

Research Article

Students' perception of the learning environment in a new medical college by means of the DREEM inventory

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ABSTRACT

Background: The educational environment in a college is one of the most important factors in determining the success of the curriculum and the student. The DREEM inventory is a validated global instrument for measuring the educational environment in undergraduate medical education. A study was undertaken to assess the educational environment as perceived by the students of a new medical college established in India in 2008.

Objectives: To compare the quality of the educational environment in preclinical years as perceived by the first two batches of students in a new medical college so that appropriate remedial measures could be taken, and also to identify gender differences, if any in the students' perception.

Methods: The DREEM questionnaire was administered to 156 students (2008 batch, n=56 and 2009 batch, n=100) on different occasions after a lecture class. Purpose of the study was explained to the students before administering the questionnaire. Confidentiality was maintained. Statistical analysis used: Cronbachs alpha for internal consistency and reliability. Unpaired t test was used for comparison.

Results: The response rate was 100% (256 /256 students). The overall DREEM score was 126.3/200 indicating that perception of the educational environment of the medical school was more positive than negative. However, the study revealed some problem areas within the educational environment.

Conclusion: A large number of diverse and hidden factors influence the way students perceive their educational environment. It should be a continuous process to monitor the feedbacks from the students to identify problem areas so that necessary remedial measures can be instituted at the earliest.

Keywords: Learning environment, Students' perception

INTRODUCTION

Medical education is considered as a complex, demanding and stressful program, on successful completion of which an undergraduate student is required to attain unique and diverse competencies.¹

There is an increasing interest and concern regarding the role of learning environment in undergraduate

medical teaching in recent years.^{2,3} However, studies done from India have been very few and restricted to one city only.^{4,5} It is no longer an acceptable premise in academia that a good or effective learning environment can be provided by just a teacher who possesses virtues such as good communication skills, knowledge, credibility and preparedness which contribute towards teaching excellence. An ideal academic environment may be defined as one that best

prepares students for their future professional life and contributes towards their personal and psychosomatic development along with social well-being as well.¹

Educational environment is one of the most important factors in determining the success of an effective curriculum and subsequently the students' academic success.

The educational environment as perceived by the students is the soul and spirit of the medical school curriculum and this in turn is related to their achievements, satisfaction and success. A conducive environment has a positive and significant impact on students' learning, academic progress and well being.⁶

Considerations of environment of a medical school along the lines of continuous quality improvement and innovation are likely to further the medical school as a learning organisation with attendant benefits.

Dundee Ready Education Environment Measure (DREEM) has been widely used as a tool to gather information about the educational environment in many institutions worldwide.^{4,7,8} It was originally developed at Dundee and has been validated as a Universal diagnostic inventory for assessing the quality of educational environment of different institutes.

In the present study, DREEM score identified the students' perceptions of the elements operating in an educational environment at a new medical college, in New Delhi, India. The college was established in 2008 and offers Bachelor of Medicine and Bachelor of Surgery (MBBS) program. Since the medical college has been established recently, the curriculum and training methodologies employed are frequently being monitored to make it most effective. However, the educational environment as perceived by the students' which is considered to be crucial to the success of the curriculum has not been assessed so far.

This study was undertaken during the IV term for the first batch (56 students) and the second batch (100 students) of students, who were admitted into the college in the years 2008 and 2009 respectively.

The objectives of the study were

1. To compare the quality of educational environment in preclinical years as perceived by the students so that appropriate remedial measures could be taken to enhance the students' learning experience.
2. To identify any gender differences in the students' perception.

METHODS

The DREEM questionnaire was administered to students of 2008 batch (n=56) and 2009 batch (n=100).

DREEM is a 50 –item inventory consisting of 5 subscales:

- (a) Students' Perception of Learning (SPL)- 12 items. (Maximum score is 48).
- (b) Students' Perception of Teachers (SPT)- 11 items. (Maximum score is 44).
- (c) Students' Academic Self Perception (SASP)- 8 items. (Maximum score is 32).
- (d) Students' Perception of Atmosphere (SPA)- 12 items. (Maximum score is 48).
- (e) Students' Social self Perception (SSSP)- 7 items. (Maximum score is 28).

The total score for all subscales is 200.

The questionnaire was administered at the end of the year to both student groups on different occasions after a lecture class. Before the administration of the questionnaire the Class was addressed regarding the purpose and process of collecting the data. It was explained that the data would be used for quality assurance as well as for research purposes and their cooperation was requested. Students not available on a particular day were asked to fill the questionnaire later. Anonymity of the students was maintained.

Each DREEM item was scored 0 to 4 with scores of 4,3,2,1 and 0 assigned for strongly agree, agree, uncertain, disagree and strongly disagree respectively. Reverse scoring was used for the negative items (9 items namely Item 4,8,9,17,25,35,39,48 and 50).

To pinpoint more specific strengths and weaknesses within the learning environment at our institute, items with a mean score of 3 and above were taken as positive points and items with a mean score of 2 and below were taken as problem areas. Items with a mean score between 2 and 3 were considered as aspects of the learning environment that could be enhanced.

The internal consistency and reliability for this study was 0.87 (Cronbachs alpha). The unpaired t test was used for comparison.

RESULTS

Table 1 shows the DREEM scores for the 2008 and 2009 batch students for each of the domains namely Students' Perception of Learning (SPL), Students' Perception of Teachers'(SPT), Students' Academic self-Perception (SASP), Students' Perception of Atmosphere (SPA), Students' Social self perception (SSSP). The mean

domain scores for 2008 batch students' were 32.7 / 48, 28 / 44, 21.8 / 32, 29.0 / 48, 16.6/28. For 2009 batch the mean scores were 31.4 / 48, 27.6 / 44, 20.4 / 32, 28.2/ 48 16.9 / 28. The total DREEM score for 2008 batch was 128.0 / 200 and for 2009 batch were 124.5 / 200.

It was observed that the 2008 batch of students' scored less than 2 for 10 items (48,8,39,17,35,50,3,4,14,28) and more than 3 in 9 items (2,18,40,10,11,12,34,15,46)

The 2009 batch students scored less than 2 for 11 items (48,8,39,5,27,35,50,3,4,14)and more than 3 for 8 items (2,18,40,45,33,15,19,46).

Table 1: The DREEM domain scores for the students of 2008 and 2009 batch.

Domain	2008	2009
SPL Students' Perception of Learning	32.65/ 48	31.41 / 48
SPT Students' Perception of Teachers	28 / 44	27.57 / 44
SASP Students' Academic Self Perception	21.76 / 32	20.37 / 32
SPA Students' Perception of Atmosphere	28 .99 / 48	28.2 / 48
SSSP Students' Social self Perception	16.61 / 28	16.94 / 28
Total DREEM score for the group	128.01 / 200	124.49 / 200

Table 2: Mean (SD) DREEM inventory items where significant differences were observed between the years of study.

Domain	Item	2008 batch	2009 batch	p value
1.	I am encouraged to participate in teaching sessions	2.98(0.86)	2.53(0.93)	0.001
7.	The teaching is often stimulating	2.88(0.94)	2.18(0.85)	0.983
13	The teaching is Registrar centred	2.86(1.07)	2.62(1.03)	0.573
SPL 16	The teaching helps to develop my competence	2.89(1.03)	2.64(0.94)	0.962
20	The teaching is well focussed	2.89(0.97)	3.04(0.74)	0.011
22	The teaching helps to develop my confidence	2.84(1.02)	2.86(0.88)	0.047
24	The teaching time is put to good use	2.75(1.00)	2.88(0.87)	0.133
25	The teaching overemphasizes factual learning.	2.59(1.20)	2.29(1.09)	0.701
38	I am clear about the learning objectives of the course.	2.79(1.07)	2.84(0.90)	0.963
44	The teaching encourages me to be an active learner.	2.75(1.1)	2.47(1.01)	0.486
47	Long term learning is emphasized over short term learning.	2.61(1.27)	2.76(0.91)	0.154
48	The teaching is too teacher centred.	1.82(1.18)	1.78(0.92)	0.031
2	The teachers are knowledgeable.	3.32(0.88)	3.41(0.53)	0.132
6	The teachers adopt a patient centred approach to consulting	2.96(1.08)	2.75(0.98)	0.646
8	The teachers ridicule the students	1.34(1.35)	1.33(1.12)	0.072
SPT 9	The teachers are authoritarian	2.02(1.37)	2.03(1.13)	0.047
18	The teachers appear to have effective communication skills with the patients'	3.07(0.93)	3.23(0.80)	0.052

29	The teachers are good at providing feedback to students.	2.61(1.23)	2.51(1.10)	0.316
32	The teachers provide constructive criticism here	2.54(1.21)	2.41(1.14)	0.451
37	The teachers give clear examples	2.86(1.05)	2.82(0.58)	0.532
39	The teachers get angry in teaching sessions	1.46(1.41)	1.69(1.06)	0.817
40	The teachers are well prepared for their teaching sessions	3.13(1.03)	3.21(0.74)	0.006
50	The students irritate their teachers	2.69(1.11)	2.18(1.06)	0.059
5	Learning strategies which worked for me before continue to work for me now	2.48(1.32)	1.99(1.13)	0.474
10	I am confident about passing this year	3.09(1.10)	2.99(1.09)	0.062
21	I feel I am being well prepared for my profession	2.94(0.99)	2.60(0.87)	0.029*
26	Last years work has been a good preparation for this years work	2.84(1.25)	2.55(1.07)	0.018
SASP 27	I am able to memorize all I need	2.13(1.13)	1.72(0.89)	0.284
31	I have learned a lot about empathy in my profession	2.86(1.26)	2.71(0.97)	0.403
41	My problem solving skills are being well developed here	2.54(1.25)	2.62(0.76)	0.845
45	Much of what I have to learn seems relevant to a career in healthcare	2.88(1.08)	3.19(0.75)	0.078
11	The atmosphere is relaxed during consultation teaching	3.00(1.13)	2.92(0.86)	0.370
12	The course is well time tabled	3.30(0.90)	2.95(1.12)	0.666
17	Cheating is a problem in this course	1.52(1.48)	2.01(1.57)	0.001**
SPA 23	The atmosphere is relaxed during lectures	2.73(0.90)	2.51(0.82)	0.714
30	There are opportunities for me to develop interpersonal skills	2.44(1.27)	2.54(0.90)	0.003
33	I feel comfortable in teaching sessions socially	2.94(0.86)	3.04(0.75)	0.188
34	The atmosphere is relaxed during seminars/ tutorials	3.05(0.94)	2.53(1.02)	0.994
35	I find the experience disappointing	1.25(1.35)	1.05(1.03)	0.123
36	I am able to concentrate well	2.50(1.16)	1.99(1.11)	0.857
42	The enjoyment outweighs the stress of studying medicine	2.19(1.43)	2.22(1.23)	0.775
43	The atmosphere motivated me as a learner	2.66(1.18)	2.63(0.99)	0.900
49	I feel able to ask the questions I want	1.41 (1.28)	1.81(1.19)	0.512
3	There is a good support system for students who get stressed	1.75 (1.44)	1.86(1.37)	0.046
4	I am too tired to enjoy this course	1.75 (1.51)	1.70(1.15)	0.120
14	I am rarely bored on this course	1.57 (1.41)	1.61(1.15)	0.838
SSSP 15	I have good friends in this course	3.50(0.89)	3.29 0.94)	0.853
19	My social life is good	2.91(1.13)	3.04(1.07)	0.856
28	I seldom feel lonely	1.93(1.26)	2.15(1.18)	0.002
46	My accommodation is pleasant	3.20(1.02)	3.29(0.69)	0.055

*p<0.05, **p<0.01

Table 3: The mean of items which showed statistically significant differences between the 2008 batch and 2009 batch students.

	2008 batch	2009 batch	p value
I am encouraged to participate in teaching sessions	2.98(0.86)	2.53(0.93)	0.001
The teaching is well focussed	2.89(0.97)	3.04(0.74)	0.011
The teaching helps to develop my confidence	2.84(1.02)	2.86(0.88)	0.047
The teaching is too teacher centred	1.82(1.18)	1.78(0.92)	0.031
The course organizers are authoritarian	2.02(1.37)	2.03(1.13)	0.047
The course organizers are well prepared for their teaching sessions	3.13(1.03)	3.21(0.74)	0.006
I feel I am being well prepared for my profession	2.94(0.99)	2.60(0.87)	0.029*
Last years work has been a good preparation for this years work.	2.84(1.25)	2.55(1.07)	0.018
Cheating is a problem in this course	1.52(1.48)	2.01(1.57)	0.001**
There are opportunities for me to develop interpersonal skills	2.44(1.27)	2.54(0.90)	0.003
There is a good support system for registrars who get stressed	1.75 (1.44)	1.86 (1.37)	0.046
I seldom feel lonely	1.93(1.26)	2.15(1.18)	0.002

Table 4: The items showing significant differences between male and female students in the 2008 batch and 2009 batch.

Items	F=62	M=94	p
2. The teachers are knowledgeable	3.53(0.53)	3.28(0.74)	0.020
3. There is a good support system for students who are stressed	2.27(1.03)	1.52(1.30)	0.000
8. The teachers ridicule the students	0.81(0.79)	1.68(1.31)	0.000
9. The teachers are authoritarian	1,66(1,17)	2.27(1.19)	0.002
17. Cheating is a problem in this school	2.15(1.45)	1.63(1.59)	0.041
20. The teaching is well focussed	3.16(0.68)	2.87(0.89)	0.032
24. The teaching time is put to good use	3.06(0.70)	2.68(1.0)	0.009
29. The teachers are good at providing feedback	2.84(0.94)	2.35 (1.22)	0.009
31. I have learned a lot about empathy	3.06(0.85)	2.56(1.17)	0.004
35. I find the experience disappointing	0.69(0.9)	1.40(1.22)	0.000
36. I am able to concentrate well	2.42(1.0)	2.01(1.21)	0.029
40. The teachers are well prepared for their class	3.35(0.55)	3.06(0.99)	0.037
44. The teaching encourages me to be an active learner	2.87(0.80)	2.37(1.15)	0.003
48. The teaching is too teacher centric	1.52(0.95)	1.98(1.02)	0.005
49. I feel able to ask the questions I want.	2.68(0.76)	2.16(1.24)	0.004

DISCUSSION

The students were interested in completing the DREEM questionnaire as evidenced by the good response rate. The overall mean DREEM score for our medical college was 126.3 / 200 (n=156) which indicated that the students positively evaluated the environment. There have been very few Indian studies on the students' perceptions of the medical college environment till date.^{4,5}

The DREEM scores for medical schools globally have been reported in Srilanka as 108 / 200⁵, in Nepal as 130 / 200, in Nigeria as 118 / 200⁹, in Pakistan as 125 / 200² and in UK as 139 / 200¹⁰.

The first batch of students (2008 batch) felt more encouraged to participate in teaching sessions but felt that the teaching was too teacher centered. They had a positive view on last years' work being a good preparation to the present years' work, and felt that they were being trained well for their profession. The first batch (2008 batch) had only 56 students. Thus a smaller batch size facilitated a better teacher-student interaction and the students felt encouraged to participate in teaching sessions and experienced a more relaxed atmosphere during tutorials. The small and the only batch in the college also had its downside in the fact that the students' felt more lonely.

The second batch of students (2009 batch) emphasized that the teaching was well focussed. They also felt that the teachers were well prepared for their classes and that the teaching helped them to develop their confidence. The 2009 batch felt that cheating had crept in and was a problem in the college. They did not report loneliness and felt that they had opportunities to develop interpersonal skills. This view could be well understood since all the medical students stayed in the hostel premises, the 2009 batch students had more friends to interact with and develop interpersonal skills. As the medical college entered its second year, the scourge of cheating had also emerged. The interaction and informal feedback received from the first batch of students had helped the faculty to make teaching more responsive to the students' needs which was reflected in the response of the second (2009 batch) of students

Gender wise there were significant differences between males (n=94) and females (n=62) as given in Table 4. Overall the female students had a more positive experience as compared to the males. The male students perceived the teaching to be less focussed and too teacher centred with the teachers being authoritarian. They also felt that the teachers often ridiculed the students. Though both males and females perceived the teachers to be knowledgeable, the female students felt that the total teaching time was put to good use, the teachers were well prepared for their classes and the teachers were good at

providing feedback. The girl students also categorically felt that the issue of cheating was a problem in the college. The Female students rated their teachers more positively. This is in contrast to the study reported by Hettie Till who reported lower DREEM scores for females as compared to males.¹¹ Another significant difference observed was the male students' social self perception. They appeared to be more stressed, were unable to concentrate well and also felt that there was a lack of any support system for students who were stressed. They felt intimidated to ask the questions they wanted and found the overall medical college experience disappointing. The impression that the teachers are knowledgeable and well prepared for their classes but are too authoritarian and strict has also been echoed by another Indian study.⁴ The same study also reported that the teaching emphasised more on factual learning with the result that students felt stressed.

It has been suggested that since individual styles of learning and preferences vary considerably, a more student- centric approach be adopted where the student is encouraged to actively "learn" rather than being "taught" (passive learning). A single "one size fits all" approach may be modified and educational content could be made available to students through a variety of methods. It is also imperative that the students are made to take responsibility for their own learning. Since, the current medical college curriculum is overcrowded, inflexible and promotes memorization of factual knowledge over development of critical thinking skills and reasoning, the students adapt themselves by adopting convenient strategies of passive learning and get discouraged from critical thinking. This could possibly be due to the fact that the focus of the curriculum is on performance rather than on learning.

In a positive academic environment, the overall well being of the students needs to be taken into consideration in terms of workload. A balance could be achieved between the academic time. Which includes hours spent in college and time spent in studying for exams, and recreation time. Daily schedules could be designed so as to maximise student performance and contribute to effective time management. Assessments, which are an integral part of the educational process need to be carefully planned and executed. They need to have clear objectives with provision for a feedback so that remediation is available to those students, who underperform and require additional support and monitoring.

The experience of stress symptoms e.g. hostility, depression and other debilitating effects has been well documented by Abdulghani and others and range from mild to severe.¹² The college environment alone is not completely responsible for being the source of stress. It is also influenced by the students' personality type, gender,

socio cultural differences and emotional intelligence etc. A formal or informal support system could be developed so as to make the students more “positive” and more in “control of their education” which would help alleviate their stress. The same study reported the prevalence of stress to be as high as 63% among medical students in Saudi Arabia.¹²

In his study, Haden¹³ describes that, when the faculty and the students exhibit humanistic values, there is freedom to learn without intimidation. This is characterised by close professional relationship between faculty and students, fostered by mentoring, advising and small group interactions. This provides a background for development of interpersonal skills necessary for learning and patient-doctor interactions.

In any medical college, besides the quality of education delivered, the ethos and values of the educational environment are equally or more important. Since, the quality standards, pressures and expectations are high, an atmosphere of understanding, tolerance and cooperation needs to be developed amongst the faculty and students. Stress may lead to violation of ethical rules and cheating during exams is thus a common observation.

CONCLUSION

It has been observed that a large number of diverse and hidden factors ranging from class size, leisure time, assessment procedures, relations with peers and faculty, extracurricular opportunities influence the way the students perceive and experience their educational environment. In fact, the content and quality of education imparted may have little influence on the satisfaction of students. It is thus important that the educational environment is focussed on learning rather than passive delivery and an environment be created which emphasizes the students’ own self directed learning.

In view of the feedback received from the students, more of integrated teaching sessions, PBL (problem based learning) and case studies have been included in the revised curriculum for subsequent batches. The “environment” of the Medical College should be one which encourages academic excellence and psychosocial well being through motivation and positive inputs rather than stress generation so as to make the learning experience more enriching and fulfilling for the undergraduate student.

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