

ASSESSMENT OF EDUCATIONAL ENVIRONMENT OF AN UNDERGRADUATE MEDICAL SCHOOL

Saima Gilani, Syed Mohammed, Naila Bukhari, Shadab Akhtar

Department of Gynaecology & Obstetrics, Khyber Teaching Hospital, Peshawar - Pakistan

ABSTRACT

Objective: To assess the medical educational environment at Khyber Medical Collage, Peshawar.

Material and Methods: The cross-sectional study was conducted at Khyber Medical College, Peshawar in March 2015. The Dundee Ready Education Environment Measure (DREEM) Questionnaire, which has worldwide face validity, was used to assess the learning environment, as perceived by students of final year MBBS. The English version of the DREEM inventory was administered to 150 student, the participation was voluntary and the questionnaire was anonymous. The return of the completed questionnaire was taken as their implied consent. The Dundee Ready Education Environment Measure (DREEM) inventory has five subscales of perceptions of learning, teachers, atmosphere, academic self-perceptions and social self-perceptions. Data was analyzed using SPSS 17.

Results: Of the 150 questionnaires distributed, 145(98%) were returned duly filled. Of all the respondents, overall mean score found positive was 105.8 ± 27.4 (Max: 200). Corresponding scores in the subscales were: student's perception of learning 25.1 ± 4.2 (Max: 48); social self-perception 16.2 ± 3.6 (Max: 28); academic self-perception 17.8 ± 5.5 (Max: 32); perception of teachers being in need of some re-training 22.5 ± 7.1 (Max: 44); and perception of atmosphere as having many issues needing a change 24.2 ± 7.0 (Max: 48). Female students perceived environment as more positive than male students (107.6 ± 23.0 vs. 98.8 ± 28.9 [$p < 0.001$]).

Conclusion: The highest score was found in the domain of student's social self-perceptions and lowest in the domain of student's perception of atmosphere and teachers. Results can be used as a basis for planning and executing remedial measures needed to improve the undergraduate medical education environment in Pakistan.

Key Words: Perception, Undergraduate, Educational environment, DREEM.

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INTRODUCTION

During the last two decades, teaching has been transformed to learning, memorizing to understanding and critical reasoning, examinations to evaluation, summative assessment to formative assessment, annual examinations to semester examinations, subjectivity to objectivity and criteria to standards. Creating an environment in which students can learn effectively and efficiently has become the new prerequisite for educa-

tional institutes. Medical education programs now see the student at the center of the learning process. This pedagogic shift from the traditional teacher-centered approach, in which the emphasis was on teachers and what they teach, to a student-centered approach, in which the emphasis is on students and what they learn, requires a fundamental change in the role of the teacher, learner and educational process.

In adult learning theories, teaching is as much about setting the context or climate for learning as it is about imparting knowledge or sharing expertise. The World Federation for Medical Education singled out learning environment as one of the targets for what it terms "the conduction of the evaluation of medical education programme". The educational environment is everything that happens within the classroom, departments, faculty, and institution both physically and psychologically. Educational environment is vital in de-

Dr. Saima Gilani (Corresponding Author)

Professor

Department of Gynaecology & Obstetrics, Khyber Teaching Hospital, Peshawar - Pakistan

Cell: 0336-9284459

Email: saimagilani@yahoo.com

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termining the success or failure of any institute. From the day students enter into the medical institute; they face a change in environment. A positive environment leads to achievements, fun, and engagement in learning while a negative one would hinder their accomplishments. Measurement of the medical education environment comprehensively assesses what is happening, or how things are. It is a way of assessing the nature of the educational practice of the school. It also provides a holistic, comprehensive, systematic and detailed picture of the overall state of affairs in the education process.¹⁻⁴

The Dundee Ready Education Environment Measure (DREEM) inventory was originally developed and validated between 1994 and 1996 by a Delphi panel of nearly 100 medical and health profession educators from several countries who were enrolled in various courses in the Medical Education Centre in Dundee, Scotland. It is intended to be a universal and culture-free inventory. The DREEM inventory is a validated inventory with proven high reliability and has been used in various countries around the world to assess the educational climate of health professionals and medical schools as perceived by the students of that institute at that particular point in time. It is highly reliable and validated tool and can be used for conducting comparison of students' perception of educational climate within an institution, between institutions or at different point of time within an institution. Moreover, it can be used to help alter the curriculum, comparing past and present curricula and evaluating the effectiveness of a university program^{5,6}. One of the important implications of DREEM is that it provides a standardized way for international comparisons between medical schools as well as allowing them to benchmark their educational climate. In addition, it may locate areas of concern shared by the majority of students that might be unintentionally neglected by educators^{7,8}. The DREEM questionnaire, is based on a Likert scale, The DREEM domains are unlikely to be independent variables, and may be less of an environment test but more of a measure of the overall motivation and learning attitude of the individual.

It comprises 50 items, divided into 5 subscales:⁹

- Students' perception of learning, 12 items, maximum score 48;
- Students' perception of teachers, 11 items, maximum score 44;
- Students' academic self-perception, 8 items, maximum score 32;

Students' perception of atmosphere, 12 items, maximum score 48;

- Students' social self-perception, 7 items, maximum score 28.

The total possible score is 200.

Each Item is scored 0–4 (4 = strongly agree, 3 = agree, 2 = unsure, 1 = disagree and

0 = strongly disagree).

There are 9 negative items scored in reverse manner; for all items, however, results should be presented so that the higher the score the more positive the reading (more favorable educational environment). The score of the whole questionnaire, each subscale and each item is done and mean for each is calculated.

The DREEM can also be used to pinpoint more specific strengths and weaknesses within the educational climate. To do this one need to look at the responses of the individual items. Items that score more than 3.5 or over are real positive points, any item with mean of 2 or less should be examined more closely as they indicate problem areas. Items with a mean between 2 and 3 are aspects that could be enhanced.

In most of the medical colleges in Pakistan, the traditional educational system and curriculum is employed which has a teacher-centered, non-integrated, subject based and hospital based approach. Learning, perceived by students as a one way transmission of information, is assessed by annual high stake examination at the end of the year. Khyber medical University, being one of the largest universities of public sector in Pakistan, is working on innovation in the field of medical education ever since its inception. The university comprises of eight undergraduate medical colleges located in six different cities. All of its colleges have open merit system. The University is in the process of developing a modular curriculum with vertical and horizontal integration of basic and clinical sciences in two spirals.

The medical college in Peshawar gives a traditional 5-year course: the first two years are devoted to basic medical sciences and the last 3 are for clinical subjects. There is a sharp divide between basic and clinical sciences, and the overcrowded curriculum depends heavily on the use of lectures. All activities are teacher centered with few open discussions or problem-solving sessions.

MATERIAL AND METHODS

A copy of the original Dundee Education Environment Measure (DREEM) was obtained. The questionnaire was in English. DREEM questionnaire was administered to final year students. The reason for including final year M.B, B.S students was the experience of all the years of education environment. Using convenient sampling, all students present on the day of the survey were given the questionnaire after their scheduled lecture. Before administration of the questionnaire, a 5-min briefing was given regarding the purpose and different aspects of the study and DREEM inventory explained to the students. It was emphasized that the identity of the participants would remain anonymous and the data could not be tracked back to the students. It was also explained that the data was only used for research purpose and quality assurance, and students requested to cooperate. Students were given 20 minutes free time to respond to the inventory. Questionnaires were collected at the same time by the research team.

Data was analyzed by using SPSS version-17 (SPSS Inc., Chicago, IL, USA). Descriptive statistics was used to calculate means and standard deviations of DREEM variables, total DREEM, and the five subscales. The internal consistency coefficient (Cronbach's alpha) was calculated to test the inventory's reliability.

RESULTS

The overall score was not excellent with a mean score of 105.8/200 (52.9%); although it was more positive than negative. Subscale analysis showed highest satisfaction with student's social self-perception with 55.6% and lowest in the domain of student's perception of atmosphere with 50.4%. We have a small sample size and overall our sample is more representative of final year. Similar studies should be done for preclinical and clinical students / on a large number of students.

In students academic self perception, only 15% of students indicated they were able to memorize all they needed to; that the learning strategies they used before

Table 1

DREEM and its sub-scale	Maximum score of the scale	Mean (SD)	Percentage of maximum score	Interpretation
All items	200	105.8	52.9	
Students perception of learning	48	25.1	52.29	positive perception
Students perception of teachers	44	22.5	51	in need of some retraining
Students academic self-perception of	32	17.8	55.6	feeling more on positive side
Students perception of atmosphere	48	24.2	50.4	many issues which need changing
Students social self-perception of	28	16.2	57.8	not too bad

Table-2: Comparison of educational environment of 6 medical colleges in four provinces of Pakistan. (n=2083)

DREEM its subscale	Institute1 [Punjab n=731]	Institute 2 [Sindh n=586]	Institute 3 [Punjab n=332]	Institute 4 Pukhtunkhwa n=183]	Institute 5 Pakhtunkhwa n=161)	Institute 6 [Balochistan n=87)
All items	92.2 ± 27.5	114.4 ± 20.0	108±20.0	124.8±21.5	104.8±22.0	93.7±22.5
S P of I	21.9 ±7.8	25.8 ± 5.7	27.8±5.9	30.0±5.9	26.1±6.7	22.4±7.1
S P of t	18.8±7.5	25.4 ± 5.6	24.2±5.1	26.9 ±5.9	21.8±6.4	19.4±5.7
S Ac Self-per	15.1±5.9	18.8 ± 4.6	16.3±4.1	21.1±13.1	19.3±5.2	16.2±4.5
S' P of At	22.2±6.9	28.0 ± 6.2	24.2±6.0	29.4±6.2	21.7±6.3	22.6±6.4
S Social Self-P	14.1±3.9	16.3 ± 4.0	15.7±3.6	17.3±3.6	15.8±3.5	14.1±3.0

DREEM: Dundee Ready Education Environment Measure

Table-3: Comparison of Dundee Ready Education Environment Measure (DREEM) scores at different medical schools

Year	Country	Total Participants	Score (%) Overall	SPL	SPT	SASP	SPA	SSSP
1997	UK ¹⁴	7905	66.2	65.8	65.8	64.3	68.6	65.4
1997	Thailand ¹⁵	236	68.7 –					
2001	Nigeria ¹⁶	127	59.0	68.8	59.1	65.6	56.3	46.4
2001	Nepal ¹⁶	86	65.0	68.8	59.1	68.8	66.7	64.3
2001	Trinidad ¹⁷	106	55.0	58.3	53.6	58.8	52.2	51.6
2004	Saudi Arabia ¹⁸	450	51.1	45.8	45.5	53.1	47.9	53.5
2005	Saudi Arabia ¹⁹	222	45.0	40.7	48.3	46.3	40.4	46.3

SPL = students' perceptions of learning; SPT = students' perceptions of teachers;

SASP = students' academic self-perception; SPA = students' perceptions of atmosphere;

SSSP = students' social self-perception

SPT=students perception of teaching

SPA=student perception of atmosphere

were still useful for them, 12% said their problem solving skills have not been developed, 16% said that they had not learnt a lot about empathy in their profession, 16% felt they are not well prepared for their profession. Lectures though cost effective for large number of students do not encourage active participation, deep learning, problem solving, these facts were also highlighted by the study. Professionalism, Ethics are some of the desired outcome of PMDC curriculum but students reported a lack of teaching in this respect.

In students' social self-perception, only 20% of students agreed that there was a good support system for stressed students, 81.5% agreed/strongly agreed that they had good friends in the school, 15% of students were too tired to enjoy the course and 10% admitted that they got bored, 12% said their accommodation was not pleasant.

Although the students were not satisfied with their accommodation, but majority of them agreed that they have found good friend in school, they also pointed to lack of support for stressed students. Counseling, adaptive curriculum, outcome based and student centered teaching are some of the methods which can help students cope with academic stress.

In students' perception of learning, 6% of students said that teaching was not stimulating, 18% of students said that long-term learning was not emphasized, 20%

students said that they were not encouraged to be active learners, nor helped to develop their confidence, and were not encouraged to participate in class.

The curriculum is subject based with heavy reliance on lectures in large group format with little time given to student's interaction and participation. Lectures though cost effective for large group of students are one way transfer of knowledge, have decreased level of comprehension and do not encourage deep learning.

In student perception of atmosphere many issues need changing, 20% of students said that Cheating was a problem, 16% of students said that the atmosphere did not motivate them as learners, 22% of students said that the course was not timetabled, 20% of students found the experience disappointing.

They also considered the overall atmosphere of college is comfortable and reported better-than-average social lives in Item 19 (2.86). However, not a single item scored 3.50 or higher, which means that we have a lot of room for improvement and improvisation in the school educational environment. They considered cheating to be a problem and that the course was not time tabled and integrated so as to increase their knowledge and comprehension.

In students' perception of course teachers, a majority of our students pointed out that teachers are

knowledgeable but not good at providing feedback and constructive criticism to students, 16% students said that they ridicule students, 16% students said that they are authoritarian, 16%, students said that get angry in class, 20% students said that easily irritated with the students.

Students felt their teachers were knowledgeable, well-prepared for their teaching and stimulated them to participate in teaching. They also felt that the teachers were good at communicating with them, and that their teaching helped the students to develop professional competence. In the analysis of individual item of SPOT subscale, Item 50 (The students irritate the teachers), a negative item, scored 1.52 (SD 1.41). The negative item scoring scheme indicated that students agreed with this item. The other items scored between 2.00 and 3.00 or above 3, indicating aspects of this domain that could be enhanced.

DISCUSSION

There is no established agreement about the acceptable DREEM inventory score from published literature. However, our findings are not very much different from other studies nationally and internationally¹⁰⁻¹¹. A study from private and government medical colleges from Pakistan had a mean score of 125/200, a higher score as compared to this study¹²

Studies from Bangladesh and Sri-lanka reported a mean DREEM score of 110 and 107.4, respectively.^{13,14} A study from Trinidad 17 reported an overall mean score of 106 and another from Nigeria showed score of 127.¹⁵ A study from India while comparing first year and clinical batches reported DREEM score of 119 and 114, respectively.^{16,17}

There are some studies which reported a more positive educational environment mostly after change in curriculum and making some reform. For instance, a study from Chile reported a score of 127.5 ± 20.9 (63.8%) after initiation of reform of educational aspects of curriculum. These reforms were emphasized by the WFME¹⁸ and the competencies for the tomorrow's physicians. Another study from UK reported mean DREEM score of 139 (70%) after the curriculum was reformed with the recommendations of GMC.¹⁹ This highlights the importance of contemporary student centered curriculum modification and its positive effects on students perception of educational environment.

In Pakistan, the undergraduate MBBS programme is still traditional in mode with very few institutions

embracing concepts of student-centered activities, problem-based learning, curriculum being community-oriented, e-learning etc. Although incorporation of modern concepts in the teaching of undergraduate curriculum are needed, but changes in any aspect of medical educational environment without clear direction can be stressful for both faculty and students.

Being important stakeholders, students, need to be part of the discussion and the first step may be to assess students' perceptions regarding various Educational environment components to identify strengths and weaknesses before any major changes could be proposed.

CONCLUSION

The DREEM is a useful tool to assess the overall teaching environment and highlight areas of weakness.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

G Samia: Planning of study, manuscript writing

M Syed: Data analysis

Bukhari N: Data management

Akhtar S: Statistics.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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