ORIGINAL ARTICLE DOI: https://doi.org/10.52206/jsmc.2024.14.4.847 OPEN ACCESS

Perception of Faculty Towards Simulation Based Learning as A Method for Clinical Teaching

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ABSTRACT

Background: Simulation based learning is excellent way of teaching all the essential skills but the evidence is scarce regarding how it works best in case of students.
Objective: To assess the perceptions of faculty towards simulated based learning as a method for clinical teaching.
Materials and Methods: This cross-sectional study was conducted at almost all the medical colleges of Peshawar and did involve faculty from preclinical as well as clinical sciences who are actively involved in teaching. This was preceded by ethical approval from advanced study and research board of Khyber Medical University Peshawar. The responses of the participants were recorded through a pre-validated questionnaire containing 20 items meant for assessing the responses of the faculty. The data analysis was done by SPSS version 23. Frequencies and percentages were applied for categorical data and Chi Square test was used for comparing responses of the faculty with a p value less than 0.05 as significant.
Results: The mean age of the participants was 37 years with a minimum of 25 and maximum of 70 years with SD 10.25. Demonstrators and assistant professors comprised 39% each followed by associate professors 13.3% while professors were the lowest with a percentage 7.8%. Highly significant association was seen while assessing the perception of the faculty about the responses of the faculty regarding SBL can be used adjuvant for clinical practice not replacement for it and "SBL Should Replace Animals in Medical Education Experiments with p value of less than 0.05
Conclusion: According to these results the faculty had overall great perception of SBL as a method for clinical teaching which can further enforce its integration into medical curriculum.
Keywords: Perception, Simulation based learning, Teaching.

This article may be cited as: Qaisar A, Jamil B, Khan JUA, Asim N, Shahana N, Khan UA. Perception of Faculty Towards Simulation Based Learning as A Method for Clinical Teaching. J Saidu Med Coll Swat. 2024;14(4):389-392. DOI: https://doi.org/10.52206/jsmc.2024.14.4.847

INTRODUCTION

Medical education has developed by leaps and bound in the last so many years for meeting the needs and expectations of the medical students who have been taught by traditional teaching methods.[1] Most of the nations have successfully implemented integrated curriculum and Pakistan is not an exception. There are different innovative styles of teachings but still there is a reluctance by both the faculty and the students who are acclimatized to old conventional methods. The importance of simulation has been recognized worldwide for clinical teaching and patients' safety.[2] The training of students and healthcare professionals is quite difficult and should address cognitive, psychomotor and affective domains simultaneously. The education of students is skill-based profession.[3] COVID pandemic has changed the dynamics of education to a colossal extent. Simulation can bridge the widening gap between theory and actual performance. It is a technique for simulating real life experiences and teaching students in a meaningful way. Simulators can accurately replicate clinical case scenarios in an environment close to real one without any risk thereby preparing the students to practice without fear.[2] This will allow practice without any hazards to the health of the patient by reducing chance of a clinical error. In addition, the option of having recording followed by feedback in modern simulators are extremely useful for assessing the performance of the students.[4] Simulation can provide appropriate platform for students to gain and learn essential skills via trial and error that is meant for improving the clinical performance of students in future.[5]

Simulation is used in various forms. The most essential part is skills development. Simulation based education is a wonderful opportunity for students to practice practical cases in a safe and sound area. So, many of the studies have stressed upon on the use of simulation-based learning for students, education and safety of the patients.[6] Eide et al. did study about training of students regarding clinical handover by using case scenarios and concluded that students training in such a way can reduce healthcare hazards.[7] A no of recent studies have proved that teaching with simulation have improved come regarding diagnosis and management. That is the reason that medical colleges have started to incorporate it as a teaching strategy in curriculum.[8] And this is the reason, that most of the educational training programs have successfully included simulation in the course. There are obstacles to its use as well. According to Ahmed et al. the absence of proper expertise and enhanced expenditure on purchase and maintenance of simulators creates are main hurdles to its use.[9] Further, Al-Ghareeb& Cooper, did highlight the

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Received: December 10th, 2023 - 1st Revision: February 27th 2024
2nd Revision: April 10th 2024 - 3rd Revision: May 05th 2024
4th Revision: September 19th 2024 - 5th Revision: September 27th 2024
6th Revision: October 08th 2024 - Accepted: October 10th, 2024

constraints of time as essential obstacle that can hamper the use of SBL for clinical teaching. Many researches have emphasized on the effective use of simulation-based learning for the safety of the patients.[10] Eide et al conclude that clinical handovers of the students can improve dramatically by using simulation scenarios. It was also reported that simulation-based learning provides trainee a golden chance to practice clinical cases in and a safe and sound environment.[11] The clinical faculty appreciated the role of simulation in safety of the patients and recommended it to be incorporated into continuous professional development curriculum.[12]

The study will be of great help for convincing the stake holders for incorporating the use of SBL as a formal way of teaching in addition to old teaching methods such as lectures which are mostly teacher centered with little participations of students who are merely spectators and just listen to the facilitator.

MATERIALS AND METHODS

This was a Cross Sectional Study done at Medical institutions of Peshawar. The research proposal was presented to graduate students committee and advanced study and research board of KMU No. DIR/KMU-ASRB/PF/IHPE/002015. Data collection was started preceded by explanation of rationale to the participants. The study duration was from May 2023 to October 2023. The sample size was 218 (with 5% margin of error,90% confidence level, total population is 1100 and assumed prevalence of SBL being 50% [4]We used assumed prevalence actual prevalence of simulation-based learning in our setting is not known since it's a novel teaching modality and therefore difficult to determine. The sampling technique was purposive sampling. The inclusion criteria were pre-clinical and the clinical faculty of Khyber Medical College Peshawar, North West School of Medicine Peshawar, Kabir Medical College Peshawar and Khyber Girls Medical College Peshawar. Well informed consent was obtained from all the participants. The questionnaire containing 20 questions was subjected to a pilot trial on 10 participants randomly selected before it was distributed in its final form. Each response for the question meant to assess perceptions towards SBL was given responses “strongly disagree,” “disagree,” “neutral,” “agree,” and “strongly agree” on a Likert's scale with scores ranging from 1 to 5 points respectively. Scoring was done in the reverse order for negative questions on perception. Data analysis will be done by using SPSS latest version. The required information and demographic variables like age, gender was provided in proforma. Data was analyzed using SPSS version 23. Mean and SD was applied for quantitative variables like age. Frequency % was be applied for categorical data. Chi-square test was used to compare perception level among participants. P = 0.05 was taken as a statistically significant association.

RESULTS

The mean age of the participants was 37 years with a minimum of 25 and maximum of 70 years with SD 10.25. Among these 218 participants, about 124 (57%) were males and 94 (43%) were females. In terms of basic and clinical sciences 124 (56.9%) were from the former group and 94 (43.1%) were from the later. Demonstrators and assistant professors comprising 85 (39%) each followed by professors 30 (14%) while associate professors were the lowest with a percentage 18(8%). 60% of the faculty were from public sector medical colleges and 40% were from private medical institutions. While assessing the perceptions of the faculty about “Can Simulation support the development of clinical skills 16 (7.3%) strongly disagrred, 13(6.0%) disagreed,26(11.9%) were neutral,89(40.8%) agreed while 74 (33.9%) strongly agreed to this with a very high statistically significant p value of less than 0.05.

Highly significant association was seen while assessing the perception of the faculty about the responses of the faculty SBL can be Used as an adjuvant for clinical Practice not as a replacement for It and “SBL Should Replace Animals in Medical Education Experiments with p value of less than 0.05.

Table 01. Socio demographic characteristics of the faculty

Gender	Percentages (%)
Male	124(56.9)
Female	94(43.1)
Faculty Seniority	
Demonstrators	85(39)
Assistant Professors	85(39)
Associate Professors	18(8)
Professors	30(14)

Table 02. Simulation supporting the development of clinical skills

Designation of the Faculty	Strongly Dsiagree, n(%)	Disagree n(%)	Neutral n(%)	Agree n(%)	Strongly Agree n(%)	Total n(%)	P Value
Demonstrators	4(4.6)	4(4.6)	13(14.9)	30(34.5)	36(41.4)	87(100)	0.01
Assistant Professors	11(12.9)	3(3.5)	9(10.6)	39(45.9)	23(27.1)	85(100)	0.005
Associate Professors	1(5.9)	2(11.8)	2 (11.8)	11(64.7)	1(5.9)	17(100)	0.79
Professors	0(0)	4(13.8)	2(6.9)	9(31)	14(48.3)	29(100)	0.45
Total	16(7.3)	13(6.0)	26(11.9)	89(40.8)	74(33.9)	218(100)	

DISCUSSION

Overall, faculty tend to perceive simulation-based learning as a valuable addition to clinical teaching, particularly for skill development, confidence building, and standardized education. According to the results SBL is often viewed positively when used for teaching rare, critical, or high-risk scenarios that students may not frequently encounter during their clinical rotations, such as cardiac arrest or trauma resuscitation. However, successful implementation relies on adequate resources, faculty training, and careful integration into the broader curriculum to overcome challenges related to technology and realism.

Our results were consistent with most of the studies done locally and internationally. According to the study conducted by AP Quilici that had a prime objective of identifying the perceptions of the faculty about the insertion of simulation in undergraduate program and it came to a conclusion that simulation is a very effective tool in healthcare program but the lack of proper of logistics support is a major hinderance in integration of simulation into their curriculum and apply it successfully as a proposed methodology for teaching.[13] Similarly Shannam Ahmed explored the perceptions of medical teachers towards integration of simulation based medical education into the curriculum.[14] The results highlighted the positive perceptions and attitudes of medical teachers. It was perceived as effective tool by 71.1% for evaluating the learning outcomes (88.8%) and evaluating the student learning (60%). The barriers identified were lack of formal training of teachers and limited time as well as resources. These are some of the critical and vital challenges which need to be addressed for enhancing the integration of simulation based medical education in the curriculum.

Another study was done to assess the perceptions of nursing faculty towards simulation culture readiness in Saudi Arabia universities in which 39.8% participants expressed overall readiness for simulation-based education.[15] There was statistically significant correlation between summary impression on measures of simulation culture readiness and survey subscales for culture organizational readiness with a p value less than 0.001. The authors of the above study are of the view that favorable conditions can provide tremendous opportunities for advancing clinical competencies in curriculum and optimizing the educational outcomes .They felt the need for further studies on ways to enhance the readiness of simulation and encouraging the integration of simulation into education for the nursing students .Despite of the greatest support for using simulation, little is known about the faculty readiness for formally utilization of it as a teaching modality for the education of the students. The study provided an insight for the integration of SBL into the curriculum feeling it as dire need of modern day medical education in which the role of the facilitators has become passive and meeting the demands of complex health system with difficult academic needs.[16]

S Hewat in 2020 reported the use of simulation as ideal method for supporting the learning of students, development of clinical skills and fostering clinical competence. The students will be able to apply theoretical knowledge in a right way. The analysis resulted in identified of four key themes in relation to impact of simulation on students and how it can be beneficial in clinical education programs. The results of the study felt the greatest need for embedding the simulation program within the curriculum and also to increase the benefits of learning in such an environment.[17]

According to another qualitative assessment, all the stake holders perceived simulation-based learning very positively and embrace it as learning and teaching method though there were major concerns about the human resource needs. The resistance of the faculty was another major hinderance for implementing it successfully. Marwa El Naggar explored the perception of medical students towards SBL, a survey in which 400 students were approached and 230 (56%) students responded, out of which 198 (86%) were from clinical years and rest of them 14% were from basic sciences. Students of all the professionals were contented with cooperation of instructors 191(83%), skills organization 179 (78%) and updated knowledge.[18]

Strengths

This study will convince the stakeholders to implement simulation-based learning in their institution. Such innovative teaching methods will help to improve the quality medical care that meets the health needs of individuals, families and communities.

Limitations

This was a cross sectional study. Hence findings may not be generalizable to other settings. Even though faculty had great perception of SBL, it remains uncertain whether the skills acquired with this teaching methodology transfer to the real-world settings such as improvement in patient care. Further research is required to evaluate these aspects.

CONCLUSION

The study did prove that both clinical and basic faculty have reasonable level of perceptions about the simulation-based learning and that is very encouraging as they are the main people who can convince all the stakeholders about incorporating it formally to the medical curriculum.

Ethical consideration

This study was approved by Institutional Review Board of Khyber Medical University (KMU), Peshawar, Pakistan.

Funding

There is no role of any funding agency in this study.

Conflict of Interest

Authors declared no conflict of interest.

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DATA SHARING STATEMENT: The data that support the findings of this study are available on request from the corresponding author. The data is not publicly available due to privacy or ethical restrictions.

AUTHORS' CONTRIBUTION

The following authors fullfill authorship criteria as per ICMJE guidelines;

Qaisar A, Jamil B:	Substantial contribution to conception and design, drafting the manuscript, final approval, agreed to be accountable for all the work.
Khan JUA, Asim N:	Substantial contribution to conception and design, data acquisition, drafting the manuscript, final approval, agreed to be accountable for all the work.
Shahana N:	Analysis and interpretation of data, drafting the manuscript, final approval, agreed to be accountable for all the work.
Khan UA:	Analysis and interpretation of data, critical revision,final approval, agreed to be accountable for all the work.

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