

## Research Article

# Perception of Medical Students Regarding Educational Environment in a Public Sector Medical College: A Cross-Sectional Survey Using the Dundee Ready Education Environment Measure (DREEM) Questionnaire

Shumaila Irum<sup>1</sup>, Muhammad Zafar Iqbal<sup>\*2</sup> and Fatima Naumeri<sup>3</sup>

<sup>1</sup>Senior Demonstrator, Dept of Physiology, Sheikh Zayed Hospital, Rahim Yar Khan; <sup>2</sup>Associate Professor of Pediatric Surgery, KEMU/ Mayo Hospital, Lahore; <sup>3</sup>Assistant Professor of Pediatric Surgery, KEMU/ Mayo Hospital, Lahore, Pakistan.

**Abstract** | The primary success of educational environment heavily depends upon benefits to learners and this further facilitates the learning processing. The most commonly used tool, to measure it, is Dundee Ready Educational Environment Measure (DREEM).

**Objective:** This study was designed to evaluate the perceptions of medical students in pre-clinical years about educational environment in a public sector medical college of Pakistan and to compare the DREEM scores with previous published scores.

**Material and Methods:** The DREEM questionnaire was conducted on undergraduate medical students (n=300) of Sheikh Zayed Medical College, Rahim Yar Khan, during the month of June 2015.

**Results:** Two eighty-six (n=286) of the 300 students (95.33%) completed the questionnaire. Analysis of these subjected indicated a total mean score of 113.68. Mean for students' perception of learning was  $26.65 \pm 10.235$ , mean for students' perceptions of teachers was  $26.63 \pm 10.177$ . On the other hands, the mean scores for students' academic self-perception, students' perception of the atmosphere, and students' social self-perception were  $17.17 \pm 6.73$ ,  $26.89 \pm 10.89$ , and  $16.34 \pm 6.70$ , respectively.

**Conclusion:** Although DREEM scores showed improvement from previously published scores of same medical college, it also highlighted the areas needing further improvement.

**Received** | August 16, 2017; **Accepted** | January 10, 2018; **Published** | April 17, 2018

**\*Correspondence** | Dr. Muhammad Zafar Iqbal, Associate Professor of Pediatric Surgery, KEMU/ Mayo Hospital, Lahore; **Email:** drza-far300@yahoo.com

**Citation** | Irum, S., M.Z. Iqbal and F. Naumeri. 2018. Perception of medical students regarding educational environment in a public sector medical college: A cross-sectional survey using the Dundee Ready Education Environment Measure (DREEM) questionnaire. *Annals of King Edward Medical University*, 24(1): 129-133.

**DOI** | <https://doi.org/10.21649/akemu.v24i1.2340>

**Keywords** | Educational environment, Medical students, Dundee Ready Educational Environment Measure

## Introduction

Educational environment is defined around the learner, which helps in the process of learning. It includes the infrastructure and physical settings; quality of the leadership and educational approach; cultural context and the quality of patient care.<sup>(1)</sup> The perception of students regarding educational environ-

ment effects their academic progress and behavior.<sup>(2,3)</sup> A motivating educational environment fosters deep learning among students, makes it easier to achieve learning outcomes and eventually leads to good medical practice by physicians.<sup>(4,5)</sup>

Although various instruments are available for the measurement of educational environment, the most

commonly used tool is the Dundee Ready Educational Environment Measure (DREEM). An international Delphi panel of professional health educationists developed this undoubted and world-wide recognized protocol to measure undergraduates' perception of educational environment in health professions. Additionally, it is a commonly used tool to evaluate weaknesses of medical institutes, thus guiding towards the changes needed in educational strategies. <sup>(6-8)</sup>

The objective of the study was to measure the educational environment of basic sciences students using DREEM at Sheikh Zayed Medical College (SZMC) Rahim Yar Khan, Pakistan. A study conducted previously by Muhammad Shahzad et al<sup>(9)</sup> have showed low scores in SZMC. Thereafter, adding new building, creating department of medical education, hiring trained staff, and changes towards student centered teaching were adapted to improve learning. This study highlights students' perception to the changes made in infrastructure, curriculum and staff development. These finding warrant future areas of improvement to further advance the educational learning environment in medical profession.

## Methods

This cross sectional survey was carried out in June 2015 in SZMC. All students from basic science departments, and first and second year MBBS class were included as these were non-probability, and convenient samples, while students of BDS and clinical classes were excluded. DREEM questionnaire was administered to a total of 300 students. All students were briefed about study purpose before administration of the questionnaire. They were advised to maintain anonymity. Informed consent was implied if the student filled and returned the questionnaire.

Data was collected from 286 respondent students (n=286). Fourteen students did not return the questionnaire.

The DREEM questionnaire consists of 50 questions and consists of following subsets:

1. Students' perception of learning (SPoL)
2. Students' perception of teachers (SPoT)
3. Students' academic self-perception (SASP)
4. Students' perception of atmosphere (SPoA)
5. Students' social self-perception (SSSP)<sup>(10)</sup>

Data of DREEM questionnaire provided information regarding total score, score of its five subsets and score for all questions. Overall score within each subset had been divided into four quarters of 25 percent each. The items with mean scores more than or equal to 3.5 were taken as real positive, while mean score less than 2 suggested a need to change.

Data was entered in SPSS version 20 and overall mean score was calculated. Mean of individual items and of subsets were calculated and analyzed.

## Results

Out of a total of 300 students, 286 filled the questionnaire. Overall response rate was 95.34% and the overall DREEM score was 113.68/200 (56.84%). Questionnaire showed that the students' perception regarding learning was 26.65/48 (55.52%), perception of teachers was 26.63/44 (60.52%), students' academic self-perception was 17.17/32 (53.65%), perception of atmosphere was 26.89/48 (56%) and students' social self-perception was 16.34/28 (58.35%).

**1. SPoL:** SPoL were measured through 12 questions (Table 1) and there were no items with less than 2 score.

**Table 1: Students' perceptions of learning (N=286)**

Items	Mean	SD
1. I am encouraged to participate in class	2.06	0.802
7. The teaching is often stimulating	2.21	0.872
13. The teaching is student centered	2.30	0.906
16. The teaching helps to develop my competence	2.18	0.838
20. The teaching is well focused	2.22	0.853
22. The teaching helps to develop my confidence	2.19	0.918
24. The teaching time is put to good use	2.10	0.754
25. The teaching over-emphasizes factual learning	2.41	0.835
38. I am clear about the learning objectives of the course	2.33	0.827
44. The teaching encourages me to be an active learner	2.12	0.917
47. Long term learning is emphasized over short term learning	2.02	0.839
48. The teaching is too teacher-centered	2.51	0.874
Total mean score	26.65	10.23
Maximum score	48	

**2. SPoT:** SPoT were measured through 11 items, with total score of 44 (Table 2). No extraordinary qualities were observed in teachers by the students as no item scored 3.5 or more. Items 8, 9 and 50 were negative and scored in reverse order.

**Table 2:** Students' perception of teachers (n=286)

Items	Mean	SD
2.The teachers are knowledgeable	2.01	0.759
6.The teachers are patient with students	2.32	0.948
8.The teachers ridicule the students	2.82	0.945
9.The teachers are authoritarian	2.16	0.778
18.The teachers have good communication skills with students	2.59	1.582
29.The teachers are good at providing feedback to students	2.40	0.796
32. The teachers provide constructive criticism.	2.69	0.836
37.The teachers give clear examples	2.17	0.816
39.The teachers get angry in class	2.73	0.934
40.The teachers are well prepared for their classes	2.04	0.770
50.The students irritate the teachers	2.70	1.013
Total mean score	26.63	10.177
Maximum score	44	

**3. SASP:** SASP was measured through eight items, with total score of 32 (Table 3). There were 3 items with mean score <2, showing serious flaws in the system. These are item 10 (1.50), item 31 (1.9), and item 45 (1.97).

**Table 3:** Students' academic self-perception (N=286)

Items	Mean	SD
5.Learning strategies which worked for me before continue to work for me now	2.30	0.941
10.I am confident about my passing this year	1.50	0.719
21.I feel I am being well prepared for my profession	2.32	0.883
26.Last year's work has been a good preparation for this year's work	2.09	0.860
10.I am able to memorize all I need	2.55	0.919
31.I have learned a lot about empathy in my profession	1.91	0.764
41.My problem solving skills are being well developed here	2.46	0.866
45.Much of what I have to learn seems relevant to a career in healthcare	1.97	0.782
Total mean score	17.17	6.734
Maximum score	32	

**4. SPoA:** It was measured through 12 items, with a total score of 48 (Table 4). All 12 items were scored between 2 and 3. Only two items, including 17 and 35 were negative.

**Table 4:** Students' perceptions of atmosphere (N=286)

Items	Mean	SD
11.The environment is relaxing during the ward teaching	2.21	0.829
12.This school is well timetabled	2.22	0.934
17.Cheating is a problem in this school	2.49	0.994
23.The atmosphere is relaxing during lectures	2.01	0.843
30.There are opportunities for me to develop interpersonal skills	2.36	0.841
33.I feel comfortable in class socially	2.10	0.736
34.The atmosphere is relaxing during seminars/tutorials	2.17	0.964
35.I find the experience disappointing	2.19	0.986
36.I am able to concentrate well	2.35	0.936
42.The enjoyment outweighs the stress of the course	2.28	1.052
43.The atmosphere motivates me as a learner	2.14	0.824
49.I feel able to ask the questions I want	2.37	0.956
Total mean score	26.89	10.89
Maximum score	48	

**5. SSSP:** SSSP was measured through 7 items (Table 5). The maximum possible score was 28. Only one item (item 19) has mean score less than 2. The item with maximum mean score was 3 (mean score 2.89).

**Table 5:** Students' social self-perceptions (N=286)

Items	Mean	SD
3.There is a good support system for students who get stressed	2.89	0.937
4.I am too tired to enjoy the course	2.34	0.951
14.I am rarely bored on this course	2.53	0.979
15.I have good friends in this school	2.01	0.979
19.My social life is good	1.93	0.796
28.I seldom feel lonely	2.30	1.057
46.My accommodation is pleasant	2.34	1.008
Total mean score	16.34	6.707
Maximum score	28	

## Discussion

Positive perception of educational environment means that students will learn good practices and achieve their learning outcomes.<sup>(11,12)</sup> There are many factors

such as social, economical, cultural, and past experiences, which effect perception of medical students.<sup>(12)</sup> Out of many tools available to measure the learning environment, DREEM is well accepted because of its validity and reliability.<sup>(13-15)</sup> The interpretation of DREEM was based on guidelines by McAleer and Roffin, in which plenty of problems were observed for score of 51–100.<sup>(16)</sup>

In this study overall mean score was 113.68/200, which indicates a positive perception of the students. Previously overall mean score was less (90.4/200)<sup>(9)</sup> in a study conducted by Shahzad on final year students. Now due to improvement in infrastructure and availability of trained faculty, scores have improved.

When we compare over all mean score with other national and international studies, DREEM score differed greatly. For example, in two Malaysian studies higher mean scores were reported 133/200 and 134/200 and another showed a score of 125 out of 200.<sup>(18,23)</sup> Lower scores were reported in Sri Lanka (108/200)<sup>(17)</sup>, Trinidad (109/200)<sup>(25)</sup> and India (114/200 and 107/200)<sup>(19,25)</sup>. King Saud University recorded the lowest score 89/200.<sup>(21)</sup> Higher DREEM score were noted in Nepal (130/200)<sup>(3)</sup> and United Kingdom (144/200<sup>(24)</sup> and 139/200<sup>(22)</sup>). These higher total scores indicate positive educational environment, thus indicating that institutes are striving hard for innovation in medical education and adopting student-centered teaching.

In this study, all students perceived a positive learning approach (26.65/48); student centered teaching (26.63/44); good academic self-perception (17.17/32); a positive atmosphere (26.89/48); and better social self-perception (16.34/28).

In our study the score of four DREEM items was 2 or less. These items belonged to the students' academic and social perception subscales. These low scores indicate students' perception of high failure rates, lack of teaching of empathy and lack of social life. It is suggested that curriculum should address questions regarding self-perception, focus more on community based activities and empathy. Also more time should be given for self-learning in libraries and faculty should provide better role models.<sup>(4)</sup>

In student's perception of learning, all mean items scores were on positive side. Maximum score was

2.51 (item 48) and minimum score was 2.02 (item 47). This gives clear idea of shift from a teacher-centered to a more interactive student-centered learning.

The scores of items of SPoT domain showed that teachers have good knowledge of the subject, are well prepared, have excellent communication skills and are kind enough to provide feedback. But items marked negatively need improvement like teachers' and students' behavior.

This study focuses about perception of medical student in a public sector medical college and compares it with the previous published scores. After making appropriate changes in infrastructure, creating department of medical education and hiring trained faculty, scores have changed from 21.8<sup>(9)</sup> in SPoL to 26.65, from 20.4<sup>(9)</sup> in SPoT to 26.63, from 13.5<sup>(9)</sup> in SASP to 17.7, from 22.6<sup>(9)</sup> in SPoA to 26.89 and from 12.3<sup>(9)</sup> in SSSP to 16.34. Further studies are recommended on larger scale to measure the students' perceptions in both private and public sectors medical colleges. It is also recommended to focus on affective domain of curriculum.

## Conclusion

Although DREEM scores showed improvement from previously published scores of same medical college, it also highlighted the areas needing further improvement.

## Author's Contribution

**Shumaila Irum and Muhammad Zafar Iqbal:** Did all the research.

**Fatima Naumeri:** Wrote the article and finalized it.

## References

1. Roff S, McAleer S. What is educational climate? Med Teach. 2001 Jul; 23(4):333–4. <https://doi.org/10.1080/01421590120063312>
2. Dornan T, Bundy C. What can experience add to early medical education? Consensus survey. BMJ. 2004 Oct 7; 329(7470): 834. <https://doi.org/10.1136/bmj.329.7470.834>
3. Roff S, McAleer S, Ifere OS, Bhattacharya S. A global diagnostic tool for measuring educational environment: comparing Nigeria and Nepal. Med Teach. 2001 Jan 1; 23(4): 378–82. <https://doi.org/10.1080/01421590120043080>



4. Maudsley RF. Role models and the learning environment: Essential elements in effective medical education. *Acad Med* 2001 May 1; 76(5): 432-4. <https://doi.org/10.1097/00001888-200105000-00011>
5. Whittle SR, Whelan B, Murdoch-Eaton DG. DREEM and beyond: studies of the educational environment as a means for its enhancement. *Educ Health*. 2007 May 1; 20(1):7.
6. Divaris K, Barlow PJ, Chendea SA, Cheong WS, Dounis A, Dragan IF, et al. The academic environment: the students' perspective. *Eur J Dent Educ*. 2008 Feb 1; 12(s1):120-30. <https://doi.org/10.1111/j.1600-0579.2007.00494.x>
7. Miles S, Leinster SJ. Medical students' perceptions of their educational environment: expected versus actual perceptions. *Med Educ*. 2007 Mar 1; 41(3):265-72. <https://doi.org/10.1111/j.1365-2929.2007.02686.x>
8. Khan JS, Tabasum S, Yousafzai UK, Fatima M. DREEM ON: Validation of the Dundee Ready Education Environment Measure in Pakistan. *J Pak Med Assoc*. 2011 Sep 1; 61(9):885.
9. Anwar MS, Anwar I, Ghafoor T. Medical students' perceptions of educational environment in remote and urban area medical colleges. *AHPE* 2015 Jan 1;1(1).
10. Hammond SM, O'Rourke M, Kelly M, Bennett D, O'Flynn SA. A psychometric appraisal of the DREEM. *BMC Med Educ*. 2012 Jan 12; 12:2. <https://doi.org/10.1186/1472-6920-12-2>
11. Jamieson S. Likert scales: how to (ab)use them. *Med Educ*. 2004 Dec 1; 38(12):1217-8. <https://doi.org/10.1111/j.1365-2929.2004.02012.x>
12. Sobral DT. Medical students' self-appraisal of first-year learning outcomes: use of the course valuing inventory. *Med Teach*. 2004 May 1; 26(3):234-8. <https://doi.org/10.1080/0142159042000192028>
13. Al-Naggar RA, Abdulghani M, Osman MT, Al-Kubaisy W, Daher AM, Nor Aripin KN, et al. The Malaysia DREEM: perceptions of medical students about the learning environment in a medical school in Malaysia. *Adv Med Educ Pract*. 2014; 5:177-84.
14. Al-Kabbaa AF, Ahmad HH, Saeed AA, Abdalla AM, Mustafa AA. Perception of the learning environment by students in a new medical school in Saudi Arabia: Areas of concern. *J Taibah Uni Med Sc*. 2012 Dec 31; 7(2):69-75. <https://doi.org/10.1016/j.jtumed.2012.11.001>
15. Mahrous M, Al-Shorman H, Ahmad MS. Assessment of the educational environment in a newly established dental college. *J Educ Ethics Dent*. 2013 Jan 1; 3(1):6. <https://doi.org/10.4103/0974-7761.126935>
16. McAleer S, Roff S. A practical guide to using the Dundee Ready Education Environment Measure (DREEM). *AMEE Medical education guide*. 2001; 23:29-33.
17. Jiffry MT, McAleer S, Fernando S, Marasinghe RB. Using the DREEM questionnaire to gather baseline information on an evolving medical school in Sri Lanka. *Med Teach*. 2005; 27(4):348-52. <https://doi.org/10.1080/01421590500151005>
18. Hassan II. A Study of Stressors and Coping Strategies Among First Year Nursing Students in the College of Poly tech Mara, Kota Bharu, Kelantan [master's thesis] Kota Bharu (Kelantan): Universiti Sains Malaysia; 2007.
19. Abraham R, Ramnarayan K, Vinod P, Torke S. Students' perceptions of learning environment in an Indian medical school. *BMC Med Educ*. 2008; 8:20. <https://doi.org/10.1186/1472-6920-8-20>
20. Mayya S, Roff S. Students' perceptions of educational environment: a comparison of academic achievers and under-achievers at Kasturba Medical College, India. *Educ Health (Abingdon)*. 2004 Nov 1; 17(3):280-91. <https://doi.org/10.1080/13576280400002445>
21. Al-Ayed IH, Sheik SA. Assessment of the educational environment at the College of Medicine of King Saud University, Riyadh. *East Mediterr Health J*. 2008; 14(4):953-9.
22. Varma R, Tiyaagi E, Gupta JK. Determining the quality of educational climate across multiple undergraduate teaching sites using the DREEM inventory. *BMC Med Educ*. 2005 Feb 21; 5(1):8. <https://doi.org/10.1186/1472-6920-5-8>
23. Zamzuri AT, Ali AN, Roff S, McAleer S. Students' perceptions of the educational environment at dental training college. *Malays Dent J*. 2004; 25:15-26.
24. Miles S, Leinster SJ. Comparing staff and student perceptions of the student experience at a new medical school. *Med Teach*. 2009 Jan 1; 31(6):539-46. <https://doi.org/10.1080/01421590802139732>
25. Bassaw B, Roff S, McAleer S, Roopnarine singh S, De Lisle J, Teeluck singh S, et al. Students' perspectives on the educational environment, Faculty of Medical Sciences, Trinidad. *Med Teach* 2003 Jan 1; 25(5): 522-6. <https://doi.org/10.1080/0142159031000137409>