledge and training, then we can conduct simulation-based teaching, then it would be possible to train our students.

We have to arrange some trainings for teachers, teach them how they can teach their students as per simulation-based education or perform the procedures on a manikin; that can enhance their knowledge. (FDG-01, P-06)

Category 2: Availability and Maintenance of Resources

This category is about 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 them to use this pedagogy. This category contains two codes: skills lab with enough and maintained manikins and easy accessibility for students.

Code 1: Skills Lab with Enough and Maintained Manikins. The participants shared that, the availability of a well-developed skills lab and maintained manikins, 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” (FDG-04, P-01). Another participant added, “It’s important that we should have advance technology, as today we are having advance level of education; so our technology should be advanced as well” (FDG-04, P-08).

One of the participants stated,” Like nurses are getting advanced, from diploma to BScN degree, so the skills lab should also be of a standard that can cater to the needs of degree program students, and every skill lab should have dummies for high fidelity simulation” (FDG-01, P-07).

Code 2: Easy Accessibility for Students. Participants highlighted that, all of 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 facilitate the students in making simulation easily accessible. The process of using simulation labs should be very easy; not that firstly 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 time. Through this we can promote simulation based education (FDG-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, in order to implement it properly. This category contains two code: Proper focus and facilitation by administration and PNC and HEC should set some criteria.

Code 1: Proper Focus and Facilitation by Administration. 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 encourages 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 and equipment to facilitate simulation” (FDG-04, P-05). Another participant added, “Management should arrange workshops. This will help us in updating our knowledge” (FDG-01, P-07).

Code 2: Pakistan Nursing Council (PNC) and Higher Education Commission (HEC)

Should Set Some Criteria. Most of the participants shared that, the regulatory bodies, including the Pakistan Nursing Council (PNC) and the Higher Education Commission (HEC) should set some criteria regarding the development of skills-based competencies in students and faculty. As stated earlier by a participant:

Everything can be applicable if the regulatory bodies, such as the PNC, can set some standards. Nurses are getting advanced, from diploma to BScN degree, so the skills lab should also be of a standard that can cater to the need of degree program students, and every skill lab should have high fidelity simulation dummies. When the PNC members come for rounds (audit), they should observe these things, and if they are not present they can raise objections on this, so that all the institutions comply with these requirements.

(FDG-01, P-07)

Another participant added: “PNC should also make strict rules that every month there should be trainings to develop competencies in faculty” (FDG-02, P-03).

Summary of the Chapter

In this chapter the results of the study were discussed. Based on the analysis of the data, four themes were extracted, which included Nursing faculty viewpoint on SBE, barriers to SBE, factors facilitating SBE, and the future of simulation. They were further divided into categories and then into codes, in which the participants’ narrations were presented to understand the depth of the topic.

Chapter Five Discussion

This chapter discusses the important outcomes of this study. These outcomes were based on the perspectives of Nursing faculty members regarding Simulation Based Education (SBE). The discussion is based on four themes that were derived from this study. The themes included Nursing faculty viewpoints on SBE, barriers of SBE, factors facilitating SBE, and the future of simulation. Furthermore, this chapter talks about the strengths, limitations and recommendations derived from this study.

Nursing Faculty Viewpoint on SBE

The research participants described simulation as a teaching learning pedagogy through which different clinical scenarios can be practiced using manikins and the required resources in a safe and comfortable environment, providing a situation based on realism. Moreover, they mentioned that simulation has moved from low fidelity simulation (LFS) to high fidelity simulation (HFS). Similar findings are reported by (Nelson, 2016; Sofer, 2018), who reported that simulation is a teaching learning strategy that enhances the clinical based competencies through the use of manikins. The introduction of HFS has increased the level of realism than it was in LFS. It has helped to repeat real life scenarios in a safe environment and allows students to practice repetitively without the risk of harming patients. Such an approach allows faculty members to shift from traditional to advanced methods of teaching.

The present research findings believed that SBE facilitated in boosting up the confidence level in students, as they were able to perform the skills repeatedly. Thus, they developed confidence to apply it in real clinical settings. These findings are similar to findings in the earlier studies that indicated that simulation enhanced students' confidence and engagement, and built

their theoretical concepts and skills based competencies (Crowe et al., 2018; Nye et al., 2019; Verkuyl & Hughes, 2019).

According to the participants, SBE provided students an opportunity to practice skills multiple times ensured quality patient care, and helped in the mastery of skills, and reduced the chances of errors. Similarly, earlier studies have also reported that simulation enabled profound learning and the growth of clinical expertise and clinical simulation played a vital role in improving the quality of health care. Moreover, it has also been highlighted that knowledge is enhanced by this pedagogy (Alshehri et al., 2023; Guinea et al., 2019; Padilha et al., 2019). Furthermore, the analysis of the present study also highlighted that simulation facilitated the enhancement of critical thinking skills in students. The same was found in literature as well, that critical thinking skills can be developed through high quality teaching learning activities, like simulation (Nye et al., 2019; Park et al., 2016; Rico et al., 2023; Stenseth et al., 2022).

The analysis of the current study also believed that SBE enhanced decision making and the problem solving power of the students, which facilitated them in providing better patient care and helped them to make decisions for best possible outcomes. The literature also reports that SBE developed clinical skills, critical thinking, problem solving abilities, and decision-making in nursing students, and recognized it as an advantageous method of training (Hustad et al., 2019; Hwang & Oh, 2021).

According to the analysis of this study, HFS is defined as a level of simulation where nearly live, sophisticated manikins are used to provide the highest sense of reality. As compared to that, LFS refers to those devices that have a lesser level of digital system and provide a lower level of reality than HFS. In the earlier studies it has been reported that HFS has full scale simulators that provide experiences of a higher level of interaction and realism than LFS (Carey

& Rossler, 2022; Hanshaw & Dickerson, 2020; Sarmah et al., 2017). In Pakistan's context most of the nursing schools have LFS in their settings, only few are having HFS.

Barriers of SBE

This study identified that barriers to SBE included lack of resources, in that, either the resources were not available in the nursing institutes or they were not managed properly. Sometimes, the manikins and other resources were not kept in conducive conditions. Similar barriers are reported earlier by the researchers as they asserted inadequate space, and equipment as compared to the number of students. These researchers also identified that technology was required but was not available (Benchadlia et al., 2023; Culyer et al., 2018; Nye et al., 2019).

Financial constraints were also believed as obstructing SBE. Many of the participants stated that institutes cannot afford expensive manikins and well equipped simulation labs. The same has been identified in previous research also that report a high cost for creating space to perform simulation based activities, and for purchasing expensive manikins (Benchadlia et al., 2023; Jamalpuri et al., 2022). Additionally, in a study conducted with advance nurse practitioners in Canada and America, 42% of the participants reported financial barrier as one of the top most obstacles in SBE (Nye et al., 2019). One of the reason for financial constraints in our context is the low economy of Pakistan which doesn't allow these sort of investments hindering the learning of our students.

One more barrier highlighted in this study was the lack of interest by the stakeholders in the implementation of innovative pedagogies in the nursing profession, as they did not want to invest they were resistant to the use of these pedagogies. Literature also highlights lack of administrative and colleague support; including support from other faculty, deans or directors of the programs (Culyer et al., 2018; Jamalpuri et al., 2022). As in Pakistan's context many of the

nursing institutes are headed by people who don't have nursing background so the main reason of their work is to do business. They actually don't give more importance to the students learning needs.

The present study revealed many barriers, for example lack of faculty and opportunity for their development specific to innovative strategies like simulation. Many of the participants highlighted this by mentioning untrained or incompetent faculty. Literature has also highlighted the same, mentioning lack of time for preparation and development of faculty. Moreover, literature also shows that the nursing faculty felt themselves to be unprepared or sometimes moderately empowered. They also raised the need of qualified faculty members to effectively work with students in simulation (Alshehri et al., 2023; Benchadlia et al., 2023; Culyer et al., 2018; Jamalpuri et al., 2022; Nye et al., 2019; Simes et al., 2018).

The participants perceived that the regulatory bodies in Pakistan had not set any standards for simulation in nursing education. According to the literature the Boards of Nursing (BON) of the United States and Columbia were asked about their rules and guidelines for the implementation of SBE. The study reported that the BONs had regulations for the use of simulation; however; sometimes the regulations varied among the different BONs, so they needed to be made consistent for everyone (Bradley et al., 2019). In our context regulatory bodies don't have set of rules and regulation that is the main drawback in implementation of SBE.

Factors Facilitating SBE

One of the facilitating factors reported in this research study was students' engagement in pre-briefing activities. This facilitated them in the accomplishment of the goals regarding simulation and helped them to get oriented with the simulation activities. The participants highlighted that they used checklists, scenarios, theory discussions, and videos as pre-briefing

activities. 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 (Bryant et al., 2020; Chernikova et al., 2020; Kim et al., 2017; Oliveira et al., 2018). In our context, most of the nursing schools use these activities to facilitate their students and to compensate the need of High fidelity manikins.

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 they could learn the skills more effectively. According to the literature the under resourced nursing institutes must develop partnerships with those institutes that are privileged with regard to SBE implementation, as this facilitate them to acquire assistance and trainings regarding SBE (Buchanan & O'Connor, 2020; Moabi & Mtshali, 2022). Additionally, collaboration between nursing institutes may facilitate in managing finances required for upgrading SBE (Bryant et al., 2020). However, in the present study financial collaboration was not highlighted by the research participants.

The Future of Simulation

Analysis of the findings of this research study revealed that for building a better future for simulation, faculty development was a very essential component that needed to be worked on. Literature also supports the same thought, stating 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 giving enough time and rewards, is also necessary for it to flourish (Culyer et al., 2018; Koukourikos et al., 2021). Another study suggests faculty members should take train-the-trainer courses that include creating curricula, learning to use simulators, exploring

new technology, and integrating features that would enhance learning (Alshehri et al., 2023; Bryant et al., 2020).

One more factor identified in this research was the availability and maintenance of resources that could facilitate faculty and students to 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 the well-founded simulation laboratories. Thus, it is emphasized that all nursing schools must invest money in the construction of suitable laboratories and allocate time for simulation in their curriculum (Bryant et al., 2020; Culyer et al., 2018; Koukourikos et al., 2021).

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, 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 the leadership (Almotairy et al., 2023; Culyer et al., 2018).

One more factor that can facilitate the future of simulation that was derived from this research study, was the support of regulatory bodies. Nursing institutes need support and set high standards in nursing education. In Korea the number of nursing schools have increased with the passage of time, but they were lacking clinical areas for learning clinical practices, so 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 on, 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 the clinical areas also decreased (Park & Yu, 2018). Another study highlighted that to

develop an effective and appropriate nursing education system in a developing country, like Pakistan, collaboration is essential at the individual, organizational, and government level, so that everyone can work collectively to improve the standards and ensure compliance with those standards (Younas et al., 2019) .

Strengths of the Study

- There are number of nursing institutes in both categories; public and private. Participants from both the settings provided their voices. These participants were diverse, having different educational backgrounds, years of experience, and working at different designations such as Lecturer, Senior lecturer, Assistant professor, Nursing instructor, and Clinical instructors. Thus, their participation enriched the data.
- This study can raise awareness and insight in faculty members for utilizing innovative pedagogy in their teaching learning journey.

Limitations of the Study

- Due to the long approval procedures and less responsiveness of the institutes, only one public institute was included in my research study.
- Recruiting faculty was very difficult for this study because of their busy schedules and some of them showed lack of interest as well.
- Recruiting institutes that fulfilled the criteria was very difficult, as many of the institutes were not having enough number of faculty members that were required for the study.
- Focus group discussion was used as method of data collection so the participants may not have felt comfortable talking openly in the group.

Recommendations of the Study

- To enhance faculty development and engagement in simulation, it is suggested that training programs should be conducted to raise awareness and insight among faculty members for utilizing innovative pedagogy in their teaching learning journey. This can grow and provide effective contributions in nursing education.
- It is suggested that further research should be conducted regarding simulation.
- It is suggested to initiate the interest groups and conferences in Pakistan regarding simulation to raise awareness among health care professionals.

Conclusion

This was an exploratory qualitative research study conducted in Pakistan, on nursing faculty perspectives regarding simulation based education. Through data analysis the researcher identified four themes presented in the findings section of this thesis. In this chapter the discussion was around these themes complemented with earlier research either supporting or contradicting the findings of this research. Additionally, the strengths, limitations and recommendation of this research have been included in the chapter.

References

- Aarkrog, V. (2019). 'The mannequin is more lifelike': The significance of fidelity for students' learning in simulation-based training in the social- and healthcare programmes. *Nordic Journal of Vocational Education and Training*, 9(2), 1-18.
<https://doi.org/10.3384/njvet.2242-458X.19921>
- Aebersold, M. (2018). Simulation-Based Learning: No Longer a Novelty in Undergraduate Education. *Online Journal of Issues in Nursing*, 23, 1-1.
<https://doi.org/10.3912/OJIN.Vol23No02PPT39>
- Albaradie, R. S. (2018). Perception of students and teachers about didactic teaching: A cross-sectional study. *Saudi Journal for Health Sciences*, 7(2), 107-115.
- Alinier, G., & Oriot, D. (2022). Simulation-based education: deceiving learners with good intent. *Advances in Simulation*, 7(1), 8. <https://doi.org/10.1186/s41077-022-00206-3>
- Almotairy, M. M., Algabbashi, M., Alshutwi, S., Shibily, F., Alsharif, F., Almutairi, W., & Nahari, A. (2023). Nursing faculty perceptions of simulation culture readiness in Saudi universities: a cross-sectional study. *BMC Nursing*, 22(1), 105.
<https://doi.org/10.1186/s12912-023-01278-w>
- Alshehri, Alenazi, F. S., Alturki, H., & Khan, F. H. (2023). Exploring faculty perception of simulation-based education: Benefits and challenges of using simulation for improving patient safety in cardiovascular diploma program. *Pak J Med Sci*, 39(2), 354-360.
<https://doi.org/10.12669/pjms.39.2.6693>
- Angelina, J. A., Stephen, K. M., & Ipyana, M. (2021). The Impact of Low Fidelity Simulation on Nurse Competence in Active Management of Third Stage of Labor: An Intervention Study in Primary Health Care Settings in Tanzania. *Clinical Simulation in Nursing*, 56, 10-21. <https://doi.org/https://doi.org/10.1016/j.ecns.2021.03.009>
- Asad, N. (2018). Millennial nursing students' perceptions regarding pedagogies implemented in a private school of nursing Karachi, Pakistan.
- 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>
- Benchadlia, F., Rabia, Q., & Abderrahim, K. (2023). Simulation in Basic Nursing Student Education: Uses and Barriers. *The Open Nursing Journal*, 17(1).
- 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, 17-25.
<https://doi.org/https://doi.org/10.1016/j.ecns.2019.04.004>
- Brauneis, L., Badowski, D., Maturin, L., & Simonovich, S. D. (2021). Impact of Low-fidelity Simulation-based Experiences in a Pharmacology Classroom Setting in Prelicensure Graduate Nursing Education. *Clinical Simulation in Nursing*, 50, 43-47.
<https://doi.org/https://doi.org/10.1016/j.ecns.2020.10.002>
- Bryant, K., Aebersold, M. L., Jeffries, P. R., & Kardong-Edgren, S. (2020). Innovations in Simulation: Nursing Leaders' Exchange of Best Practices. *Clinical Simulation in Nursing*, 41, 33-40.e31. <https://doi.org/https://doi.org/10.1016/j.ecns.2019.09.002>

- Buchanan, D. T., & O'Connor, M. R. (2020). Integrating Diversity, Equity, and Inclusion into a Simulation Program. *Clinical Simulation in Nursing*, 49, 58-65. <https://doi.org/10.1016/j.ecns.2020.05.007>
- Campbell, S., Greenwood, M., Prior, S., Shearer, T., Walkem, K., Young, S., . . . Walker, K. (2020). Purposive sampling: complex or simple? Research case examples. *J Res Nurs*, 25(8), 652-661. <https://doi.org/10.1177/1744987120927206>
- Cant, R. P., Cooper, S. J., & Lam, L. L. (2020). Hospital Nurses' Simulation-Based Education Regarding Patient Safety: A Scoping Review. *Clinical Simulation in Nursing*, 44, 19-34. <https://doi.org/10.1016/j.ecns.2019.11.006>
- Carey, J. M., & Rossler, K. (2022). *The How When Why of High Fidelity Simulation*. StatPearls Publishing, Treasure Island (FL). <http://europepmc.org/abstract/MED/32644739>
<http://europepmc.org/books/NBK559313><https://www.ncbi.nlm.nih.gov/books/NBK559313>
- Carrero-Planells, A., Pol-Csastañeda, S., Alamillos-Guardiola, M. C., Prieto-Alomar, A., Tomás-Sánchez, M., & Moreno-Mulet, C. (2021). Students and teachers' satisfaction and perspectives on high-fidelity simulation for learning fundamental nursing procedures: A mixed-method study. *Nurse Education Today*, 104, 104981. <https://doi.org/10.1016/j.nedt.2021.104981>
- Chang, Y. Y., Chao, L. F., Xiao, X., & Chien, N. H. (2021). Effects of a simulation-based nursing process educational program: A mixed-methods study. *Nurse Educ Pract*, 56, 103188. <https://doi.org/10.1016/j.nepr.2021.103188>
- Chernikova, O., Heitzmann, N., Stadler, M., Holzberger, D., Seidel, T., & Fischer, F. (2020). Simulation-Based Learning in Higher Education: A Meta-Analysis. *Review of Educational Research*, 90(4), 499-541. <https://doi.org/10.3102/0034654320933544>
- Coggins, A., Hong, S. S., Baliga, K., & Halamek, L. P. (2022). Immediate faculty feedback using debriefing timing data and conversational diagrams. *Advances in Simulation*, 7(1), 7. <https://doi.org/10.1186/s41077-022-00203-6>
- Cook, D. A., Andersen, D. K., Combes, J. R., Feldman, D. L., & Sachdeva, A. K. (2018). The value proposition of simulation-based education. *Surgery*, 163(4), 944-949. <https://doi.org/10.1016/j.surg.2017.11.008>
- Creswell, J. W., & Creswell, J. D. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. SAGE Publications. <https://books.google.com.pk/books?id=s4ViswEACAAJ>
- Crowe, Ewart, L., & Derman, S. (2018). The impact of simulation based education on nursing confidence, knowledge and patient outcomes on general medicine units. *Nurse Educ Pract*, 29, 70-75. <https://doi.org/10.1016/j.nepr.2017.11.017>
- Crowe, S., Ewart, L., & Derman, S. (2018). The impact of simulation based education on nursing confidence, knowledge and patient outcomes on general medicine units. *Nurse Educ Pract*, 29, 70-75. <https://doi.org/10.1016/j.nepr.2017.11.017>
- Culyer, L. M., Jatulis, L. L., Cannistraci, P., & Brownell, C. A. (2018). Evidenced-Based Teaching Strategies that Facilitate Transfer of Knowledge Between Theory and Practice: What are Nursing Faculty Using? *Teaching and Learning in Nursing*, 13(3), 174-179. <https://doi.org/10.1016/j.teln.2018.03.003>
- Davitadze, M., Ooi, E., Ng, C. Y., Zhou, D., Thomas, L., Hanania, T., . . . Kempegowda, P. (2022). SIMBA: using Kolb's learning theory in simulation-based learning to improve

- participants' confidence. *BMC Medical Education*, 22(1), 116.
<https://doi.org/10.1186/s12909-022-03176-2>
- Dykes, S., & Chu, C. H. (2021). Now more than ever, nurses need to be involved in technology design: lessons from the COVID-19 pandemic. *J Clin Nurs*, 30(7-8), e25-e28.
<https://doi.org/10.1111/jocn.15581>
- Earnest, D. (2020). Quality in qualitative research: An overview [Research Series]. *Indian Journal of Continuing Nursing Education*, 21(1), 76-80.
https://doi.org/10.4103/ijcn.Ijcn_48_20
- Egan, R., Lee, C., Bornais, J., Tyerman, J., & Luctkar-Flude, M. (2023). Perspectives of simulation facilitators, course professors and students on factors and outcomes of simulation effectiveness. *International Journal of Healthcare Simulation*.
<https://doi.org/null>
- Eriksen, M. B., & Frandsen, T. F. (2018). The impact of patient, intervention, comparison, outcome (PICO) as a search strategy tool on literature search quality: a systematic review. *J Med Libr Assoc*, 106(4), 420-431. <https://doi.org/10.5195/jmla.2018.345>
- Findik, Ü. Y., Yeşilyurt, D. S., & Makal, E. (2019). Determining student nurses' opinions of the low-fidelity simulation method. *Nursing Practice Today*.
- Franklin, A., & Blodgett, N. (2020). Simulation in Undergraduate Education. *Annual Review of Nursing Research*, 39, 3-31. <https://doi.org/10.1891/0739-6686.39.3>
- Fukada, M. (2018). Nursing Competency: Definition, Structure and Development. *Yonago Acta Med*, 61(1), 1-7. <https://doi.org/10.33160/yam.2018.03.001>
- Greenway, K., Butt, G., & Walthall, H. (2019). What is a theory-practice gap? An exploration of the concept. *Nurse Educ Pract*, 34, 1-6. <https://doi.org/10.1016/j.nepr.2018.10.005>
- Guerrero, J. G., Ali, S. A. A., & Attallah, D. M. (2022). The Acquired Critical Thinking Skills, Satisfaction, and Self Confidence of Nursing Students and Staff Nurses through High-fidelity Simulation Experience. *Clinical Simulation in Nursing*, 64, 24-30.
<https://doi.org/https://doi.org/10.1016/j.ecns.2021.11.008>
- Guinea, S., Andersen, P., Reid-Searl, K., Levett-Jones, T., Dwyer, T., Heaton, L., . . . Bickell, P. (2019). Simulation-based learning for patient safety: The development of the Tag Team Patient Safety Simulation methodology for nursing education. *Collegian*, 26(3), 392-398.
<https://doi.org/https://doi.org/10.1016/j.colegn.2018.09.008>
- Hanshaw, S. L., & Dickerson, S. S. (2020). High fidelity simulation evaluation studies in nursing education: A review of the literature. *Nurse Education in Practice*, 46, 102818.
<https://doi.org/https://doi.org/10.1016/j.nepr.2020.102818>
- Hernandez-Acevedo, B. (2021). Nursing faculty integrate simulation instruction into their teaching practice: A phenomenological study. *Teaching and Learning in Nursing*, 16(3), 205-209. <https://doi.org/https://doi.org/10.1016/j.teln.2021.03.003>
- Howell, L. J. (2017). *Faculty perspectives on effective integration of simulation into a baccalaureate nursing curriculum* [Walden University].
- Hung, C.-C., Kao, H.-F. S., Liu, H.-C., Liang, H.-F., Chu, T.-P., & Lee, B.-O. (2021). Effects of simulation-based learning on nursing students' perceived competence, self-efficacy, and learning satisfaction: A repeat measurement method. *Nurse Education Today*, 97, 104725.
<https://doi.org/https://doi.org/10.1016/j.nedt.2020.104725>
- Hussain, Afzal, M., Sehar, S., Gillani, S. A., Parveen, K., & Rafique, M. (2019). Student's Insight about Simulation and Skills Learning.

- Hussein, M. T., Harvey, G., & Bell, N. (2022). The Influence of Nursing Simulation on Patient Outcomes and Patient Safety: A Scoping Review. *Clinical Simulation in Nursing*, 70, 37-46. <https://doi.org/https://doi.org/10.1016/j.ecns.2022.06.004>
- Hustad, J., Johannesen, B., Fossum, M., & Hovland, O. J. (2019). Nursing students' transfer of learning outcomes from simulation-based training to clinical practice: a focus-group study. *BMC Nursing*, 18(1), 53. <https://doi.org/10.1186/s12912-019-0376-5>
- Hwang, Y., & Oh, J. (2021). The Relationship between Self-Directed Learning and Problem-Solving Ability: The Mediating Role of Academic Self-Efficacy and Self-Regulated Learning among Nursing Students. *International Journal of Environmental Research and Public Health*, 18(4), 1738. <https://www.mdpi.com/1660-4601/18/4/1738>
- Iben. (2023). How Can we Use Simulation to Improve Competencies in Nursing?
- Jamalपुरi, V., Gunda, R. K., Ramachandra, G., Thyagarajan, S., Shetty, R., Seethamraju, R. R., . . . Shepherd, M. (2022). Breaking barriers in establishing simulation in India—A collaborative approach by pediatric simulation training and research society (PediSTARS) [Perspective]. *Frontiers in Pediatrics*, 10. <https://doi.org/10.3389/fped.2022.927711>
- Kamińska, D., Sapiński, T., Wiak, S., Tikk, T., Haamer, R. E., Avots, E., . . . Anbarjafari, G. (2019). Virtual Reality and Its Applications in Education: Survey. *Information*, 10(10), 318. <https://www.mdpi.com/2078-2489/10/10/318>
- Kang, & Kang. (2020). The Effects of Simulation-based Education on the Clinical Reasoning Competence, Clinical Competence, and Educational Satisfaction.
- Karacay, P., & Kaya, H. (2020). Effects of a Simulation Education Program on Faculty Members' and Students' Learning Outcomes. *International Journal of Caring Sciences*, 13, 1-555.
- Karlsaune, H., Antonsen, T., & Haugan, G. (2023). Simulation: A Historical and Pedagogical Perspective. In I. Akselbo & I. Aune (Eds.), *How Can we Use Simulation to Improve Competencies in Nursing?* (pp. 1-11). Springer International Publishing. https://doi.org/10.1007/978-3-031-10399-5_1
- Kim, Y.-J., Noh, G.-O., & Im, Y.-S. (2017). Effect of Step-Based Prebriefing Activities on Flow and Clinical Competency of Nursing Students in Simulation-Based Education. *Clinical Simulation in Nursing*, 13(11), 544-551. <https://doi.org/https://doi.org/10.1016/j.ecns.2017.06.005>
- Kleinheksel, A. J., Rockich-Winston, N., Tawfik, H., & Wyatt, T. R. (2020). Demystifying Content Analysis. *American Journal of Pharmaceutical Education*, 84(1), 7113. <https://doi.org/https://doi.org/10.5688/ajpe7113>
- Kolb, A., & Kolb, D. (2018). Eight important things to know about the experiential learning cycle. *Australian educational leader*, 40(3), 8-14.
- Korayem, G. B., Alshaya, O. A., Kurdi, S. M., Alnajjar, L. I., Badr, A. F., Alfahed, A., & Cluntun, A. (2022). Simulation-Based Education Implementation in Pharmacy Curriculum: A Review of the Current Status. *Advances in Medical Education and Practice*, 13(null), 649-660. <https://doi.org/10.2147/AMEP.S366724>
- Koukourikos, K., Tsaloglidou, A., Kourkouta, L., Papatheanasiou, I. V., Iliadis, C., Fratzana, A., & Panagiotou, A. (2021). Simulation in Clinical Nursing Education. *Acta Inform Med*, 29(1), 15-20. <https://doi.org/10.5455/aim.2021.29.15-20>
- Labrague, L. J. (2021). Use of Simulation in Teaching Nursing Leadership and Management Course: An integrative review. *Sultan Qaboos Univ Med J*, 21(3), 344-353. <https://doi.org/10.18295/squmj.4.2021.007>

- Lee, J. Y., & Park, S. (2020). Nursing students' and instructors' perception of simulation-based learning. *International Journal of Advanced Culture Technology*, 8(1), 44-55.
- Lincoln, & Guba. (1985). *Naturalistic Inquiry*. Sage Publications Incorporation, Newbury Park, London.
- Logan, R. M., Johnson, C. E., & Worsham, J. W. (2021). Development of an e-learning module to facilitate student learning and outcomes. *Teaching and Learning in Nursing*, 16(2), 139-142. <https://doi.org/https://doi.org/10.1016/j.teln.2020.10.007>
- Luo, D., Yang, B. X., Liu, Q., Xu, A., Fang, Y., Wang, A., . . . Li, T. (2021). Nurse educators perceptions of simulation teaching in Chinese context: benefits and barriers. *PeerJ*, 9, e11519. <https://doi.org/10.7717/peerj.11519>
- Mackey, A., & Bassendowski, S. (2017). The History of Evidence-Based Practice in Nursing Education and Practice. *J Prof Nurs*, 33(1), 51-55. <https://doi.org/10.1016/j.profnurs.2016.05.009>
- Masooth Mohamed, A. (2023). Impact of simulation in Nursing Education: A Review Article. <https://doi.org/10.6084/m9.figshare.22179904>
- Maura. (2020). *Flashback Friday - Practice Makes Perfect: The History of Simulation*.
- Meum, T. T., Slettebø, Å., & Fossum, M. (2020). Improving the Use of Simulation in Nursing Education: Protocol for a Realist Review. *JMIR Res Protoc*, 9(4), e16363. <https://doi.org/10.2196/16363>
- Moabi, P. S., & Mtshali, N. G. (2022). Simulation-based education model for under-resourced nursing education institutions in Lesotho. *Health SA*, 27, 1889. <https://doi.org/10.4102/hsag.v27i0.1889>
- Morris, T. (2020). Morris, T. H. (2020). Experiential learning – a systematic review and revision of Kolb's model. *Interactive Learning Environments*, 28(8), 1064-1077. doi:10.1080/10494820.2019.1570279. *Interactive Learning Environments*, 28, 1064-1077. <https://doi.org/10.1080/10494820.2019.1570279>
- Mubeen, K., Baig, M., Abbas, S., Adnan, F., Lakhani, A., Bhamani, S. S., . . . Jan, R. (2021). Helping babies breathe: assessing the effectiveness of simulation-based high-frequency recurring training in a community-based setting of Pakistan. *BMC Pediatrics*, 21(1), 555. <https://doi.org/10.1186/s12887-021-03014-2>
- Mukhtar, K., Javed, K., Arooj, M., & Sethi, A. (2020). Advantages, Limitations and Recommendations for online learning during COVID-19 pandemic era. *Pak J Med Sci*, 36(Covid19-s4), S27-s31. <https://doi.org/10.12669/pjms.36.COVID19-S4.2785>
- Murakami, T., Yamamoto, A., Hagiya, H., Obika, M., Mandai, Y., Miyoshi, T., . . . Otsuka, F. (2023). The effectiveness of simulation-based education combined with peer-assisted learning on clinical performance of first-year medical residents: a case-control study. *BMC Medical Education*, 23. <https://doi.org/10.1186/s12909-023-04798-w>
- Nelson, R. (2016). Replicating Real Life: Simulation in Nursing Education and Practice. *AJN The American Journal of Nursing*, 116(5), 20,21. <https://doi.org/10.1097/01.NAJ.0000482956.85929.d8>
- Nye, C., Campbell, S. H., Hebert, S. H., Short, C., & Thomas, M. (2019). Simulation in Advanced Practice Nursing Programs: A North-American Survey. *Clinical Simulation in Nursing*, 26, 3-10. <https://doi.org/https://doi.org/10.1016/j.ecns.2018.09.005>
- Nyumba, T., Wilson, Derrick, C., & Mukherjee, N. (2018). The use of focus group discussion methodology: Insights from two decades of application in conservation. *Methods in Ecology and Evolution*, 9, 20-32. <https://doi.org/10.1111/2041-210X.12860>

- Oliveira, S. N. d., Massaroli, A., Martini, J. G., & Rodrigues, J. (2018). From theory to practice, operating the clinical simulation in Nursing teaching. *Revista Brasileira de Enfermagem*, *71*, 1791-1798.
- Olmos-Vega, F. M., Stalmeijer, R. E., Varpio, L., & Kahlke, R. (2023). A practical guide to reflexivity in qualitative research: AMEE Guide No. 149. *Medical Teacher*, *45*(3), 241-251. <https://doi.org/10.1080/0142159X.2022.2057287>
- Padilha, J. M., Machado, P. P., Ribeiro, A., Ramos, J., & Costa, P. (2019). Clinical Virtual Simulation in Nursing Education: Randomized Controlled Trial. *J Med Internet Res*, *21*(3), e11529. <https://doi.org/10.2196/11529>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., . . . Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*, *372*, n71. <https://doi.org/10.1136/bmj.n71>
- Park, H., & Yu, S. (2018). Policy issues in simulation-based nursing education and technology development. *Health Policy and Technology*, *7*(3), 318-321. <https://doi.org/https://doi.org/10.1016/j.hlpt.2018.06.003>
- Park, M., Conway, J., & McMillan, M. (2016). Enhancing critical thinking through simulation. *Journal of Problem-Based Learning*, *3*, 31-40. <https://doi.org/10.24313/jpbl.2016.3.1.31>
- Piryani, R. M., Piryani, S., Shrestha, U., Acharya, A., Kansakar, S., Shahi, M., . . . Bajracharya, S. (2019). Simulation-based education workshop: perceptions of participants. *Advances in Medical Education and Practice*, *Volume 10*, 547-554. <https://doi.org/10.2147/AMEP.S204816>
- Polit, & beck. (2012). Essentials of nursing research: Appraising Evidence for Nursing Practice.
- Raemer, D., Hannenberg, A., & Mullen, A. (2018). Simulation safety first: an imperative. *Advances in Simulation*, *3*(1), 25. <https://doi.org/10.1186/s41077-018-0084-3>
- Rattani, S. A., Kurji, Z., Khowaja, A. A., Dias, J. M., & AliSher, A. N. (2020). Effectiveness of High-Fidelity Simulation in Nursing Education for End-of-Life Care: A Quasi-experimental Design. *Indian J Palliat Care*, *26*(3), 312-318. https://doi.org/10.4103/ijpc.Ijpc_157_19
- Rendle, K. A., Abramson, C. M., Garrett, S. B., Halley, M. C., & Dohan, D. (2019). Beyond exploratory: a tailored framework for designing and assessing qualitative health research. *BMJ Open*, *9*(8), e030123. <https://doi.org/10.1136/bmjopen-2019-030123>
- Rico, H., de la Puente Pacheco, M. A., Pabon, A., & Portnoy, I. (2023). Evaluating the impact of simulation-based instruction on critical thinking in the Colombian Caribbean: An experimental study. *Cogent Education*, *10*(2), 2236450. <https://doi.org/10.1080/2331186X.2023.2236450>
- Ritter, F. E., Yeh, M. K., Stager, S. J., McDermott, A. F., & Weyhrauch, P. W. (2023). The Effect of Task Fidelity on Learning Curves: A Synthetic Analysis. *International Journal of Human-Computer Interaction*, 1-15. <https://doi.org/10.1080/10447318.2022.2161863>
- Rojas-Sánchez, M. A., Palos-Sánchez, P. R., & Folgado-Fernández, J. A. (2023). Systematic literature review and bibliometric analysis on virtual reality and education. *Education and Information Technologies*, *28*(1), 155-192. <https://doi.org/10.1007/s10639-022-11167-5>
- Ruslan, R., & Saidi, S. (2019). Simulation and novice nurses: A review. *Enfermería Clínica*, *29*, 665-673. <https://doi.org/https://doi.org/10.1016/j.enfcli.2019.04.102>
- Saleem, M., & Khan, Z. (2023). Healthcare Simulation: An effective way of learning in health care. *Pakistan Journal of Medical Sciences*, *39*(4).

- Salifu, D. A., Heymans, Y., & Christmals, C. D. (2022). A Simulation-Based Clinical Nursing Education Framework for a Low-Resource Setting: A Multimethod Study. *Healthcare (Basel)*, 10(9). <https://doi.org/10.3390/healthcare10091639>
- Sarmah, P., Voss, J., Ho, A., Veneziano, D., & Somani, B. (2017). Low vs. high fidelity: the importance of 'realism' in the simulation of a stone treatment procedure. *Current Opinion in Urology*, 27(4). https://journals.lww.com/co-urology/fulltext/2017/07000/low_vs_high_fidelity_the_importance_of_realism_3.aspx
- Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., . . . Jinks, C. (2018). Saturation in qualitative research: exploring its conceptualization and operationalization. *Qual Quant*, 52(4), 1893-1907. <https://doi.org/10.1007/s11135-017-0574-8>
- Setia, M. S. (2017). Methodology Series Module 10: Qualitative Health Research. *Indian J Dermatol*, 62(4), 367-370. https://doi.org/10.4103/ijd.IJD_290_17
- Shah, A., Mai, C. L., Shah, R., & Levine, A. I. (2019). Simulation-Based Education and Team Training. *Otolaryngol Clin North Am*, 52(6), 995-1003. <https://doi.org/10.1016/j.otc.2019.08.002>
- Simes, T., Roy, S., O'Neill, B., Ryan, C., Lapkin, S., & Curtis, E. (2018). Moving nurse educators towards transcendence in simulation comfort. *Nurse Education in Practice*, 28, 218-223. <https://doi.org/https://doi.org/10.1016/j.nepr.2017.10.024>
- Smith, H. J., Chen, J., & Liu, X. (2008). Language and rigour in qualitative research: Problems and principles in analyzing data collected in Mandarin. *BMC Medical Research Methodology*, 8(1), 44. <https://doi.org/10.1186/1471-2288-8-44>
- Sofer, D. (2018). The Value of Simulation in Nursing Education. *AJN The American Journal of Nursing*, 118(4), 17-18. <https://doi.org/10.1097/01.Naj.0000532063.79102.19>
- Stenseth, H. V., Steindal, S. A., Solberg, M. T., Ølnes, M. A., Mohallem, A., Sørensen, A. L., . . . Nes, A. A. G. (2022). Simulation-Based Learning Supported by Technology to Enhance Critical Thinking in Nursing Students: Protocol for a Scoping Review. *JMIR Res Protoc*, 11(4), e36725. <https://doi.org/10.2196/36725>
- Swedberg, R. (2020). Exploratory research. *The production of knowledge: Enhancing progress in social science*, 17-41.
- Thompson. (2021). The Effects of High-Fidelity Simulation, Low-Fidelity Simulation, and Video Training on Nursing Student Anxiety in the Clinical Setting. *Nurs Educ Perspect*, 42(3), 162-164. <https://doi.org/10.1097/01.Nep.0000000000000624>
- Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care*, 19(6), 349-357. <https://doi.org/10.1093/intqhc/mzm042>
- Vandali, V. (2017). Nursing Profession: A Review. *International Journal of Nursing Education and Research*, 5, 444. <https://doi.org/10.5958/2454-2660.2017.00095.3>
- Verkuy, M., & Hughes, M. (2019). Virtual Gaming Simulation in Nursing Education: A Mixed-Methods Study. *Clinical Simulation in Nursing*, 29, 9-14. <https://doi.org/https://doi.org/10.1016/j.ecns.2019.02.001>
- Vural., & Zengin. (2020). The effects of training with simulation on knowledge, skill and anxiety levels of the nursing students in terms of cardiac auscultation: A randomized controlled study. *Nurse Educ Today*, 84, 104216. <https://doi.org/10.1016/j.nedt.2019.104216>

- Watson, C., Gómez-Ibáñez, 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>
- Wenlock, R. D., Arnold, A., Patel, H., & Kirtchuk, D. (2020). Low-fidelity simulation of medical emergency and cardiac arrest responses in a suspected COVID-19 patient - an interim report. *Clin Med (Lond)*, 20(4), e66-e71. <https://doi.org/10.7861/clinmed.2020-0142>
- Yaseen Fathi, K., & Ibrahim, R. H. (2023). Factors influencing integration of theory into practice in clinical skills acquisition among nursing students. *Informatics in Medicine Unlocked*, 37, 101181. <https://doi.org/https://doi.org/10.1016/j.imu.2023.101181>
- Younas, Rasheed, S. P., & Sommer, J. (2019). Current situation and challenges concerning nursing education in Pakistan. *Nurse Educ Pract*, 41, 102638. <https://doi.org/10.1016/j.nepr.2019.102638>
- Younas, A., Zeb, H., Aziz, S. B., Sana, S., Albert, J. S., Khan, I. U., . . . Rasheed, S. P. (2019). Perceived challenges of nurse educators while teaching undergraduate nursing students in Pakistan: An exploratory mixed-methods study. *Nurse Education Today*, 81, 39-48. <https://doi.org/https://doi.org/10.1016/j.nedt.2019.07.002>
- Younas., Zeb, H., Aziz, S. B., Sana, S., Albert, J. S., Khan, I. U., . . . Rasheed, S. P. (2019). Perceived challenges of nurse educators while teaching undergraduate nursing students in Pakistan: An exploratory mixed-methods study. *Nurse Educ Today*, 81, 39-48. <https://doi.org/10.1016/j.nedt.2019.07.002>

Appendix A

Nursing Curriculum BSN and Post RN BSN

STANDARD TEMPLATE FOR 4-YEAR BS NURSING

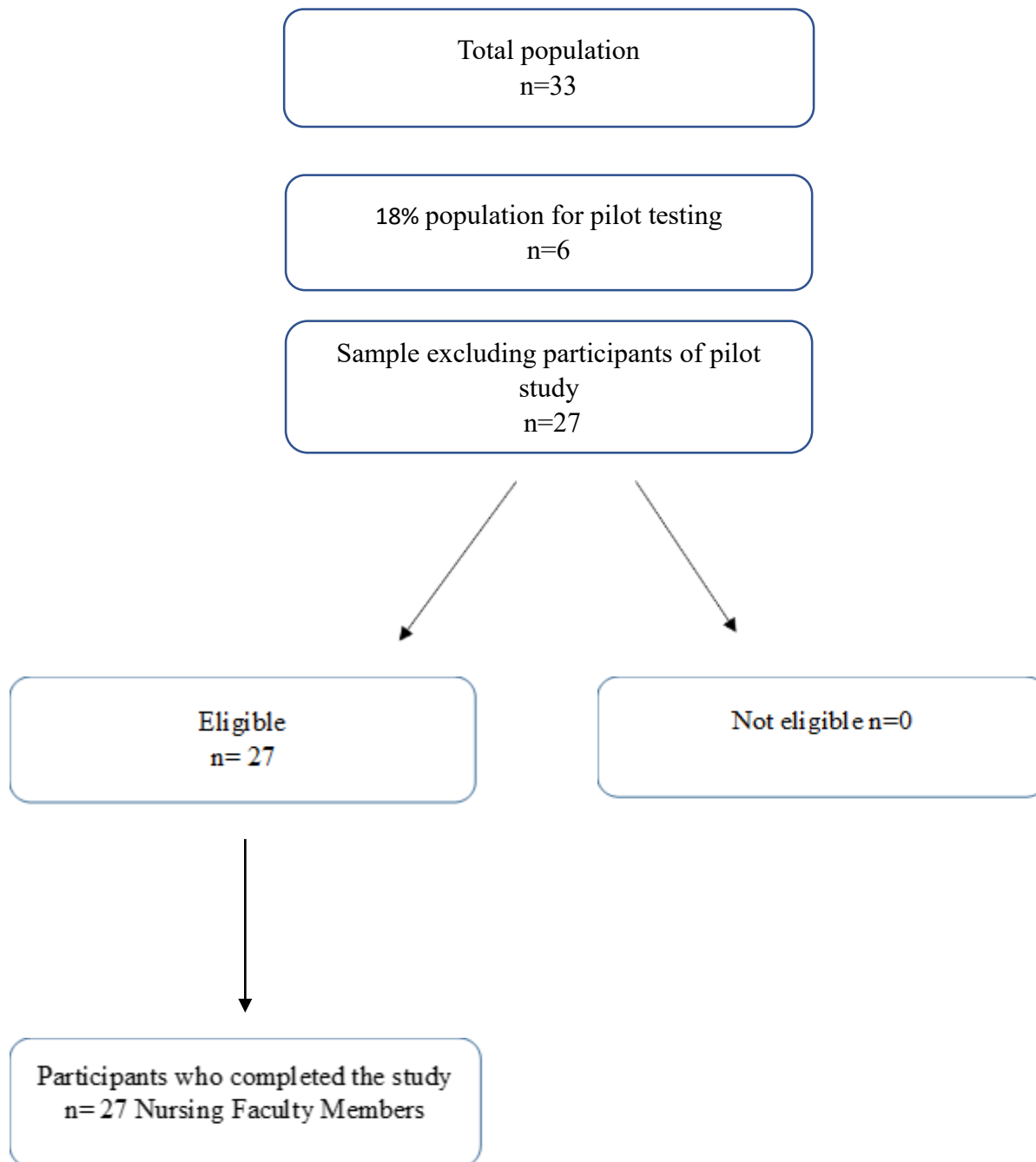
Compulsory Requirements (the student has no choice)		General Courses to be chosen from other departments	
9 courses		7-8 courses	
22 Credit hours		21-24 Cr. hours	
Subject	Cr. Hr.	Subject	Cr. Hr.
1. ENGLISH I	2	1. MICROBIOLOGY	3
2. ENGLISH II	2	2. ANATOMY & PHYSIOLOGY	6
3. ENGLISH III	2	3. BIOCHEMISTRY	3
4. ENGLISH IV	2	4. ETHICS	1
5. ENGLISH V	2	5. PATHOPHYSIOLOGY	5
6. ENGLISH VI	2	6. NUTRITION	1
7. ENGLISH VII	2	7. PSYCHOLOGY	5
8. ENGLISH VIII	2		
9. PAKISTAN STUDIES	2		
10. ISLAMIC STUDIES / ETHICS	2		
11. MATHEMATICS I	1		
12. MATHEMATICS II / UNIV. OPTIONAL **			
13. INTRODUCTION TO COMPUTER	1		
	22		24

Discipline Specific Foundation Courses		Major courses including research project/internship		Elective Courses within the major	
9-10 courses		11-13 courses		4 courses	
30-33 Credit hours		36-42 Credit hours		12 Credit Hours	
Subject	Cr. Hr.	Subject	Cr. Hr.	Subject	Cr. Hr.
1. FON I	4	1. BIOSTATS	3	1. CHN III	5
2. FON II	4	2. RESEARCH	3	2. NURSING SEMINAR	2
3. AHN I,	8	3. EPIDEMIOLOGY	2	3. Senior Elective: Clinical Practicum	5
4. AHN II,	8	4. LDSP/.MGT	3		
5. CHN I,	3	5. CRITICAL CARE NURSING	5		
5. HA	4	6. TEACHING/ LEARNING	5		
6. Culture, Health & Society	2	7. CHN II	6		
		8. MHN	6		
		9. PEADIATRIC	7		
		10. PHARMACOLOGY	4		
	33		42		12

Scheme of Studies for Post RN BSN Studies							
Year -1 Semester -1				Year -1 Semester- 2			
Sr.	Course No	Courses	Credit Hours	Sr.	Course No	Courses	Credit Hours
01	SC 611	Biochemistry	2(1.5+0.5)	01	NU 621	* Advance Concepts in Nursing (II) <i>Mental Health</i>	04 (2+2)
02	NU 612	Advance Concepts in Nursing I (Adult Health Nursing)	4 (2+2)	02	SC 622	Introduction to Biostatistics	02
03	NU 613	Health Assessment	3(1.5+1.5)	03	SC623	Epidemiology	02
04	SC 614	Pharmacology	3	04	HU 624	Culture Health & Society	02
05	EN 615	English I (Functional)	2	05	NU 625	Introduction to Nursing Models & Theories	02
06	CS 616	Computer Skills & Information Technology	02	06	EN 626	English II (Academics)	02
					NU 627	Principle of Teaching and Clinical Preceptor ship	3
		Total Credits	16			Total Credits	17
Year -2 Semester -1				Year -2 Semester- 2			
Sr.	Course No	Courses	Credit Hours	Sr.	Course No	Courses	Cred Hour
01	Nu 631	Advance Concepts III (CHN)	04 (2+2)	01	NU 641	*Research/ Evidence based Elective project	4
02	SC 632	Introduction to Nursing Research	03	02	NU 642	**Clinical Practicum	6
03	NU 633	Professional Development and Ethics	03	03	EN 643	English IV (Scholarly writing)	2
	PS 634	Pak Studies	02		IS 644/	Islamic Studies/Ethics (For	02

Post RN Curriculum

				ET 644	Non-Muslims)	
04	NU 634	Leadership and Management	03		Total Credits	14
05	EN 635	English III (Professional writing)	02			
		Total Credits	17			
Total Credits for Two Years						
		Semester-I	Semester -II	Total	Theory & Practice balance =	
	Year I	16 Credits	17 Credits	33		
	Year II	17Credits	14 Credits	31		

Appendix B**Sample Recruitment Table**

Appendix C

ERC Approval Letter



27-Jan-2023

Dr. SALMA RATTANI
Department of School of Nursing and Midwifery
Aga Khan University
Karachi

Dear Dr. SALMA RATTANI,

2023-7968-23860, SALMA RATTANI: Faculty Perspective on Simulation Based Education

Thank you for submitting your application for ethical approval regarding the above mentioned study.

Your study was reviewed and discussed in ERC meeting. There were no major ethical issues. The study was given an approval for a period of one year with effect from 27-Jan-2023. For further extension a request must be submitted along with the annual report

List of document(s) approved with this submission.

Submission Document Name	Submission Document Date	Submission Document Version
Version 1Re: 2022-7968-22814 Zohra kurji Certificate	03-Mar-2017	Version 1
Version 1 Re: 2022-7968-22814Salma Rattani certificate	03-Mar-2017	Version 1
Version 1Re: 2022-7968-22814 Sadaf Zindani ERC Ethics Certificate	29-Jul-2021	Version 1
Version 1 Re: 2022-7968-22814Barbara Wilson-Keates NDA GNC Certificate	03-Mar-2017	Version 1
Version 1 Re: 2022-7968-22814 Saira Ialari certificate	26-May-2022	Version 1
Version 1 Re 2022-7968-22814 Permission letter	07-Oct-2022	Version 1
Version 1 Re 2022-7968-22814 Acceptance Form	07-Oct-2022	Version 1
Version 1 Re 2022-7968-22814 Permission letter Munhid	12-Nov-2022	Version 1
Version 1 Re 2022-7968-22814 Permission letter Horizon	12-Nov-2022	Version 1
Version 1 Re 2022-7968-22814 Permission letter Iqra(Status discussed with ERC)	12-Nov-2022	Version 1
Version 1 Re 2022-7968-22814 Permission letter	12-Nov-2022	Version 1

Submission Document Name	Submission Document Date	Submission Document Version
Civil		
Version 3 Re 2022-7968-22814 Written consent form	12-Nov-2022	Version 3
Version 4 Re 2022-7968-22814 Research protocol/Study protocol	14-Jan-2023	Version 4
Version2 Re 2022-7968-22814 Study Questionnaire English	14-Jan-2023	Version 2
Re 2022-7968-22814 ERC RESPONSE SHEET	14-Jan-2023	Version 1

Any changes in the protocol or extension in the period of study should be notified to the Committee for prior approval. All informed consents should be retained for future reference.

Please ensure that all the national and institutional requirements are met.

Thank you.

Sincerely,

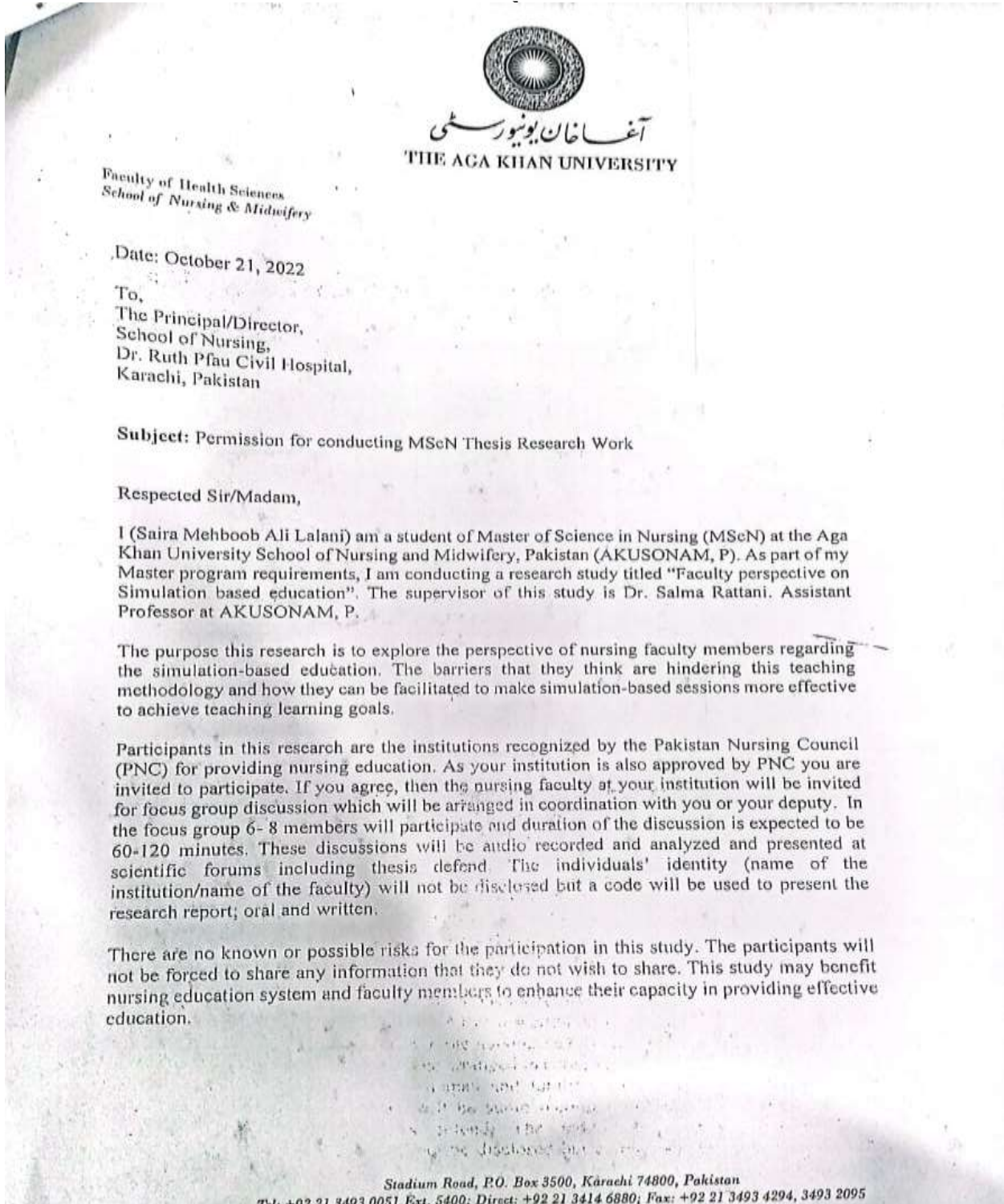


Dr Afia Zafar

Chairperson
Ethics Review Committee

Appendix D

I
n
s
t
:





In view of the above information, I request you to permit me to conduct research in your institute. I will be thankful to you for your cooperation. The acceptance form is provided below.

Sincerely,

Saira Mehboob Ali Lalani
MScN Student
School of Nursing and Midwifery, Pakistan
Aga Khan University
Stadium Road, P.O. Box 3500,
Karachi 74800, Pakistan

Thesis Supervisor

Dr. Salma Rattani, PhD, MScN, BScN, RN, RM
Assistant Professor
School of Nursing and Midwifery, Pakistan
Aga Khan University
Stadium Road, P.O. Box 3500,
Karachi 74800, Pakistan
T. +92 21 3486-5256 | M. +92 345 234178
Email address: salma.rattani@aku.edu , rattani@ualberta.ca

Received
by
original
22/10/22


**ACCEPTANCE FORM**

I am accepting your request and you are permitted to collect your data from our institute

College of Nursing (Female) Dr. Ruth K.M. Ptau, Civil Hospital Karachi.

Name: Khair-UN-Nisa

Designation: Principal

Signature: 

Ms. Khair-Un-Nisa
Principal
College of Nursing (Female)
Dr. Ruth K.M. Ptau,
Civil Hospital Karachi

Date: 11-11-2022



آغا خان یونیورسٹی
THE AGA KHAN UNIVERSITY

Faculty of Health Sciences
School of Nursing & Midwifery

Date: October 20, 2022

To,
The Principal/Director,
Murshid School of Nursing and Midwifery,
Murshid Hospital and Health Care Centre,
Karachi, Pakistan

Subject: Permission for conducting MScN Thesis Research Work

Respected Sir/Madam,

I (Saira Mehboob Ali Lalani) am a student of Master of Science in Nursing (MScN) at the Aga Khan University School of Nursing and Midwifery, Pakistan (AKUSONAM, P). As part of my Master program requirements, I am conducting a research study titled "Faculty perspective on Simulation based education". The supervisor of this study is Dr. Salma Rattani, Assistant Professor at AKUSONAM, P.

The purpose this research is to explore the perspective of nursing faculty members regarding the simulation-based education. The barriers that they think are hindering this teaching methodology and how they can be facilitated to make simulation-based sessions more effective to achieve teaching learning goals.

Participants in this research are the institutions recognized by the Pakistan Nursing Council (PNC) for providing nursing education. As your institution is also approved by PNC you are invited to participate. If you agree, then the nursing faculty at your institution will be invited for focus group discussion which will be arranged in coordination with you or your deputy. In the focus group 6- 8 members will participate and duration of the discussion is expected to be 60-120 minutes. These discussions will be audio recorded and analyzed and presented at scientific forums including thesis defend. The individuals' identity (name of the institution/name of the faculty) will not be disclosed but a code will be used to present the research report; oral and written.

There are no known or possible risks for the participation in this study. The participants will not be forced to share any information that they do not wish to share. This study may benefit nursing education system and faculty members to enhance their capacity in providing effective education.



In view of the above information, I request you to permit me to conduct research in your institute. I will be thankful to you for your cooperation. The acceptance form is provided below.

Sincerely,

Saira Mehboob Ali Lalani
MScN Student
School of Nursing and Midwifery, Pakistan
Aga Khan University
Stadium Road, P.O. Box 3500,
Karachi 74800, Pakistan

Thesis Supervisor

Dr. Salma Rattani, PhD, MScN, BScN, RN, RM
Assistant Professor
School of Nursing and Midwifery, Pakistan
Aga Khan University
Stadium Road, P.O. Box 3500,
Karachi 74800, Pakistan
T. +92 21 3486-5256 | M. +92 345 234178
Email address: salma.rattani@aku.edu , rattani@ualberta.ca



ACCEPTANCE FORM

I am accepting your request and you are permitted to collect your data from our institute

Murshid School of Nursing & midwifery,
Murshid Hospital & Health care Centre, Karachi.

Name: Dr Kashif Mahmood

Designation: Chief Executive Officer.

Signature: 

Date: 24-10-22



آغا خان یونیورسٹی
THE AGA KHAN UNIVERSITY

Faculty of Health Sciences
School of Nursing & Midwifery

Date: October 21, 2022

To,
The Principal/Director,
Iqra University,
Nursing College, North Campus,
Karachi, Pakistan

Subject: Permission for conducting MScN Thesis Research Work

Respected Sir/Madam,

I (Saira Mehboob Ali Lalani) am a student of Master of Science in Nursing (MScN) at the Aga Khan University School of Nursing and Midwifery, Pakistan (AKUSONAM, P). As part of my Master program requirements, I am conducting a research study titled "Faculty perspective on Simulation based education". The supervisor of this study is Dr. Salma Rattani, Assistant Professor at AKUSONAM, P.

The purpose this research is to explore the perspective of nursing faculty members regarding the simulation-based education. The barriers that they think are hindering this teaching methodology and how they can be facilitated to make simulation-based sessions more effective to achieve teaching learning goals.

Participants in this research are the institutions recognized by the Pakistan Nursing Council (PNC) for providing nursing education. As your institution is also approved by PNC you are invited to participate. If you agree, then the nursing faculty at your institution will be invited for focus group discussion which will be arranged in coordination with you or your deputy. In the focus group 6- 8 members will participate and duration of the discussion is expected to be 60-120 minutes. These discussions will be audio recorded and analyzed and presented at scientific forums including thesis defend. The individuals' identity (name of the institution/name of the faculty) will not be disclosed but a code will be used to present the research report; oral and written.

There are no known or possible risks for the participation in this study. The participants will not be forced to share any information that they do not wish to share. This study may benefit nursing education system and faculty members to enhance their capacity in providing effective education.

Stadium Road, P.O. Box 3500, Karachi 74800, Pakistan

Tel: +92 21 3493 0051 Ext. 5400; Direct: +92 21 3414 6880; Fax: +92 21 3493 4294, 3493 2095
sonani.pk@aku.edu; www.aku.edu



In view of the above information, I request you to permit me to conduct research in your institute. I will be thankful to you for your cooperation. The acceptance form is provided below.

Sincerely,

Saiba Mehboob Ali Lalani
MScN Student
School of Nursing and Midwifery, Pakistan
Aga Khan University
Stadium Road, P.O. Box 3500,
Karachi 74800, Pakistan

Thesis Supervisor

Dr. Salma Rattani, PhD, MScN, BScN, RN, RM
Assistant Professor
School of Nursing and Midwifery, Pakistan
Aga Khan University
Stadium Road, P.O. Box 3500,
Karachi 74800, Pakistan
T. +92 21 3486-5256 | M. +92 345 234178
Email address: salma.rattani@aku.edu , rattani@ualberta.ca

Forwarded to Dean for consideration
for permission

- 1) The study questions do not current practices in our Nursing College. This is a discussion with faculty on innovation ways of Education.
- 2) The Faculty can participate on free days i.e. Friday.
- 3) Study will be allowed after approval for this ERC.

Recommended & forwarded to Director academics

hmas



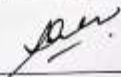
ACCEPTANCE FORM

I am accepting your request and you are permitted to collect your data from our institute

Iqra University Nursing College.

Name: Shehla Naeem Zafar.

Designation: Professor + Principal

Signature: 

Date: 6th February 2023.





آغا خان یونیورسٹی
THE AGA KHAN UNIVERSITY

Faculty of Health Sciences
School of Nursing & Midwifery

Date: November 4, 2022

To,
The Principal/Director,
Horizon School of Nursing & Allied Health Sciences,
Karachi, Pakistan

Subject: Permission for conducting MScN Thesis Research Work

Respected Sir/Madam,

I (Saira Mehboob Ali Lalani) am a student of Master of Science in Nursing (MScN) at the Aga Khan University School of Nursing and Midwifery, Pakistan (AKUSONAM, P). As part of my Master program requirements, I am conducting a research study titled "Faculty perspective on Simulation based education". The supervisor of this study is Dr. Salma Rattani, Assistant Professor at AKUSONAM, P.

The purpose this research is to explore the perspective of nursing faculty members regarding the simulation-based education. The barriers that they think are hindering this teaching methodology and how they can be facilitated to make simulation-based sessions more effective to achieve teaching learning goals.

Participants in this research are the institutions recognized by the Pakistan Nursing Council (PNC) for providing nursing education. As your institution is also approved by PNC you are invited to participate. If you agree, then the nursing faculty at your institution will be invited for focus group discussion which will be arranged in coordination with you or your deputy. In the focus group 6- 8 members will participate and duration of the discussion is expected to be 60-120 minutes. These discussions will be audio recorded and analyzed and presented at scientific forums including thesis defend. The individuals' identity (name of the institution/name of the faculty) will not be disclosed but a code will be used to present the research report; oral and written.

There are no known or possible risks for the participation in this study. The participants will not be forced to share any information that they do not wish to share. This study may benefit nursing education system and faculty members to enhance their capacity in providing effective education.



In view of the above information, I request you to permit me to conduct research in your institute. I will be thankful to you for your cooperation. The acceptance form is provided below.

Sincerely,

Saira Mehboob Ali Lalani
MScN Student
School of Nursing and Midwifery, Pakistan
Aga Khan University
Stadium Road, P.O. Box 3500,
Karachi 74800, Pakistan

Thesis Supervisor

Dr. Salma Rattani, PhD, MScN, BScN, RN, RM
Assistant Professor
School of Nursing and Midwifery, Pakistan
Aga Khan University
Stadium Road, P.O. Box 3500,
Karachi 74800, Pakistan
T. +92 21 3486-5256 | M. +92 345 234178
Email address: salma.rattani@aku.edu , rattani@ualberta.ca



ACCEPTANCE FORM

I am accepting your request and you are permitted to collect your data from our institute

HORIZON SCHOOL OF NURSING & ALLIED HEALTH SCIENCES

Name: MUNIBA

Designation: Director

Signature: [Handwritten Signature]

DIRECTOR
HORIZON SCHOOL OF NURSING
& ALLIED HEALTH SCIENCES

Date: 08/11/22

Appendix E

Consent Form

Appendix: B Informed Consent

Consent form for (Nursing faculty Members) for participation in study.

Study Title: Faculty members' perspective on Simulation Based Education.

Thesis committee: Supervisor and Committee members

Supervisor	Dr. Salma Rattani Assistant Professor AKU-SONAM salma.rattani@aku.edu
Thesis Co-Supervisor:	Ms. Zohra Kurji Assistant Professor, Section Head, Palliative Care and Oncology Clinical Stream and Lactation Consultant, SONAM, Obygn- Women's Health Care. zohra.kurji@aku.edu
Committee Member:	Dr. Barbara Wilson-Keates Academic Coordinator, Assistant Program Director, Bachelor Nursing Programs, Faculty of Health Disciplines Athabasca University bwilsonkeates@athabascau.ca
Committee Member:	Ms. Sadaf Zindani Associate Professor & Principal, Saifee Burhani School of Nursing sadafzindani@gmail.com

INTRODUCTION:

I am Saira Mehboob Ali Lalani, a student Masters in Nursing Science (MScN) School of Nursing and Midwifery, Aga Khan University, Pakistan. For MScN thesis I am doing a research titled 'Faculty members' perspective on Simulation Based Education'.

I invite you to participate in this research and as a faculty share your perspectives perspective and thoughts regarding simulation based teaching method.

PURPOSE OF THIS RESEARCH STUDY

In this research I am going to understand the perspective of nursing faculty members regarding the simulation-based education. The barriers that they think are hindering this

teaching methodology and how they can be facilitated to make simulation-based sessions more effective to achieve teaching learning goals.

PROCEDURES

I am approaching you with the permission of your institution Head and I thank you for your availability and agreement to talk to me. I invite you to participate in this research. If you agree, then you will be included in focus group discussions. In each focus group there will be 6- 8 faculty members and the duration of the discussion is expected to be 60-90 minutes. These discussions will be audio recorded, transcribed and data will be analyzed to making meaning from the data. Researcher will also take field notes to record the unstructured observations. These will also be included in data set. Presentations of findings will be through writing thesis report, presentation of research findings at scientific forums including thesis defend and through publications at scientific journals. Your individual identity will not be identified but a code will be used to present the research report; oral and written.

If you agree to participate, then you will be involved in a focus group discussion and share your thoughts and ideas regarding this topic. I would request you to read this consent form and if you need clarification for any point, I will be available to respond.

POSSIBLE RISKS OR BENEFITS

There are no known or possible risks for your participation in this study. You will not be forced to share any information that you do not wish to share. This study may benefit nursing education system and faculty members to enhance their capacity in providing effective education. This research may not provide you any personal benefits but it may benefit to the community at large and to the health care system.

CONFIDENTIALITY

Focus group discussion will be carried out in the respective institute and mode would be in person, face to face. For this purpose, separate venue will be booked prior with the help of

Head of department of the institute. So, the confidentiality of information will be maintained within members in the focus group. An oral under taking will be taken from the participants to maintain the confidentiality of participants in the group. The audio recorded data will be password protected and secured in the researcher's password protected computer. Field notes will be secured in lock and key with its access to the researcher. The data anonymized and will be grouped to analyze. Instead of the individuals' names code numbers will be assigned and used. However, the entire data will be accessible to thesis committee. It can be audited by ERC quality assurance team.

RIGHT TO REFUSE OR WITHDRAW

You are free to choose whether to participate or not to participate in this study. If you choose not to participate there will be no penalty or loss of benefits to which you are otherwise entitled.

In the event you decide to discontinue your participation in the study you can notify your (name, telephone no) so that your participation can be terminated.

AVAILABLE SOURCES OF INFORMATION

In case of further questions or queries in relation to the study, or the consent form, you may contact the researchers.

Name

Saira Mehboob Ali Lalani

Contact no: 03242437916

Contact details

Email: saira.mehboob@scholar.aku.edu

Research supervisor

Dr. Salma Rattani

Contact no: 021 3486 5256

Email: salma.rattani@aku.edu

AUTHORIZATION

I have read and understand this consent form, and I volunteer to participate in this research. I understand that I will receive a copy of this form. I voluntarily choose to participate, but I understand that my consent does not take away any legal rights in the case of negligence or

other legal fault of anyone who is involved in this study.

Name of participant (Printed or Typed):

Date:

Signature of participant:

Date

Signature of Principal Investigator:

Date:

Name and Signature of person obtaining consent:

Date:

Appendix F

Interview Guide

FACULTY PERSPECTIVE ON SIMULATION BASED EDUCATION INTERVIEW GUIDE FOR FOCUS GROUP DISCUSSION

Thank you for your consent to participate in this research and joining for the focus group discussion.

1. Please share your perspectives about simulation based education.

Probes:

- Understanding about simulation based education
- Using simulation as a teaching learning pedagogy
- Understanding about low fidelity simulation
- Understanding about high fidelity simulation

2. Please share your perspectives and experiences regarding the barriers in performing simulation based education.

Probes

- Availability of simulation lab
- Availability of equipment required for simulation

3. Please share your perspectives and experiences regarding facilitators of performing simulation based education

Probes:

- Availability of resources required for clinical teaching
 - Using to teach any specific skills
 - Using to teach all nursing skills
 - Building students' competencies to be safe practitioners
4. Please add any other point that you would like to add related to this research

Thank you for contribution and participation

Appendix G
Data Extraction Table

Author(s), Year	Purpose of Study	Study Design	Sample Size	Key Findings
Almotairy et al., (2023).	The purpose of this study was to explore faculty perceptions about readiness to integrate simulation into nursing programs.	Cross-sectional correlational study (Original research)	88 Faculty	Findings suggested that the highest the degree, years of experience in academia, and years of using simulation in teaching were significantly and positively correlated with the overall readiness for SBE.
Alshehri et al., (2023).	The study was conducted to explore faculty's perception of using simulation-based teaching as part of the Cardiovascular Diploma Program (CDP) to improve patients' safety. And was aimed to identify the benefits and challenges of utilizing simulation.	Qualitative approach. Semi-structured interviews (Original Research)	10 faculty	Faculty appreciated the role of simulation in improving patients' safety. It gives a risk-free environment for training, gives ideas about basic things of the working environment, identifies gaps between theory and practice. It is recommended that simulation should be integrated into the CDP curriculum.
Angelina et al., (2021)	This study aimed to test the effectiveness of a low fidelity simulation-based training intervention in improving knowledge and	Quasi experimental (Original research)	172 Nurses.	The findings suggested that skills significantly improved after simulation training, skills were retained even after the period of six months.

	skills of nurses on Active management of third stage of labor			
Asad (2018).	The purpose of this study was to explore nursing students' perceptions about pedagogies implemented in a school of nursing, in Karachi, Pakistan.	Qualitative descriptive exploratory study design (Original research)	14 Nursing students. (7 from 4 th year BScN and 7 from MScN).	The findings suggested that, while shifting from traditional to strategic teaching learning pedagogies, like SBE the barriers are untrained faculty, time constraints, faculty's hectic schedule, lack of institutional and leadership support.
Baayd et al., (2023).	The purpose was to identify factors that affect the application of simulation in nursing and midwifery schools.	In-depth individual interviews. (Original research)	14 simulationists	The findings showed that, for application of SBE stakeholders should be involved, cultural values should be taken care of , it was exciting for students to learn via a new methodology than through the traditional learning method.
Brauneis et al., (2021).	The purpose of this study was to explore the impact of use of simulation on the knowledge, confidence, and competence in a pre-licensure graduate pharmacology class.	Quasi-experimental comparison group pre/post-test (Original Research)	44 participants.	Simulation is an effective teaching method for teaching graduate pre-licensure students. It enhanced confidence in safe medication administration and pharmacology knowledge.

Bryant et al., (2020).	The focus was on the future of simulation-based education, latest trends in simulation research, and linking simulation to improved patient safety outcomes	Interprofessional summit on innovations in simulation (Original research)	15 Simulation specialists	It reviewed the evolution of simulation and explored steps that can take it to the next level for students, educators, researchers, and practicing clinicians, with the goal of improving patient outcomes.
Cant et al., (2020).	The purpose was to know about the clinical impact of simulation-based education (SBE) for hospital nurses.	(Scoping review)	26 articles.	Nurses' continuous professional development programs should include both short-term evaluations and longitudinal measures to detect practice improvements needed that may advance patient safety.
Carrero-Planells et al., (2021).	To assess the implementation of high-fidelity simulation as a teaching tool for fundamental nursing procedures from the perspectives of students and teachers.	Mixed-methods study (Original Research)	91 students and faculty	HFS brings students closer to real-life scenarios, bridges the gap between theory and practice, and offers students an insight into the healthcare system
Cook et al., (2018).	The purpose of this study was to explore the value proposition of simulation-based education in healthcare, including its costs and benefits.	(Conceptual review)	NA	Simulation-based education has the potential to improve patient outcomes, reduce costs associated with medical errors, and enhance learner engagement and satisfaction. However, they noted that careful consideration of cost-effectiveness and the integration of simulation-based education into healthcare training

				programs are important for realizing its full value.
Crowe et al., (2018).	The purpose of this study was to investigate the impact of simulation-based education on nursing confidence, knowledge, and patient outcomes in general medicine units.	Pre-post quasi-experimental design (Original research)	331 nurses.	The study found that simulation-based education led to improvements in nurses' confidence, knowledge, and patient outcomes. Specifically, nurses who participated in the simulation-based training demonstrated higher levels of confidence and knowledge, and their patients had fewer falls and pressure ulcers compared to the control group.
Davitadzeet al., (2022).	To investigate the use of Kolb's experiential learning theory in simulation-based learning to enhance participant confidence.	Quasi-experimental design with pre- and post-intervention surveys and simulation-based training sessions. (Original research)	40 healthcare professionals	The SIMBA program improved the self-reported confidence of participants in various medical specialties. The program was well-received, and the participants appreciated its practical approach and individualized feedback. However, further studies are needed to determine the program's impact on long-term knowledge retention and clinical performance.
Egan et al., (2023).	The study compared the efficacy of simulation to clinical practice from the point of view of simulation facilitators, faculty, and students.	Cross sectional study with a mixture of quantitative and qualitative analysis (Original research)	Facilitators =40, Faculty=23 and Students=83 Total: 146	A lack of consistency in Simulation based activity is due to lack of preparation for the development and debriefing process. They also found money and time as key challenges to SBE. They said, administration support is also essential.
Eriksen & Frandsen, (2018).	To investigate the impact of using PICO as a search	(Systematic review)	NA	The review found that using PICO as a search strategy tool can improve

	strategy tool on literature search quality.			the quality of literature searches. The use of PICO was associated with a higher number of relevant articles, more efficient searches, and improved search precision. However, there was no consistent evidence that PICO improved search quality.
Findik et al., (2019).	The purpose was to determine student nurses' opinions about the low-fidelity simulation method.	Descriptive research (Original research)	54 nursing students.	The results of the study showed that student nurses believed that LFS was an educational method that improved skills and provided effective learning. Satisfaction levels of the student nurses related to this educational method were high as well.
Guerrero et al., (2022).	The goal was to identify and compare the acquired critical thinking skills, satisfaction, and self-confidence of nursing students and staff nurses based on their use of high-fidelity simulation learning.	Quasi-experimental design (Original research)	30 Nursing students and staff nurses	Findings suggested that both groups had high levels of satisfaction and self-confidence following the HFS learning. Furthermore, the use of HFS enhanced their critical thinking skills and enhanced their retention of learning.
Hanshaw & Dickerson, (2020).	The purpose was to explore the evidence of learning outcomes in high-fidelity simulation in undergraduate nursing education.	(Literature review)	20 research studies	Findings suggested that high-fidelity simulation increased levels of thinking (Bloom's Taxonomy).

Hernandez-Acevedo (2021).	To explore the experiences of faculty as they integrate simulation into their teaching practice.	Phenomenological qualitative study (Original research)	8 interviews from Nursing Faculty.	Findings suggested that participants felt some barriers, like they needed professional development to integrate simulation in teaching.
Howell (2017).	The purpose of this study was to explore the thoughts and perceptions of nursing faculty about best practice elements for integration of HFS into undergraduate nursing programs	Qualitative Case Study Purposive sampling (Thesis) (Original research)	22 faculty	The findings highlighted that HFS should be integrated into the nursing curriculum but efforts should be made to enhance faculty and other assets, to improve its applicability.
Hung et al., (2021).	The purpose was to explore the changes in nursing students' perceived competence, self-efficacy, and learning satisfaction after repeated exposures to simulations, and to determine the acceptable frequency of SBL in the 'Integrated Care in Emergency and Critical Care' course.	Repeated measurement experimental design Convenient sample (Original research)	79 nursing students	The findings showed that the nursing faculty observed significant changes in nursing competence, self-efficacy, and learning satisfaction scores in students after repeated exposures to simulation.
Hussain et al., (2019).	Purpose was to explore the facilitators of Simulation and Skill Learning in Nursing Education.	Quasi-experimental study design, pre and post educational intervention (Original research)	133 students	Simulation is a valuable tool in order to gain knowledge, skills, and self-confidence, which are required to perform effective care in a clinical setting

Kamińska et al., (2019).	The purpose of the study was to investigate the current state and potential of virtual reality technology in education.	Survey Design (Review article)	Not Applicable	The survey found that virtual reality (VR) is perceived as an effective and engaging tool for education, especially in fields such as healthcare and engineering. However, there are still challenges related to the cost of VR technology, its integration into the curriculum, and the need for further research on its impact.
Kang.H & Kang (2020).	To investigate the effects of simulation-based education on clinical reasoning competence, clinical competence, and educational satisfaction.	The study used a pretest-posttest control group design. (Original research)	89 3 rd year nursing students.	The study found that simulation-based education significantly improved clinical reasoning competence and clinical competence in the experimental group, compared to the control group. Additionally, participants in the experimental group reported higher levels of educational satisfaction than those in the control group.
Karlsaune et al., (2022).	Its purpose was to review the historical and pedagogical aspect of simulation and its application in nursing education.	Descriptive study (Review article)	NA	The findings suggested that simulation has led to more patient safety, a greater scope for nursing action, and best quality of nursing care.
Kolb.A & Kolb (2018).	The purpose of the study was to discuss and highlight the key aspects of the experiential learning cycle for educators.	Conceptual analysis (Review article)	Not Applicable	Eight important features of the experiential learning cycle were identified, including the need for a balance of concrete experiences, reflective observation, abstract conceptualization, and active experimentation.

				They also emphasized the importance of feedback, the role of emotions in learning, and the need for learners to be actively engaged in the process.
Koukourikos et al., (2021).	To present data related to simulation in nursing education.	(Literature review)	NA	The findings of the review suggested that simulation facilitated students in practicing skills, boosted their self-esteem, enhanced confidence. Thus, it promoted learning and bridged the gap between theory and practice.
Lee & park (2020).	The purpose was to identify the subjectivity of nursing students and instructors about simulation-based learning.	Q-methodology (Subjective views, Qualitative and Quantitative both). (Original research)	46 nursing students and 38 instructors	The findings suggested that SBE was an effective educational method that improved students' nursing competence, skills, knowledge, learning motivation, improved students' critical thinking and problem-solving skills.
Logan et al., (2021)(Kolb & Kolb, 2018)(Kolb & Kolb, 2018)(Kolb & Kolb, 2018)(Kolb & Kolb, 2018)(Kolb & Kolb, 2018)	The purpose of the study was to develop an e-learning module to improve student learning and outcomes in nursing education.	Descriptive design (Original research)	Not Applicable	E-learning module for nursing education was developed and was evaluated for its effectiveness. The module was found to be effective in improving student learning outcomes and increasing engagement. The authors suggested that e-learning modules can be a valuable addition to traditional teaching methods in nursing education.
Luo et al., (2021).	To explore Nurse educator's perceptions about simulation teaching, its benefits and barriers.	Cross-sectional descriptive study (Original research)	136 Nurse educators.	Findings suggested that nurse educators should be trained to enhance their competencies.

Masooth & Ahmad (2023).	The purpose of this review was to highlight the impact of simulation on nursing education.	Review article	NA	The findings proposed that, simulation was significant as it developed more skilful nurses. It helped to develop all types of learning including the cognitive, affective and psychomotor domain.
Meum et al., (2020).	This review aimed to understand how, why, and in what circumstances the use of simulation affected learning as part of the bachelor's program in nursing.	(Realist review article)	NA	The findings suggested using SBL as an integrated part of the bachelors of nursing program, as it helps enhance students learning.
Morris (2020).	The purpose of this study was to conduct a systematic review and a revision of Kolb's experiential learning model, to better inform educational practice.	(Systematic review)	NA	The study found that while Kolb's experiential learning model remains relevant, it requires revision to incorporate new research and developments in educational theory. The author proposed a revised model that includes more emphasis on the social and cultural context of learning and the role of emotion in learning.
Mubeen et al., (2021).	The purpose of this study was to evaluate the effectiveness of simulation-based high-frequency recurring training in improving the knowledge and skills of healthcare workers in a community-	This was a pre and post-test interventional-I design (Original research)	The sample size was 50 CMWs.	The study found that simulation-based training significantly improved healthcare workers' knowledge and skills in helping babies breathe, which could potentially improve neonatal survival rates in resource-limited settings.

	based setting in Pakistan, to help babies breathe.			
Mukhtar et al., (2020).	This study explored the perceptions of teachers and students regarding online learning during the COVID-19 pandemic, its advantages, limitations, and recommendations for use in the institutions in Pakistan	Qualitative case study (Original research)	12 faculty members and 12 students	The findings suggested that online learning modalities encourage student-centered learning and they were easily manageable during the lockdown situation.
Piryani et al., (2019).	The objective of this study was to evaluate the perceptions of participants about SBE and an SBE workshop.	Semi structured pre-test and post-test questionnaires (Original research)	20 faculty 17 filled consent and participated	All participants mentioned that integration of SBE was important to build one's professional capacity, resulting in better quality of medical care through better learning opportunities.
Rattani et al., (2020).	The aim of this study was to measure the effectiveness of HFS to teach end of life care in a palliative course in the undergraduate nursing program.	Quasi-experimental design with pre and post-test (Original research)	42 nursing students	The findings showed that students improved their attitudes towards providing care, they were able to handle their emotions through HFS.
Ritter et al., (2023).	The purpose of this study was to identify the effect of level of simulation fidelity on learning, on a target task.	Synthetic analysis (Literature review)	NA	The results suggested that lower fidelity simulation training can lead to faster training, but it would depend upon what and how it is taught.
Saleem & Khan (2023).	The main objective of this	(Literature review)	39 articles	It supported the idea that simulation is an effective

	paper was to use existing literature to explore aspects of simulation in healthcare teaching			way of learning in healthcare.
Salifu et al., (2023).	The study explored and described the experiences and perceptions of nursing students and post-registration nurses in the teaching and learning of clinical competence in Ghana, a low-resource setting.	Sequential multimethod design with 4 research designs (scoping review, qualitative descriptive study, narrative synthesis, and nominal group discussions FGD) (Original research+ scoping review)	FGDs of 15 post-registration diploma nurses and 40 nursing students semi-structured interviews with nine nurse educators	SBE can be adapted in low resource settings as well with the support of leaders.
Shah et al., (2019).	The purpose of this study was to review the current literature on simulation-based education and team training in the field of otolaryngology.	(Literature review)	NA	The authors found that simulation-based education and team training had been shown to improve clinical and non-technical skills, team communication, and patient outcomes in the field of otolaryngology. They also identified the need for further research to explore the optimal design and implementation of simulation-based training programs.
Thompson (2021).	The purpose was to identify the effects of high-fidelity simulation, low-fidelity simulation, and video training on nursing student	Quasi-experimental Design (Original research)	44 Nursing Students	The findings suggested a connection between simulation, anxiety, and clinical experiences for first-year nursing students. Anxiety may influence performance in the clinical setting; it is expected that lowering anxiety would be

	anxiety in the clinical setting.			beneficial to students when performing skills in the clinical setting that affect patient safety.
Vural Dođru & Zengin Aydın (2020).	The aim of this study was to compare the effectiveness of high-fidelity simulators and traditional teaching method on nursing students' knowledge and skill development in terms of cardiac auscultation, and their anxiety levels.	Randomized controlled study. (Original research)	72 first-year nursing students (simulation group = 36, control group = 36).	The results showed that the use of high-fidelity simulators in nursing education was more effective than traditional method in terms of improving the students' knowledge and skill levels for cardiac auscultation, and reducing their anxiety.
Watson et al., (2021).	The purpose of this study was to explore the perceptions of nursing students towards their first experience with HFS.	Phenomenological study (Original research)	16 undergraduate nursing students.	The findings suggested that HFS prepared students to work in the clinical areas with confidence, and the chances of error were reduced.
Younas et al., (2020).	The purpose was to explore nurse educators' perspectives about clinical and academic teaching, and to determine their challenges.	Sequential exploratory mixed-methods study. purposive sample (Original research)	12 educators interviewed and 112-surveyed	Findings suggested that educators, experience, workload, time constraints, inappropriate educator to student ratio; underdeveloped curriculum; inadequate resources; inadequate clinical teaching settings for skills and simulation labs; inadequate professional development opportunities; lack of autonomous decision making; lack of educational, management and research support from

				the regulatory bodies; and lack of educational research are challenges for SBE.
--	--	--	--	---