ORIGINAL ARTICLE

Change in Student's perceptions of the learning environment after a period of exposure: A mixed method approach with quantitative and qualitative analysis

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Abstract

Objectives: To compare change in students'perceptions of learning environment at the time of their enrollment and after moving to the second semester.

Method: The mixed method quantitative-qualitative studywas conducted in two parts at the Pathology Department, Jinnah Sindh Medical University, Karachi,from Marchto October, 2018, and comprised undergraduate medical students. Data was collected using the Dundee Ready Education Environment Measurein phase one. In phase two, a focus group discussion was conducted on the same theme with a small group of students. Data was analysed using SPSS 21.

Results: Of the 235 students in the first phase, 54(23%) were males and 181 (77%) were females. The overall score from all five sub-scales of the inventory was 128.22 out of a maximum 200. In the second phase, there were 10 participants; 3(30%) males and 7(70%) females.

Conclusion: Students' perception of their learning environment altered from being positive in the first semester to being barely satisfactory by the end of semester 2.

Keywords: Student's perception, Learning environment, DREEM, Undergraduate medical school.

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Introduction

Learning environment refers to an educational approach towards any type of learning or activity. It includes the cultural aspect and the physical setting in which teaching and learning take place.[1] With respect to a medical college, an adequate learning environment is considered to be immensely crucial for the maintenance of a proper medical education programme.[1,2] The World Federation for Medical Education accentuated the importance of the learning environment in a medical institution and it has been regarded as one of the key elements of a successful medical education programme.[3,4]

It is important that evaluations of this environment in a medical school is done periodically for continuous quality improvement and innovation that may further make the medical school a better learning organisationwith adequate facilities and benefits.[5]

Jinnah Sindh Medical University (JSMU) is based on an integrated education system where all students are taught simultaneously. At its Pathology department, learning tools include lectures, discussions and case-based learning (CBL) in small groups, addressing the true integration of basic and clinical medical science students.It is very crucial that a student's perception in his/her learning environment is also kept into consideration while making these reforms.[6] A motivating learning environment fosters deep self-directed learning in students that leads to effective medical practice as physicians.[5,7]

Students' stress is increasingly seen as a problem resulting from the individual's interaction with the learning environment and not as an indication of personal deficiency. This shift has made evident the need for an instrument capable of assessing the significant dimensions of the medical school learning environment.[7,8] The Dundee Ready Educational Environment Measure (DREEM) is an instrument that was developed to facilitate evaluation of undergraduate learning environments in healthcare education systems.[9] DREEM has been found to be highly reliable in a variety of settings, and, with its help, institutions can identify shortcomings and formulate changes in their curriculum.[6-9]

The current study was planned to determine the change in students' perception of learning environment in the first and second semesters.

Subjects and Methods

Themixed method qualitative-quantitative two-phase study was conducted at the Pathology department of

Department of Pathology, Sindh Medical College Jinnah Sindh Medical University, Karachi, Pakistan.

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JSMU, Karachi, from March to October, 2018. After approval from the institutional ethics review committee, the sample was rasied using non-probability, convenience sampling. All students enrolled in first year of MBBS programme were included. Those who were not present at the time of the study and those who did not give consent were excluded.

In the quantitative phase, DREEM[9] questionnaire was used after taking informed consent from the subjects to evaluate the perception of learning environment of the undergraduates who had just entered JSMU. The total time required to answer the 50-item questionnaire was about 20 minutes. Difficult educational terms and phrases, such as "factual learning", "ridicule", and "authoritarian", of DREEM were explained before the completed questionnaires were collected at the same session. As nine items (4, 8, 9, 17, 25, 35, 39, 48 and 50) from the instrument are negatively stated, corrections were made, thus resulting in higher scores designating disagreement with these items. The instrument's validity has been established in many countries, including Nigeria, Nepal and Sri Lanka.[10,11]

DREEM is a 50-item inventory consisting of 5 domains[9]: students' perceptions of learning (SPOL) having 12 items and a maximum score of 48; students' perceptions of teachers (SPOT)[11] items with a maximum score of 44; students' academic self-perceptions (SASP)[8] items with a maximum score of 32; students' perceptions of atmosphere (SPOA)[12] items with a maximum score of 48; and students' social self-perceptions (SSSP)[7] items with a maximum score of 28. The total score for all subscales is 200. The quantitative method was followed by a second phase of qualitative assessment which comprised a small focused group discussion (FGD). Discussion was recorded till saturation.

The qualitative phase was conducted after the participants' promotion to the second semester of their Bachelor's programme. This was done to evaluate the change in perception of participants' educational environment in the second semester compared to the first semester. Qualitative data was based on a discussion which took place in a private room on the campus. The discussion was conducted in a friendly and comfortable environment. The participants were given pseudonyms for transcription purposes to ensure their anonymity. The entire discussion was recorded and then transcribed verbatim. The discussion was conducted in English and transcripts were produced in English language.

The quantitative data was analysed using SPSS 26. The mean score for each subscale with standard deviation (SD) was calculated. Qualitative data was analysed using inductive approach. The transcribed data was organised, points of focus were identified, data was labelled and finally coding was done. The codes and themes were analysed.

Results

Of the 235 students in the first phase, 54(23%) were males and 181 (77%) were females (Table-1). The overall score from all five sub-scales of the inventory was 128.22(64.11%). The SPOT subscale had the highest score of 37.85(86%), while the lowest score was for the SPOA subscale 26.13 (54.4%). The general perception of the students in all five subscales was more positive than negative (Table-2).

The students scored less than 2 for 7 items only (3, 4, 8, 17, 27, 35, 39) and above 3 for 6 items (1, 2, 10, 14, 37, & 45) (Table-3).

In the second phase, there were 10 participants; 3(30%) males and 7(70%) females. Main themes were identified (Table-4). The first theme was 'Challenges in learning process'. For the item 'is teaching student-centered', 8(80%) students answered in the affirmative, while 2(20%) students pointed out that there was a language barrier between the teaching staff and the students. One of these students said: "I believe I am not getting the full potential from a teacher, as sometimes there is a language barrier. The teachers come, give lectures, read from slide, they feel like we know the background, so I go home and study

Table-1: Demographic characteristics n=235.

Gender (n=235)	
Male	54 (23%)
Female	181 (77%)
Age	
18-20 (years)	220 (93.6%)
21-23 (years)	15 (6.4%)

Table-2: Mean DREEM domain scores for first year (Semester 1).

DREEM Subscales	Score obtained	Total score	Interpretation of score
SPOL	26.15	48	A more positive approach
SPOT	37.85	44	Model Teachers
SASP	21.64	32	Feeling more on a positive side
SPOA	26.13	48	A more positive atmosphere
SSSP	16.45	28	Not very bad
Total DREEM mean score	128.22	200	More positive than negative

99DREEM: Dundee Ready Education Environment Measure; SPOL: Students' Perceptions of Learning; SPOT: Students' Perceptions of Teachers; SASP: Students' Academic Self-Perceptions; SPOA: Students' Perceptions of Atmosphere; SSSP: Students' Social Self-Perceptions.

Table-3: Mean DREEM item scores for first year students.

SPOL	Item	Mean	SD
Table-3A:			
1	I am encouraged to participate during teaching sessions	3.0255	.78948
7	Teaching is often stimulating	2.5794	.82729
13	Teaching is student- centered	2.5574	.97397
16	Teaching helps to develop my competence	2.5726	.97449
20	Teaching is well focused	2.7532	.85156
22	Teaching helps to develop my confidence	2.6043	.98318
24	Teaching time is to put good use	2.7319	.80625
25	Teaching over emphasizes factual learning	2.4701	1.64733
38	I am clear about my learning objective of course	2.7735	.91011
44	Teaching encourages me to be an active learner	2.6325	.92275
47	Long- term learning is emphasized over short -term learning	2.9313	2.84128
48	Teaching is too teacher- centered	2.0385	1.70666
Table-3B:			
SPOT (11 items)			
2	Teacher are knowledgeable	3.1489	.67237
6	Teacher adopt a patient-centered approach to consult	2.5751	.85837
8	Teacher ridicule students	1.2511	.91565
9	Teachers are authoritarian	2.2664	1.04031
18	Teachers have good communication skill with patients	2.7225	1.59855
29	Teachers are good at providing feedback to students	2.7532	.95112
32	Teachers provides constructive criticism here	2.1082	1.03061
37	Teachers give clear example	3.1191	.86889
39	Teachers get angry in teaching	1.7021	1.04011
40	Teachers are well prepared for their teaching session	2.8085	.94368
50	Teachers are irritated by students	2.2814	1.24536
SPOA			
11	The atmosphere is relaxed during ward teaching	2.3596	.78113
12	School is well timetabled	2.8383	1.16181
17	Cheating is problem in this school	1.2468	1.11648
23	Atmosphere is relaxed during lecture	2.5579	1.03696
30	There are opportunities for me to develop my interpersonal skills	2.9274	.83323
33	I feel comfortable in class socially	2.9319	2.15322
34	Atmosphere is relaxed during seminar/tutorial/class	2.9361	.82540
35	I find experience disappointing	1.1957	.98492
36	I am able to concentrate well	2.5489	1.00891
42	The enjoyment outweighs the stress of course	2.2949	1.14347
43	The atmosphere motivates me as a learner	2.6596	.99736
49	I feel able to ask questions	2.5769	.91978
Table-3C:			
SSSP			
3	There is a good support system for students who get stressed	1.9191	1.17935
4	I am too tired to enjoy this course	1.7692	1.23875
14	I am rarely bored in this course	3.1745	.86688
15	I have good friends in this course	2.7617	1.02669
19	My social life is good	2.0936	1.31386
28	I seldom feel lonely	2.0936	1.31386
46	My accommodation is pleasant	2.6870	.88525

DREEM: Dundee Ready Education Environment Measure; SPOL: Students' Perceptions of Learning; SPOT: Students' Perceptions of Teachers; SASP: Students' Academic Self-Perceptions; SPOA: Students' Perceptions of Atmosphere; SSSP: Students' Social Self-Perceptions.

Table-4: Summary of discussion (Qualitative Analysis - Phase two).

Q1. What are some of your challenges in learning process now?

Teaching student centered	Course objectives are provided at the start of the course	Teaching period is purposeful	Teaching emphasis on long term or short term
Yes, it is.	Yes, they are provided	Yes, it is purposeful	Yes, it emphasises on long term learning
No, language Barrier	Yes, they are provided but not accurate	No, Inadequate teaching method	No, it feels very rushed
No, lack of interactive learning	Yes, they are provided but very exhaustive	No, it is very tiring	No, difficulty in retaining knowledge

Q2. What can you say about whole teaching process?

Teaching methods	Instructional method incorporated in teaching methods	Teachers knowledgeable and cooperative	Teacher's organization, preparation and feedback
Non-friendly teachers	More Interactive learning	Yes, they are knowledgeable and cooperative	Organized and well prepared
Inadequate teaching material	Quizzes	Yes, they knowledgeable but uncooperative	
Inadequate teaching method	More Seminars and Workshops		

Q3. What are your views of learning environment now?

Environment is conducive to learning?	Facilities in the laboratories	Technology as an effective learning tool	Access to technology (digital, skill labs)	Barrier encountered while using technologies	Satisfied with the equipment's, infrastructures within the premises	What else can be done to improve?
No, it is not conducive to learning	Satisfied with the facilities provided	Yes, affirmative	Yes, I feel we have enough access to technology	Non friendly teachers	Yes, I am satisfied	Provide basic necessities such as soap, toilet tissue, etc.
Yes, the learning environment has improved			Not enough space in Digital Library, Skill Lab	Not enough time	No, poor maintenance	Maintenance of washrooms, halls and lobbies
			Not enough Microscopes			Take strict measures against smoking

Q4 Does studying all participants at a time influence your social life?

Extra academic activities?	Restricted social life	Relationship with teacher and colleagues	Socialization	Satisfaction
No, I don't have time for other things apart from curricular activities, because of stress of studies	Yes, due to stress of studies	We have limited interaction with our teachers	Through social media	No, because the environment is not very friendly
	No, I can manage	The attitude of teachers is not very friendly	Through practical classes/ labs	
		Good relationship with both teachers and colleagues		

Q5 Is there anything more you would like to share with regards to learning?

Less number of students per class/lab
More thorough study guidance from teachers
Interactive learning methods e.g. discussions, use of quiz, concept maps, etc.
The duration and length of each module should be increased

by YouTube all by myself. So most of the learning is done by students through YouTube.Alas!!"

For the item 'are course objectives provided at the start of the course', 2 (20%) raised an issue that the course objectives were not always accurate. Similarly, a student pointed out that the timetable was very cramped and exhaustive. The student said: "Yes, the course objectives are provided, but because we have continuous classes from 8:30am to 3pm, that is 4 hours of continuous classes,

the students get mentally saturated and are unable to focus properly."

For the item 'does teaching emphasis is the longterm', 6(60%) students answered in the negative.

The second theme was, 'Views on the teaching process'. It involved three main items. For the item'what do you think about teaching methods', 3(30%) students said that the teachers had a very non-friendly attitude towards their students; 4(40%) said the teaching material should be improved by including small side-notes, using quizzes, and by avoiding reading from the presentation slides.

When the students were asked if the teachers were knowledgeable and cooperative, 7(70%) reported them to be very knowledgeable.

On asking about the organisation and preparation of the teachers, the 6 (60%) said that they found their teachers to be well-organisedand well-prepared. 3 (30%) of them reported that the teachers are not very good at delivering of knowledge. One student said: "The organisationand preparation is very good, but the method of delivery is not very efficient."

The third theme was, 'Views on the learning environment'. It consisted of seven items that revolved around the learning environment at the university. 8 (80%) the participants said they had not seen improvement in their learning environment and that it was not a conducive environment. One student said: "*Comparedto the first semester, I donot see much difference in this semester as far as teaching methods is conserned, but my personal effort towards studies have increased now as I have figured it out that teachers are not putting in much effort.*"

When asked about the facilities in the laboratories, all the 10(100%) students were satisfied with the facilities being provided in the laboratories.

On asking if they thought of technology as an effective learning tool, all (100%) the participants answered in the affirmative.

The participants were asked whether they had enough access to technological facilities in the university, and 6(60%) said that there was not enough in the digital and skill labs. The remaining participants were satisfied with access to technology.

One student said: "We have digital lab available … we are taking the initiative that is positive, so I feel like, yes, we do have enough digital like technologies available for us."

On asking about the barriers they faced while using technology, they reported that there was not enough time to utilise these facilities.

Lastly, the students were asked if they were satisfied with the equipment and infrastructure, to which 7(70%) students showed discontent by saying that there was poor maintainence.

On asking what could be done to improve the learning environment, 4(40%) suggested provision of basic necessities such as soap, toilet tissue, etc, 3(30%) favoured maintenance of washrooms, hall and lobby, and 3(30%) suggested strict measures against smoking on the university premises.

The last theme was, 'Effect of studies on social life.' It consisted of 5 items. Upon asking about the activities apart from the academics,]8(80%) students reported that they did not have time for extracurricular activities. When asked if their studying schedule restricted their social life, 4(50%) responded in the affirmative. When asked about their relationship with their teacher and with their colleagues, only 2(20%) students said that they had limited interaction with the teachers, while 6(60%) said that the attitude of the teachers was not very friendly.

Discussion

The present study evaluated the mean DREEM score for the first year medical students at the time of their induction into the medical school and it was 128/200. This indicated a very positive student perception of the learning environment at the start of their bachelor's programme. The reason could be because they were newly-inducted students and were very enthusiastic.

When individual subscales were analysed it was found that the SPOT subscale had the highest satisfaction with a score of 37.85 out of 44 (86%), while the lowest score was for the SPOA subscale 26.13 (54.4%). In our sample, the score for all the five domains of DREEM indicated a more positive perception by first year students at the time of their induction.

The DREEM global score for medical schools reported from SriLanka, Nepal and Nigeria is 107.44, 130 and 106.5 respectively.[10-12]

A study conducted in Kasturba Medical College in India reported the mean DREEM score from the overall sample (n=508) to be 107.44.[12] Another study from Trinidad reported 109.9.[13] The mean DREEM score for a medical school in the United Kingdom was reported to be 139.[14] We feel that these scores are not comparable with the mean DREEM score of the current study, as the students in

our school were from different backgrounds and only from the first year. Perception of the environment may vary with the educational background of the students from different regions. However, the mean score of the current study surpassed all Asian and South Asian countries.[10-12,15-18] A study from Punjab, Pakistan, reported mean DREEM score of 125, which is quite similar to our score of 128.22.[19]

The current study evaluated the change in students' perception at the time of induction and after being promoted to the second semester.

There was a major change in students' perception of the learning environment after being promoted to the second semester. One of the reasons for that could be because students were highly enthusiastic and had positive expectations of teachers at the time of their starting the medical college, when the DREEM scale was administered. By the time the students were promoted to the second semester, their perception of teachers, environment and their academic performance changed, variably indicating that students initially had not much interacted with their teachers and the administration.

When the participants were asked about the current challenges faced by them, 7 of the 10 students in the FGD complained about the exhaustive schedule and inadequate teaching approach. This observation is complimented by a study done in Hong Kong in 2010.[20]

The students' perception about their academic performance and social imagealso improved compared to the mean DREEM scores for each subscales. This could be explained by the students' better understanding of the integrated modular system of teaching and better adapting to their new surroundings.

Even though the score for SPOT in the DREEM scale was the highest compared to the other subscales, the participants' perception about the teachers deteriorated immensely in the second semester. The participants viewed their teachers to be non-cooperative and unfriendly which is quite surprising keeping in mind the previous DREEM score of 86%. This change could be explained by the exhaustive and tiring schedule which both the teachers and the students have to follow all through the day. The burden of teaching and studies may have an impact on the behaviour of both the teachers and the students.

The students also suggested that they would like to see more interactive learning with use of quizzes, concept maps and other conceptual learning methods.

To our knowledge, this is the first study that has usedmixed study method combining both quantitative and qualitative data to assess the medical students' perception of the learning environment.

It is quite evident that when the students' learning problems remain unaddressed, their learning environment remains unaltered, leading to repetition of failure.[21]

The main limitation of the current study is that data was collected only from the first year students and is in no way a representation of the entire JSMU population. A study involving all students from all the years of undergraduate medical education would be much more representative.

Conclusion

The mean DREEM score of 128.22 signified a positive learning environment. The preception, however, changed when the students got promored to the second semsester.

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