Barriers to Learning During Clinical Rotations in the Emergency Department: The Perspective of Students in a Public Sector Institute of a Developing Country

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ABSTRACT

Background: Clinical learning is the crux of medical education. Students perceive many barriers to effective clinical learning due to transition, poor supervision, and lack of orientation. There is an urgent need for recommendations to alleviate these barriers and improve the quality of medical education in a public sector institute of a developing country.

Aims: The study aims to identify the barriers in clinical learning perceived by the students during their clinical rotations in emergency. The study also aims to provide recommendations to alleviate these barriers.

Methods: A cross-sectional study conducted among 300 students from a public sector institute of Pakistan. The perception of clinical learning was assessed using a structured questionnaire in students attending medical and surgical emergency ward. Independent samples t-test and ANOVA were used to assess differences in perception scores across gender and academic years.

Results: The mean perception score was 52.0 ± 11.74 . There was a significant difference in perception scores across academic years ($p=0.028$) with the final year having lower perception scores than the junior students. The mean scores of items in domain 1 (Transition and stress) and domain 4 (Supervision and feedback) were lower indicating a negative perception in these domains.

Conclusions: Lack of clinical orientation, non-integration of the clinical curriculum in preclinical years, poor supervision, lack of resources, and a crippled feedback delivery system are barriers to clinical learning. Interventions such as integration of clinically orientated curriculum, teacher training, student-centered teaching methodology, and development of an effective feedback delivery system must be employed for quality clinical learning during rotations.

Keywords: Barriers, medical education, perception, clinical rotations.

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I. INTRODUCTION

The knowledge and skills acquired during the clinical years are fundamental as they lay the core foundation for the training of medical students [1]. Efficacious clinical learning enriches the students with the necessary professional and communication skills which aids them to become competent clinicians [2]. Unlike the pre-clinical years, the learning in the clinical years is self-regulated, constant, self-directed, and patient-focused that demands students to be self-reflective and capable of recognizing the gaps between their knowledge and skills [3]. All these factors make clinical learning the gist of the medical curriculum and it can be influenced by many factors [1], [3].

Students' preparation for the new clinical setting acts as one of the major factors which can affect the knowledge and skills acquired during the clinical rotations [4]. A good supportive clinical learning environment helps students to develop competent skills, while an inadequate learning environment acts as a barrier for the acquisition of efficient skills [5]. Moreover, the students experience more stress and anxiety in the clinical years particularly during their transitional phase [6]. The students experience an abrupt transition from preclinical to clinical phase due to increased workload, overburdened curriculum, and ethical dilemmas that may lead to ineffective learning during clinical rotations [5], [6].

It has also been indicated that efficient teaching methodologies play an important role in outcome-based

clinical learning [4]. The new active, learner-based teaching methodology in developed countries such as problem-based learning and self-regulated learning helps in proficient clinical learning [7]. In contrast, the traditional teacher-centered learning approach in some developing countries with limited feedback delivery and poor student-teacher interaction adversely affect the quality of clinical learning which are of serious concern for medical educators [8], [9]. Furthermore, the increased patient load, prioritization of patient care, lack of sufficient time, and other responsibilities of clinicians at hospitals limit them to effectively teach the required clinical skills to medical students [10].

In developed countries, various efforts have been made to highlight these barriers to the curriculum directors in attempt to mitigate these problems and to improve the quality of clinical learning [7], [11]. Despite all the interventions made to highlight and minimize these problems, the students tend to feel stressed, demotivated, and anxious when they enter the clinical phase of learning [5], [10]. All these factors demand the need for studies like ours to be done as the perspective of students regarding the quality of clinical education provided to them is largely ignored [4], [12].

The present study aims to identify the barriers to learning during clinical rotations as perceived by clinical students. The study also aims to highlight the shortcomings in clinical learning and formulate potential recommendations to ease the transition and alleviate barriers for effective clinical learning for students. This will not only benefit the medical students to develop competent clinical skills but will also aid the faculty to improve the quality of medical education for an outcome-based curriculum in a public sector institute of a developing country.

II. METHODS

This cross-sectional study was conducted from December 2019 till February 2020 which included 300 MBBS students in a public sector medical institute of Pakistan. In the institution, the MBBS course was divided into five academic years and education is divided into two phases. The preclinical phase included the 1st and 2nd year while the clinical phase included students from 3rd, 4th, and 5th-year where students are exposed to various clinical rotations in medical, surgical, and allied fields. The data was collected from students during their rotation in medical and surgical emergency. A stratified random sampling technique was employed to collect data in which an equal number of male and female students from 3rd, 4th, and 5th year were approached. The students of the preclinical phase (1st and 2nd-year MBBS) were excluded from the study as they are not exposed to clinical rotations. A structured questionnaire was used to assess the students' perceptions regarding the barriers they faced during clinical learning. The purpose of the study was explained properly to the students. Consent was taken and confidentiality was maintained. The study was ethically approved by the institutional research forum.

A twenty-five-item scale was used to assess the barriers to clinical learning during the clinical rotations as perceived by the students. Responses were collected on a five-point Likert

scale (0 = strongly disagree, 1 = disagree, 2 = neutral, 3 = agreeable, 4 = strongly agreeable). Five out of twenty-five negative items (Item no. 4, 5, 6, 8, and 9) were reversed scored. The questions of the scales were modified according to our setup for prompt understanding. The mean perception scores for each item were interpreted as 0-1.99: more negative perception, 2.00-2.99: neutral perception, and 3.00-4.00 as a more positive perception towards clinical learning. The permission to use the questions of the scale was obtained from the corresponding author of the referenced study [12].

The scale was divided into four subdomains which included the following:

1. Transition and Stress (Question 1-9) with a maximum score of 36.
2. Clinical orientation during the rotations (Question 10-17) with a maximum score of 32.
3. Knowledge and skills (Question 18-21) with a maximum score of 16.
4. Clinical supervision and feedback (Question 22-25) with a maximum score of 16.

The Maximum total perception score was 100. Scores below 50 indicated a negative perception with many perceived barriers in clinical learning, scores between 50-74 indicated a neutral perception with the need for improvement, and scores between 75-100 indicated a positive perception towards clinical learning with negligible barriers.

The scale was checked for reliability and validity by Cronbach's alpha value. The mean scores and standard deviations for each item in the scale were tabulated. The normality of the data for total and subscale scores was confirmed using the Shapiro-Wilk test ($P > 0.05$). ANOVA along with Tukey's posthoc analysis was used to find significant differences in total and subdomain scores across academic years. Independent samples t-test was used to assess differences in total scores across gender and residence. Data were analyzed using SPSS version 25.0. $P < 0.05$ was considered statistically significant. The study was ethically approved by institutional research forum.

III. RESULTS

A total of 300 clinical students from third, fourth, and fifth year MBBS participated in the study. Table I shows the information of the students.

TABLE I: DETAILS OF PARTICIPANTS (STRATIFIED RANDOM SAMPLING WAS USED)

Variable	3rd year (n=100)	4 th year (n= 100)	5th year (n= 100)	Total (n=300)
Age				
(years)				
18-20	37	1	1	39
21-23	63	98	66	227
24-26	0	1	33	34
Gender				
Male	50	50	50	150
Female	50	50	50	150

There was a statistically significant difference in mean perception scores across academic years ($F(2,297) = 3.626$, $P = 0.028$). A Tukey post-hoc analysis revealed that there was

a significant difference between the mean perception scores of the 3rd and 5th year of study ($P=0.021$) with 3rd year having higher total mean perception scores than 4th and 5th year of study. This comparison of mean scores is tabulated in Table II.

Independent samples t-test showed that statistically there was no significant difference in mean perception scores between females (53.30 ± 11.36) and male (50.70 ± 12.02) students ($t=1.92$, $P=0.055$).

Item numbers 11 and 12 scored highest on the scale indicating a positive perception. Item numbers 10, 22, and 23 had the lowest mean scores. Eleven out of twenty-five Individual items had mean scores below 2.00. Table III delineates the mean scores of all individual items, subscales, and Cronbach alpha values of each subscale. The scale had showed good reliability with a Cronbach's alpha value of 0.858.

TABLE II: COMPARISON OF TOTAL MEAN SCORES AND SUBDOMAINS IN THE SCALE

Clinical learning domains	Max. Score	3 rd year means	4 th year means	5 th year means	P-values*	Post Hoc**
Transition and stress	36	17.72 $\pm$ 6.36	17.1 $\pm$ 5.56	16.5 $\pm$ 5.52	0.355	
Clinical orientation	32	17.76 $\pm$ 4.55	17.46 $\pm$ 4.26	16.33 $\pm$ 4.14	0.051	
Knowledge and skills	16	10.40 $\pm$ 2.57	9.74 $\pm$ 3.10	9.42 $\pm$ 2.43	0.035	3:5
Clinical supervision	16	8.26 $\pm$ 3.03	7.83 $\pm$ 2.74	7.44 $\pm$ 2.71	0.125	
Total mean scores	100	54.14 $\pm$ 12.4	52.15 $\pm$ 11.70	49.71 $\pm$ 10.71	0.028	3:5

*One-way Analysis of variance.

**Tukey Post hoc analysis showing only significant differences $p < 0.05$.

TABLE III: MEAN SCORE OF STUDENTS' PERCEPTIONS OF CLINICAL LEARNING FOR EACH ITEM

Item no.	Items with domains	Mean $\pm$ S.D
Domain: transition and stress (Cronbach's alpha=0.782)		17.12$\pm$5.88
1	I felt well prepared when I entered in the clinical year of study	1.64 $\pm$ 1.02
2	The transition from pre-clinical (2 nd year) to clinical training (3 rd year and above) went smoothly.	1.85 $\pm$ 0.98
3	My uncertainty when starting my clinical (3 rd year) lasted only a few days.	2.07 $\pm$ 1.00
4	I needed time to adjust to the new hospital and ward environment.	1.40 $\pm$ 0.99
5	I experienced an abrupt transition from pre-clinical (2 nd year) to clinical training (3 rd year)	1.68 $\pm$ 1.03
6	I experienced great stress during this transition.	2.20 $\pm$ 1.1
7	My experience in clinical rotations proved to be better than I expected	2.16 $\pm$ 1.06
8	My first few weeks as a clinical student (3 rd to final year) were difficult	1.58 $\pm$ 1.01
9	There is a huge difference between my workload before and after the transition to clinical training.	2.53 $\pm$ 1.02
Domain: clinical orientation (Cronbach's alpha=0.741)		17.18$\pm$4.35
10	The clinical orientation to each rotation was provided up to the standards	1.44 $\pm$ 0.93
11	A good clinical orientation would make the transition from 2 nd year much easier.	3.11 $\pm$ 0.75
12	A general orientation should be provided to all new clinical students at the start of each rotation.	3.21 $\pm$ 0.73
13	The information provided about the structure and organization of The clinical rotations were sufficient	1.67 $\pm$ 0.95
14	I was aware of the clinical skills that I had to accomplish by the end Of the clinical rotation.	1.77 $\pm$ 0.87
15	The clinical skills to be attained during clinical rotation (ward) were explained by the faculty.	2.14 $\pm$ 1.04
16	I was aware of how I would be assessed during and after completion of the rotation	2.07 $\pm$ 1.05
17	Adequate resources (conference rooms, furniture, examination equipment, etc.) Were present and provided to us during the rotation for teaching clinical skills	1.77 $\pm$ 1.1
Domain: knowledge and skills (Cronbach's alpha=0.672)		9.85$\pm$2.74
18	I noticed a gradual improvement in my history taking and examination skills during and after the rotation.	2.86 $\pm$ 0.76
19	I noticed a gradual improvement in my interaction with the patient and counseling.	2.86 $\pm$ 0.78
20	I feel confident in my patient management skills and the clinical knowledge I attained from the rotations	2.20 $\pm$ 1.03
21	The teachers were able to teach all the required skills to me	1.93 $\pm$ 1.02
Domain: clinical supervision and feedback (Cronbach's alpha=0.658)		7.84$\pm$2.84
22	I was frequently observed during patient contact (when I was Taking a medical history or doing a physical examination)	1.46 $\pm$ 0.93
23	I received sufficient supervision and constructive feedback about My performance	1.49 $\pm$ 0.97
24	The clinical rotation helped me to think and reflect on my strengths And weaknesses	2.66 $\pm$ 0.88
25	The teachers I encountered during clinical rotations were cooperative and ensured their availability.	2.24 $\pm$ 1.01
Total score (Cronbach's alpha=0.858)		52.0$\pm$11.74
0 – 1.99: negative perception, 2 – 2.99: neutral perception, 3.0 – 4.00: more positive perception towards the clinical learning		

IV. DISCUSSION

The students look forward to increasing their knowledge and learn clinical skills when they enter the clinical phase of medical education [4], [13]. However, they perceive various difficulties in learning clinical skills at an optimal level due to an abrupt transition and the results of our study are

suggestive of this finding. The mean perception score of the study participants suggested that the perception of students regarding the clinical learning was neutral, however, attempts can be made to reduce these barriers and improve clinical learning.

The 5th year students perceived the clinical learning towards a more negative side with the lowest mean scores

indicating that the 5th year students perceived more barriers and difficulties in clinical learning than junior students. The probable reasons may include stress and increased workload on the penultimate year than other years of study. Kumar B et al. also reported that the final year medical students were more stressed than other years which hinders their ability to learn clinical skills optimally [14].

The mean scores of eleven individual items on the scale were below 2 indicating that the perception of students regarding clinical learning to those items was negative. This is an alarming situation which shows that the perception of students towards clinical learning is largely ignored by the faculty as the teaching is too teacher centered. Studies have proven that student-centered teaching methodologies are better for medical education than traditional teacher-centered methods in terms of orienting students for clinical learning [8], [15].

Low mean scores of individual items in the first domain (transition and stress) illustrate that the transition was rather troublesome for students. The students felt unprepared for the clinical phase of the course indicating the lack of integration of clinical curriculum during the preclinical years. As a result, the study participants felt that a few weeks were rather difficult for them and they needed time to adjust to the new hospital environment. The low mean scores in item number 1, 2, 4, 5 and 8 are suggestive of this finding. Studies have concluded the necessity of integration of problem-based learning (PBL) and stimulation-based learning (SBE) techniques in preclinical years for the smooth transition of students when they enter in their clinical phase of learning [7], [8], [11]. Moreover, the incorporation of clinical skills sessions and case-based learning in the curriculum will improve students' preparedness for clinical years and reduce the burden caused by this transition [16], [17]. Thus, there is a need for practical sustainable change in the preclinical curriculum so that the students can deal with this transition in a more effective manner.

The high mean scores of items 11 and 12 in the second domain (clinical orientation) show that students supported the idea for the provision of a comprehensive clinical orientation before the start of clinical rotations. However, all other items in this domain have low mean scores indicating a negative perception regarding the quality of clinical orientation provided to them from their teachers. The reasons why students struggle to improve their clinical skills include poor quality of clinical orientation, lack of structured clinical curriculum, and low availability of resources. Similar barriers are highlighted in another study [18]. The low mean scores in items 10, 13, 14 and 17 demand the need for interventions that provide sound clinical orientation to the students so that they can attain the required clinical skills. O'Brien B et al. necessitated the need for clinical orientation during preclinical and at the start of clinical years for optimal and efficacious clinical learning [19].

The low mean score of item 21 in domain three (Knowledge and skills) shows that the student perceived the teaching abilities of the teachers towards a more negative side as they believe they are not able to teach them the required clinical skills. In a setting of public sector medical

institutions of a developing country like ours, the clinicians are involved in patient care along with teaching clinical skills to the students. Due to an increased patient load in public sector teaching hospitals, the clinicians may not find adequate time to teach all the required skills effectively to the students. Stark P. et al. also reports similar barriers in developing countries recommending the need for separate faculty and the establishment of clinical skills centers within available resources in the context of developing countries [20].

The low mean scores of item no. 22 and 23 in domain four (Clinical Supervision and feedback) indicate the lack of supervision and feedback provided to the students during their task performance. Similarly, Bing-You R. et al. concluded that the development of an effective feedback delivery system along with proper supervision is the need of the time and few recommendations are available for its improvement [21]. Lack of supervision and feedback by the teachers is a very alarming barrier as it may adversely affect the competency and clinical abilities of students to care for the patients [22]. This can lead to the failure of an already resource-deprived health-care system in a developing country where there is an immediate need for competent doctors [9]. Thus, there is a requirement of competency-based training of the teachers so that they can provide adequate supervision and feedback to the students for improving the quality of medical education.

The qualitative aspects are also important for assessing the barriers to clinical learning as qualitative analysis provides open-ended themes. Qualitative factors that might affect clinical learning may be missed from us as we only assessed only a fixed set of factors. Despite this limitation, the study provides baseline data and opens up new horizons for the conduction of further research. Nonetheless, further studies are required to explore more elements that lead to ineffective learning during clinical rotations for medical students. Conduction of such studies especially in developing countries with enhance the quality of medical education and health professionals that can ultimately improve the health care system for a resource deprived community.

V. CONCLUSION

According to students the lack of clinical orientation, abrupt transition, the weak structure of the clinical curriculum, ineffective feedback delivery system, lack of supervision, and inadequate resources are the barriers to clinical learning. Reforms in the field of medical education in terms of integration of clinical curriculum, strengthening of the educational structure, training of teachers, and development of an effective feedback delivery system will help to reduce these barriers and improve the quality of clinical learning in a public sector medical institute of a developing country.

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