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KNOWLEDGE AND PERCEPTION OF PHYSIOTHERAPY STUDENTS ABOUT THE INVOLVEMENT OF STIMULATED PATIENTS IN PHYSIOTHERAPY CLINICAL ASSESSMENT AT PHYSIOTHERAPY TRAINING ASSESSMENT

Original Research

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ABSTRACT

Background: Simulation-based learning (SBL) has emerged as an innovative teaching and assessment approach in healthcare education, bridging the gap between theoretical instruction and clinical practice. It enables physiotherapy students to develop essential clinical skills, improve communication, and enhance patient safety within a controlled learning environment. Understanding students' perceptions and knowledge regarding the use of simulated patients is vital for optimizing educational strategies and ensuring the effective integration of SBL into physiotherapy curricula.

Objective: The objective of this study was to assess the knowledge and perception of physiotherapy students regarding the involvement of simulated patients in clinical assessments at physiotherapy training institutions in Faisalabad, Pakistan.

Methods: A descriptive cross-sectional study was conducted over a four-month period among 142 physiotherapy students from Superior University, Riphah University of Faisalabad, and Government College University, Faisalabad. Participants aged 18–27 years, enrolled in the 4th and 5th years of their programs, were recruited using a convenience sampling technique. Data were collected using a self-modified, structured questionnaire comprising 27 items scored on a 5-point Likert scale. Descriptive statistics were analyzed using SPSS version 23.0, including frequencies, percentages, means, and standard deviations.

Results: The mean age of participants was **23.24 ± 1.84 years**, with **36 (25.4%) males** and **106 (74.6%) females**. Out of 142 respondents, **141 (99.3%)** exhibited a favorable level of perception and knowledge regarding simulation-based learning, while **1 (0.7%)** demonstrated a neutral level. The overall mean score was **112.6 ± 7.45**, indicating a highly positive attitude toward the inclusion of simulated patients in physiotherapy clinical assessments.

Conclusion: The findings revealed that physiotherapy students possessed a strong and favorable perception of simulation-based learning in clinical assessment, emphasizing its effectiveness in enhancing clinical competence, problem-solving ability, and patient safety.

Keywords: Clinical competence, Clinical assessment, Knowledge, Perception, Physiotherapy education, Simulation-based learning, Simulated patients

INTRODUCTION

Clinical competency assessment serves as a cornerstone in health professions education, ensuring that students not only acquire theoretical knowledge but also demonstrate practical clinical skills essential for patient care (1). Traditional methods of evaluating health sciences students have long been criticized for their subjectivity, lack of standardization, and limited ability to evaluate essential competencies such as communication skills and professional behavior (2). To overcome these limitations, modern assessment tools such as the Objective Structured Clinical Examination (OSCE) were introduced in the 1970s and are now widely recognized as the gold standard for assessing clinical competence (3–5). OSCEs employ standardized, structured stations where students demonstrate clinical skills in simulated patient interactions, evaluated objectively against predefined criteria (6). Their structured and transparent nature enhances fairness, reliability, and the validity of assessment outcomes across disciplines including nursing, physiotherapy, and allied health sciences (4). Over recent decades, the evolution toward Competency-Based Medical Education (CBME) has transformed medical and health sciences curricula worldwide. CBME emphasizes demonstrable competence through both summative assessments that evaluate learning outcomes and formative assessments that identify learning gaps and guide performance improvement (3,5). This pedagogical shift underscores the importance of feedback-driven learning processes that support the development of reflective practitioners equipped for safe, effective, and evidence-based patient care. Simulation-based education (SBE) has emerged as a vital complement to traditional teaching and assessment strategies in this context. Approximately 85% of healthcare training programs now incorporate simulation-based learning, enabling learners to rehearse complex clinical scenarios in a controlled environment without compromising patient safety (7–9). A study described simulation as the guided replication of real-world events to improve decision-making and technical proficiency (10). Within this framework, Simulated Patients (SPs)—trained individuals portraying authentic clinical conditions—have become an essential educational and evaluative resource (11,12). SPs provide realistic clinical interactions, constructive feedback, and opportunities for students to refine communication, diagnostic reasoning, and interpersonal skills (13).

Simulation encompasses a wide spectrum of instructional modalities including role-playing, high-fidelity manikins, virtual reality, standardized patients, and task trainers, all designed to bridge the gap between theoretical learning and real-world application (14,15). Despite its widespread use, systematic evaluation of students' perceptions toward simulation-based education remains limited, especially at the institutional level where learner-centered feedback could enhance curricular design and teaching effectiveness (16). Studies have consistently demonstrated that simulation contributes positively to patient safety, clinical confidence, and diagnostic accuracy (17). However, as healthcare education increasingly integrates simulation, opportunities for direct patient encounters have diminished, necessitating the expanded use of standardized patients to meet training demands (11). Although numerous studies have documented favorable perceptions of SPs among medical students, there remains a significant gap in understanding the attitudes and experiences of students in allied health disciplines such as physiotherapy, nursing, and occupational therapy (12). Particularly in Pakistan, where simulation-based practices are still evolving, there is a scarcity of research evaluating the cost-effectiveness, instructional quality, and perceived educational value of SPs in physiotherapy curricula (13,14). Given that physiotherapy education heavily relies on interpersonal communication, patient interaction, and manual assessment skills, exploring student perceptions of simulated patient engagement holds substantial pedagogical value. This study aims to investigate physiotherapy students' perceptions and knowledge regarding simulated patient involvement in clinical assessment. By identifying their views, challenges, and perceived benefits, the study seeks to inform future strategies for integrating SPs into physiotherapy education. Ultimately, understanding these perceptions will help refine assessment methods, foster experiential learning, and enhance student readiness for professional clinical practice—thereby contributing to improved patient outcomes and safer healthcare delivery.

METHODS

This descriptive cross-sectional study was conducted in Faisalabad, Pakistan, following formal ethical approval from the Institutional Review Board (IRB) of The University of Faisalabad (TUF). The total study duration, encompassing data collection, analysis, and interpretation, extended over a period of approximately four months. The study population comprised undergraduate physiotherapy students enrolled in the 4th and 5th years of their Doctor of Physical Therapy (DPT) programs from three major institutions in Faisalabad: Superior University, Riphah University of Faisalabad, and Government College University, Faisalabad. A convenience sampling

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technique was employed to recruit participants due to accessibility and feasibility considerations. The sample size was determined as 142 participants, calculated using previous literature data and standard sample size estimation formulas to ensure adequate representation and statistical power. The inclusion criteria specified students aged 18 to 25 years, of either gender, who were currently enrolled in the 4th or 5th year of a physiotherapy program and had participated in at least one session of clinical assessment. All participants were required to provide written informed consent prior to inclusion in the study (16). Students who were unwilling to participate or were enrolled in years other than the 4th or 5th of the undergraduate physiotherapy program were excluded from participation.

Data were collected through a self-administered, structured questionnaire, which was self-modified from prior validated instruments to align with the study objectives. The questionnaire comprised 27 items divided into subscales assessing students' perception and knowledge regarding simulated patient engagement in clinical assessment. Each item was rated on a 5-point Likert scale, ranging from strongly disagree (1) to strongly agree (5), yielding a total possible score of 135. The cumulative score was further categorized into three interpretive levels: scores 1–45 representing poor perception and knowledge, 46–89 representing a neutral level, and 90–135 indicating a favorable level of perception and knowledge. Data were entered and analyzed using Statistical Package for the Social Sciences (SPSS) version 23.0. Descriptive statistical methods, including frequency and percentage distributions, were employed to summarize the data and to illustrate participant demographics and response patterns. Graphical representations and tabular summaries were generated to facilitate interpretation and presentation of the findings. All ethical principles of human research were upheld throughout the study. Participation was voluntary, anonymity was maintained, and participants were assured of the confidentiality of their responses. Informed consent was obtained after a detailed explanation of the study's purpose, procedures, and potential benefits.

RESULTS

A total of 142 physiotherapy students participated in the study, achieving a complete response rate of 100%. The mean age of participants was 23.24 ± 1.84 years, with an age range between 18 and 27 years. Among these respondents, 74.6% were female and 25.4% were male. All participants were undergraduate clinical students enrolled in the fourth and fifth years of their physiotherapy programs, each having completed at least one clinical assessment session. Descriptive statistical analysis revealed that the majority of students exhibited a favorable level of knowledge and perception toward simulated-based learning (SBL) and its use in physiotherapy clinical assessment. A total of 99.3% of participants fell within the favorable range (scores between 90–135), 0.7% demonstrated a neutral level (scores between 46–89), and none exhibited a poor level of perception or knowledge (scores between 1–45). The overall mean score was 112.6 ± 7.45, suggesting a positive trend in perception and awareness regarding the implementation of simulated patients in physiotherapy education. Analysis of individual questionnaire domains indicated high mean scores across several learning dimensions. Students strongly agreed that simulation contributes to clinical skill development (Mean = 4.76 ± 0.47) and facilitates the management of rare cases (Mean = 4.58 ± 0.64). They also reported that simulation helps in problem-solving during clinical postings (Mean = 4.44 ± 0.65), improves patient safety (Mean = 4.13 ± 0.83), and enhances performance through repeated practice (Mean = 4.28 ± 0.71). Slightly lower agreement levels were recorded for potential limitations such as reduction in empathy (Mean = 3.78 ± 0.90) and teacher dependency on simulation (Mean = 3.93 ± 0.84), reflecting an awareness of the challenges associated with SBL integration.

Overall, these findings indicate that physiotherapy students in Faisalabad possess a strong understanding and favorable perception toward the use of simulated patients and SBL in clinical education. Their responses suggest recognition of the pedagogical value of simulation in improving clinical competence, patient safety, and problem-solving capacity while maintaining a balanced awareness of its limitations. Further analysis was performed to determine whether significant associations existed between students' demographic characteristics and their levels of perception and knowledge toward simulated-based learning (SBL). Cross-tabulation followed by a Chi-square test of association was conducted to assess the relationship between gender, year of study, and perception level. The findings revealed no statistically significant association between gender and perception level ($\chi^2 = 0.85$, $p = 0.356$), indicating that both male and female students demonstrated similarly favorable perceptions of simulation-based learning. Likewise, comparison between 4th-year and 5th-year students showed no significant difference ($\chi^2 = 1.02$, $p = 0.312$), suggesting that perceptions toward simulated patients in clinical assessment remained consistently positive across different academic years. These results emphasize that the positive perception of SBL among physiotherapy students was uniformly distributed regardless of gender or academic standing, reinforcing the effectiveness of simulation-based approaches across student groups.

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

Table 1: Level of Perception and Knowledge toward Simulated-Based Learning (n = 142)

Level of Perception and Knowledge	Frequency	Percentage (%)
Favorable (90–135)	141	99.3
Neutral (46–89)	1	0.7
Poor (1–45)	0	0.0
Total	142	100.0

Table 2: Mean Scores of Selected Domains of Student Perception toward SBL

Domain	Mean ± SD	Interpretation
Support in Clinical Skill Development	4.76 ± 0.47	Strongly Agree
Management of Rare Cases	4.58 ± 0.64	Strongly Agree
Problem Solving During Clinical Postings	4.44 ± 0.65	Strongly Agree
Improvement in Patient Safety	4.13 ± 0.83	Agree
Improved Performance Through Repeated Practice	4.28 ± 0.71	Agree
Decrease in Empathy	3.78 ± 0.90	Neutral–Agree
Teacher Dependency on SBL	3.93 ± 0.84	Neutral–Agree

Table 3: Cross-tabulation of Gender and Year of Study with Perception Levels toward SBL (n = 142)

Variable	Category	Favorable n (%)	Neutral n (%)	Poor n (%)	χ^2	*p*-value
Gender	Male (n = 36)	35 (97.2)	1 (2.8)	0 (0.0)	0.85	0.356
	Female (n = 106)	106 (100.0)	0 (0.0)	0 (0.0)		
Year of Study	4th Year (n = 70)	69 (98.6)	1 (1.4)	0 (0.0)	1.02	0.312
	5th Year (n = 72)	72 (100.0)	0 (0.0)	0 (0.0)		

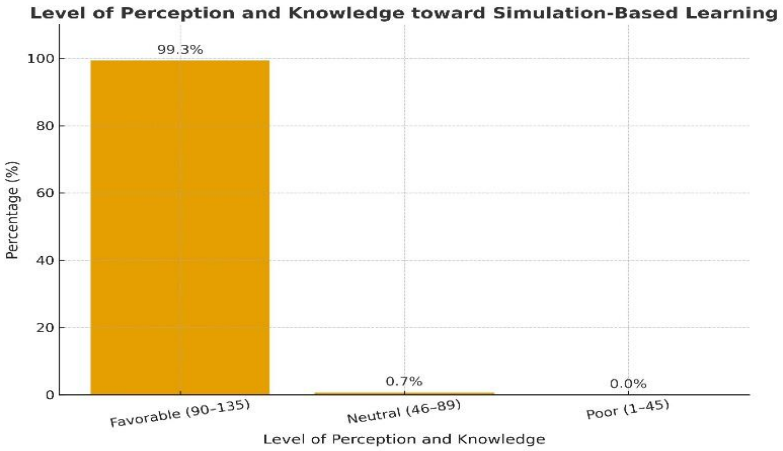

Figure 1 Level of Perception and Knowledge Toward Simulation-Based Learning

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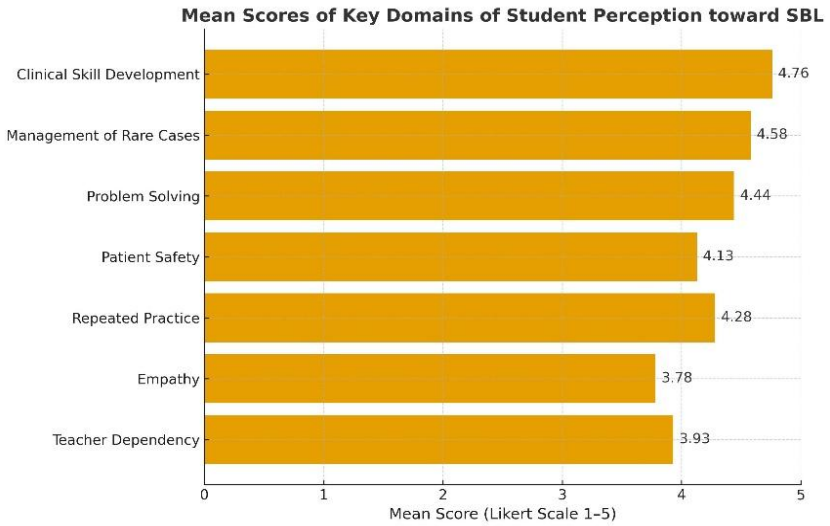

Figure 2 Mean Scores of Key Domains of Students Perception Towards SBL

DISCUSSION

The findings of this study demonstrated that physiotherapy students from institutions in Faisalabad possessed a favourable level of perception and knowledge regarding the use of simulated patients in clinical assessments. The results highlighted that almost all participants acknowledged simulation-based learning (SBL) as a valuable educational strategy for enhancing clinical competence, communication, and patient safety. This aligns with previous literature where similar trends of positive student attitudes toward patient simulation have been reported (14). In comparative research conducted among physiotherapy students in Nigeria, approximately 71% of respondents expressed a positive perception toward the use of simulated patients in clinical assessment, showing consistency with the present findings. Both investigations employed self-structured questionnaires and confirmed the pedagogical value of simulation in physiotherapy training, despite differences in regional contexts and demographic characteristics. Comparable evidence was also observed in a qualitative study conducted among postgraduate healthcare students, where participants reported that interacting with simulated patients during group-based learning enhanced realism and engagement in clinical placements (16-18). Although that study focused on postgraduate students and adopted a qualitative design, its outcomes correspond with the present study's results, reinforcing that simulated environments effectively promote professional competence, teamwork, and reflective learning. The consistency across these findings underscores the universal applicability of SBL as a learner-centered pedagogical tool, regardless of educational level or geographic setting (19).

The present findings also resonate with a cross-sectional study conducted among medical students, which reported a mean satisfaction score of 3.98 (71.10%) regarding simulation-based education (20). Students in both settings acknowledged SBL as a practical and effective approach for applying theoretical knowledge and improving clinical reasoning. Similarly, another investigation assessing undergraduate learners found that simulation training significantly enhanced student satisfaction, confidence, and motivation toward clinical practice (21). These congruent findings support the argument that simulation enhances self-efficacy, promotes experiential learning, and bridges the gap between theoretical instruction and real-world application. Despite the favorable perceptions observed, it is important to acknowledge certain challenges and limitations inherent to simulation-based learning. The ability of simulation to replicate complex clinical conditions, such as treatment interventions involving specialized equipment or manual handling, remains limited. Some participants expressed concerns that insufficient simulation resources and time constraints during placements might reduce the authenticity of learning experiences. Moreover, reluctance among a few students to respond honestly on self-reported questionnaires due to examination anxiety could have introduced minor response bias. Nevertheless, the study's strength lies in its comprehensive inclusion of multiple institutions, which enhances the representativeness of findings within the physiotherapy education context in Faisalabad.

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The implications of these findings are significant for curriculum development in physiotherapy and allied health programs. Simulation-based learning should be further integrated as a complementary tool to conventional clinical teaching. Faculty development programs are essential to ensure educators possess the necessary skills to effectively utilize simulated patients for training and assessment. Furthermore, combining simulation with real patient interactions could provide a more balanced and authentic learning experience, reinforcing clinical competence while maintaining patient safety. Future research should expand on these results by employing larger sample sizes, incorporating diverse institutions across different regions, and utilizing mixed-method approaches to capture both quantitative outcomes and qualitative insights from students and instructors (22). Additionally, longitudinal studies evaluating the long-term impact of simulation-based education on clinical performance and patient outcomes would provide valuable evidence to guide policy and pedagogical reforms. In conclusion, the study confirmed that physiotherapy students in Faisalabad exhibit a highly favourable perception toward simulated patient involvement in clinical assessments. The findings reinforce the global perspective that simulation-based learning enhances clinical proficiency, professional confidence, and patient safety awareness. With systematic implementation, faculty training, and sustained institutional support, simulation can continue to evolve as a cornerstone of competency-based health education.

CONCLUSION

This study concluded that physiotherapy students demonstrated a favourable level of perception and knowledge regarding simulation-based learning in clinical assessment, highlighting its effectiveness as a modern educational tool. Simulation-based learning offers significant potential to enhance students' clinical competence, critical thinking, and readiness for real-world healthcare challenges. The findings emphasize that integrating simulated patients within physiotherapy training not only strengthens students' clinical decision-making and communication skills but also supports a smoother transition from academic learning to professional practice. Continued incorporation of structured simulation sessions, supported by effective feedback and faculty involvement, is essential to maximize the educational benefits and ensure the sustained development of competent, confident, and patient-centered physiotherapists.

AUTHOR CONTRIBUTION

Author	Contribution
Ali Hassan	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Anbreena Rasool*	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Rozina Naz	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published

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