

Exploring Students Perception of Manikin Based Training in a Medical Skills Lab

Students
Perception of
Manikin Based
Training

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ABSTRACT

Objective: To assess the perception of students at the University College of Medicine & Dentistry regarding their training on manikins in a skills lab.

Study Design: Cross Sectional study

Place and Duration of Study: This study was conducted at the University College of Medicine and Dentistry, The University of Lahore from January 2023 to June 2023.

Materials and Methods: Data was collected from final year MBBS students using a pre validated 23 items questionnaire. A total of 121 students were included in the study. SPSS version 23 was used for data analysis. Mean \pm SD and frequency (percentages) were calculated. Chi Square test was applied and p values less than or equal to 0.05 was taken as significance.

Results: A total of 121 participants were enrolled, comprising 78 female students (57%) and 59 male students (43%). The calculated mean of the sum of all 23 questionnaire items was 73.16 ± 10.33 , with individual item means at 2.96 ± 0.449 . These results suggest a noteworthy inclination of students towards skill laboratory training, indicating a favorable perception of this educational approach. Statistical analysis revealed a significantly high frequency of students expressing positive attitudes towards skill laboratory training ($p < 0.05$).

Conclusion: Training on mannequins in a skills lab is a preferred teaching methodology for students, and it greatly aids them in achieving their desired learning outcomes.

Key Words: Mannequins, Simulation, Skill Lab, Learning

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INTRODUCTION

Clinical skills acquisition plays a critical role as a bridge between gaining procedural knowledge and achieving clinical competence. In its broadest sense, "skills labs," or skills laboratories, are specialized practice rooms designed to function as training facilities. They offer medical students, trainee physicians, and other healthcare personnel a secure and forgiving environment to practice clinical skills on manikins before applying them in real-life scenarios.

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Clinical clerkship and rotations are widely acknowledged as demanding for junior medical students worldwide. To improve and enhance learning opportunities, educational institutions establish skills laboratory facilities for clinical skills training. These labs provide students with a safe environment to practice skills on manikins, ensuring they acquire necessary competencies without endangering real patients. The primary goal is to better prepare students for their clinical years.⁽¹⁾

Repetitively practicing skills on manikins enhances students' learning abilities, resulting in heightened expertise and confidence while alleviating anxiety and fostering a sense of security. Furthermore, beyond technical proficiency, non-technical skills like communication, leadership, and decision-making also demonstrate improvement through clinical skills training. This training enables students to differentiate between theoretical knowledge and practical application, a vital aspect influencing outcomes in actual clinical settings.⁽²⁾

Skill labs hold immense value for students aiming to acquire clinical skills. These labs provide a controlled and secure environment, enabling students to practice essential medical skills on manikins before interacting with real patients. This approach ensures that students

gain proficiency and confidence before facing real-world medical challenges, ultimately contributing to improved patient care and safety.⁽³⁾

These skill development opportunities empower students to train effectively, benefiting from educational resources tailored to their individual needs. Working in skill labs stands out for its high efficiency and cost-effectiveness. It allows students to maximize their learning potential while ensuring a safe and supportive environment for honing their clinical skills. As a result, students gain the essential expertise and confidence required to excel in their medical careers and deliver high-quality patient care.⁽⁴⁾

The study aimed to assess the perception of students at the University College of Medicine & Dentistry regarding their training on manikins in a skills lab. Another aim was to identify areas that require improvement and implement need-based changes to create a more effective setup for enhancing the learning experience of medical students.

MATERIALS AND METHODS

This cross-sectional study was conducted at the University College of Medicine & Dentistry. The participants included the final year MBBS class that had undergone clerkship training on manikins in a skills laboratory, selected through convenience purposive sampling. Verbal consent was obtained from all the participants. The data collection tool utilized a closed-ended self-administered questionnaire comprising 23 questions, as presented in Table I. The questionnaire was distributed to the entire class of 150 students, and 121 students returned the duly filled questionnaire. The participants' responses were measured on a four-point

Likert scale, ranging from "strongly disagree" to "strongly agree."

The data was analyzed using SPSS Statistics version 22. Descriptive statistics, such as mean and standard deviation, were used for continuous variables, while frequency and percentage were used for categorical variables. The results were presented in the form of tables and graphs.

RESULTS

The study involved 121 participants, and the response rate was 81%, indicating a significant level of engagement from the students. Among the respondents, 41% were male, while 59% were female, showcasing a relatively balanced representation of gender in the study as shown in Table No: 1.

Figure no. 1 presents the frequency and percentage of respondents expressing various levels of agreement to the questionnaire items. Additionally, the mean and standard deviation for each item are provided, offering valuable insights into the overall perception of the students as shown in Table No: 2. Summary item statistics as shown in Table No.3, it indicates that the average mean for the questionnaire was 3.18, with a standard deviation of 0.448. This indicates a moderate level of agreement among the participants.

Furthermore, the statistical analysis revealed that there were significant differences in the levels of agreement across all the questions ($p < 0.05$).

Table No.1: Students demographics

Gender	Frequency	Percentage
Male	59	43%
Female	78	57%
Age	Mean±SD	24.2±16.21

Table No. 2: Mean and standard deviation of responses

	Statements	Mean	SD	P Value
1	Training increased my motivation for becoming a doctor.	2.90	0.55	<0.05
2	Training increased my motivation for learning clinical subjects.	2.90	0.55	<0.05
3	Teachers in the skills laboratory were committed to teaching.	2.97	0.46	<0.05
4	Teachers demonstrated the skills for me so that I understood what to do	2.97	0.46	<0.05
5	Teachers observed if I learned what I was supposed to learn	2.87	0.59	<0.05
6	I had to participate actively in class	2.99	0.35	<0.05
7	I tried all stations in the skill lab that I participated in	2.87	0.59	<0.05
8	I have developed professional approach in the skill lab	2.98	0.38	<0.05
9	There was too much noise in the skills laboratory	2.99	0.33	<0.05
10	There were too many students in the skills laboratory at the same time	2.99	0.33	<0.05
11	It was hard to concentrate in the skills laboratory	2.99	0.33	<0.05
12	I have benefitted from the training of skills	3.02	0.22	<0.05
13	I believe I could have learned the same skills just during house job as well	2.75	0.78	<0.05
14	I was not under pressure any time when performing clinical skills	2.87	0.59	<0.05
15	Teachers went through the procedure with me before I had to perform it myself	2.97	0.46	<0.05
16	I did not have to be afraid that I would do something wrong	3.79	0.45	<0.05
17	I did not have to be afraid that I would hurt the patient	3.79	0.45	<0.05

18	Skills learned on a manikin can be directly transferred to patients	3.81	0.43	<0.05
19	There is no difference in learning skills on a manikin and on a patient	3.91	0.34	<0.05
20	Skills laboratory training has increased my confidence	3.91	0.34	<0.05
21	Confidence is important for me when I perform clinical skills	3.91	0.34	<0.05
22	Skills lab training has increased my outcome of the house job	2.92	0.57	<0.05
23	House job provides a better opportunity to learn clinical skills as compared to the skills laboratory	3.10	0.42	<0.05

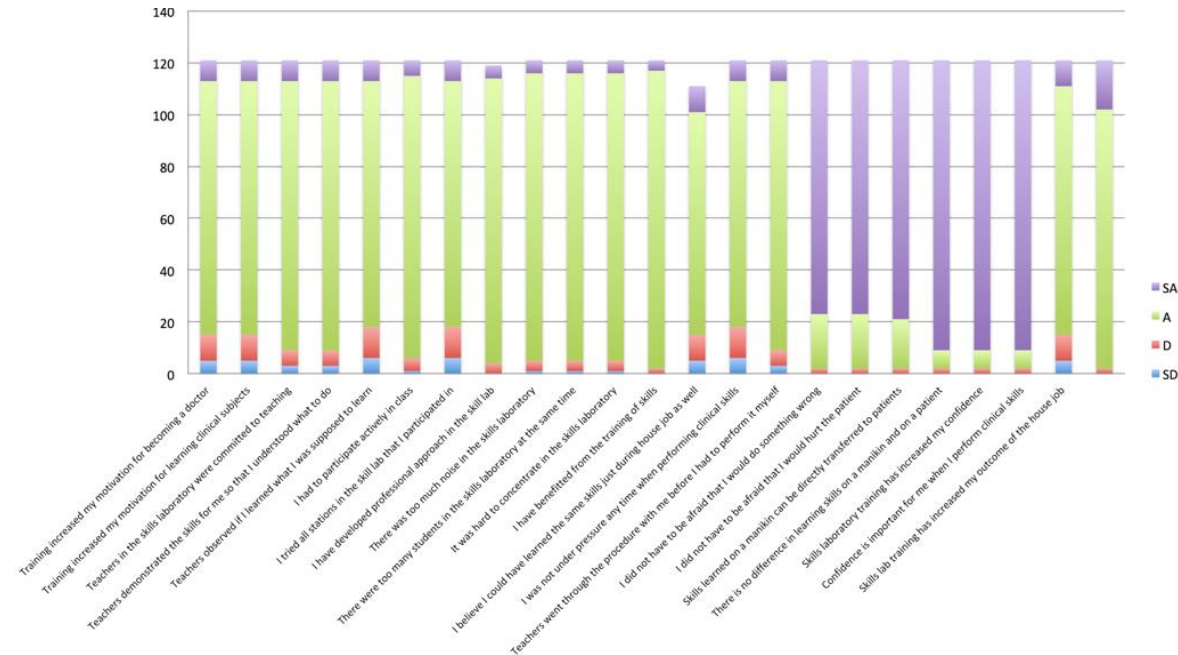


Figure No.1: Frequency & comparison of various levels of responses.

Table No. 3: Summary item statistics

Average mean for the questionnaire	3.18
Mean standard deviation	0.448

DISCUSSION

This study was conducted to evaluate the perception of medical students towards skill laboratory training. The results showed that skill-based laboratory training positively influenced participants' motivation for becoming doctors and learning clinical subjects. This finding is consistent with findings in the literature and is of particular importance, as intrinsic motivation is a key factor in students' commitment to their medical studies. A study conducted at Wah Medical College revealed medical students in their final year prefer to practice in skill laboratories as it not only improves their learning but also increases their motivation and hence should be made a compulsory part of the undergraduate medical curriculum.⁽⁵⁾

A similar study conducted on nursing students also reports the positive effects of simulated learning on student confidence and readiness for real clinical setting.⁽⁶⁾

The majority of respondents agreed that teachers in the skills laboratory were committed to teaching and demonstrated the skills effectively, fostering a conducive learning environment. This reflects positively on the teaching faculty's dedication and effectiveness in imparting knowledge and skills to the students. This is an important finding because literature also supports that the Clinical Skills Laboratory should provide an authentic learning environment, which is only possible with the appropriate use of teaching strategies. The same study also reports on the critical aspect of developing effective links between educators and clinical staff to maintain and enhance the transferability of the skills learned.⁽⁷⁾

The results of this also suggest that skills laboratory training not only enhances technical abilities but also cultivates a sense of professionalism in students. A study conducted at The University of Pretoria also highlights students' positive experiences with acquiring skills in a laboratory which has a positive impact on their clinical practice.⁽⁸⁾ While professionalism is a life long journey, it begins with culturally appropriate training in clinical competence, humanistic qualities and reflective capacity all of which can be optimized by

the use of skill laboratories for clinical skill training.^(9, 10)

Although the overall perception of the skills laboratory training was positive, some challenges were identified. A small proportion of participants felt that there was too much noise and too many students in the skills laboratory at the same time, affecting their ability to concentrate. Similar issues have been reported across literature as task-irrelevant noises have negative effects on cognitive performance as it affects intrinsic cognitive states such as attention, stress, and mental workload.⁽¹¹⁾

One of the key outcomes of skills laboratory training was an increase in students' confidence in performing clinical skills. Additionally, students perceived that the skills learned on manikins could be directly transferred to patients, demonstrating the perceived practical relevance of skills laboratory training. A similar study reported that teaching clinical examination and procedural skills using manikins in a clinical skills laboratory was effective and well received by third-year medical students.⁽¹²⁾

Another study reported that medical students perceived skill laboratory training as a favoured learning strategy as compared to practising on real patients for acquisition of various aspects of clinical skills, knowledge and attitude.⁽¹³⁾

Another study conducted on midwives also revealed that a majority of students had positive attitudes towards their skills acquisition experience in the skills laboratory and to the available opportunities to practice in clinical settings.^(14, 15)

Medical education is a crucial aspect of producing competent and confident healthcare professionals. Skills laboratories have become an integral part of medical curricula, offering students a controlled environment to practice and refine their clinical skills.

CONCLUSION

This study provides valuable insights into the impact of skills laboratory training on medical students' motivation, perception of teaching quality, and confidence in performing clinical skills. The findings highlight the positive influence of skills laboratory training on students' motivation and confidence, as well as the importance of addressing challenges in the learning environment. To ensure the effectiveness of skills laboratory training, continuous improvements and clear communication of its unique benefits should be implemented in medical curricula. As medical education evolves, incorporating skills laboratory training as an essential component can contribute to producing competent and confident healthcare professionals.

Author's Contribution:

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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