Research Article

A rapid appraisal of educational environment of an evolving medical school in northern India

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ABSTRACT

Background: One needs to assess the learning environment to identify the lacunae so that appropriate and timely remedial measures can be undertaken and gaps can be bridged to enhance the students' learning experience. **Objectives:** The objective of this study is to evaluate the students' perception on learning environment in an evolving Indian Medical School. **Materials and Methods:** The Dundee Ready Educational Environment Measure (DREEM) questionnaire was given to 282 students during November 2015 to January 2016. The questionnaires were handed out to the students in the classrooms by the authors themselves just after the completion of classes. The time allocated for the completion of the questionnaire was 45 min. **Results:** Overall DREEM score was 130.63/200. The mean score for student's perceptions of learning (SPL) was 31.51/48 (standard deviation [SD] = 9.68); for student's perceptions of teachers (SPT) 28.04/44 (SD = 8.12); for student's academic self-perceptions 21.5/32 (SD = 6.81); for student's perceptions of atmosphere 32.46/48 (SD = 9.96); and for student's social self perceptions (SSSP) 17.12/28 (SD = 6.11). Mean DREEM values were highest among males and females of 2nd year. In the domain of SPL, students were of the view that teachers were teaching more of the facts and figures in the classrooms. In the domain of SPT, students were in the view that teachers ridicule them. In the domain of SSSP, students did not feel the existence of good support system for stressed students. **Conclusion:** Targeted interventions are needed in identified areas to bridge the gap and make the learning experience more soothing for our students. Mentoring may be introduced to interact the students and help them in creating the better support system for them.

KEY WORDS: Teachers; Learning; Atmosphere; Academic; Social Self-perception

INTRODUCTION

Nowadays, role of educational environment has received due to importance in the field of undergraduate medical education. Success of an effective curriculum largely depends on educational environment.[1] Students' academic success is determined by learning environment of any medical school, and it becomes extremely important if medical school is in evolving stage.[2] Today's medical student is tomorrow's health-care provider and medical teacher. Level of competence of workforce in any field or sector including health sector reflects the educational institution they attended. It is of the utmost importance to all their future patients and the broader community.[3] The educational environment is generally multifaceted and unique to each educational institution. Observations of various investigations across the globe have shown that the educational environment affects students' achievement, happiness, motivation, and success.[3] Nowadays, a lot of efforts are directed toward bringing a reform in the educational environment so as to make it student friendly without compromising the standards and the quality of

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learning. The quality of educational environment has been recognized to be critical for effective learning.

Effective management of the curriculum is only possible with systematic feedback and appraisal. There are only limited reports from India in this regard. One needs to assess the learning environment to identify the lacunae so that appropriate and timely remedial measures can be undertaken and gaps cannot be bridged to enhance the students' learning experience. Outcomes and outputs of students' achievement, satisfaction, and success have a definitive bearing on teaching-learning environment of the school. Study of the curriculum is largely dependent on a study of the environment.[4,5] Curriculums reflect the teaching-learning environment of the medical school, which embraces everything that is happening there. The perceptions carry more weight for an institution in evolving phase. The study would cover the gamut of factors contributing toward the quality of educational environment in the institution. This evaluation would provide valuable information, which can be utilized to improve the quality of educational environment in an evolving medical school. The Dundee Ready Educational Environment Measure (DREEM) is a culturally non-specific, generic instrument. This tool was designed to measure the educational environments in the health professions. This tool has been found to be extremely reliable in a variety of settings; with its help, organizations can distinguish inadequacies and devise modifications in curriculum.

To the best of our knowledge such an evaluation of educational environment of growing Shaheed Hasan Khan Mewati (SHKM) Government Medical College, Haryana has not been closely investigated till date. Only a very few studies have been conducted on this topic and none from the state of Haryana. This is the first time a study of this kind is being undertaken in our college. The paucity of literature toward scope of improvements in a medical school in evolving phase also warrants this study. Therefore, the present study was planned with the aim of evaluating the students' perception of their learning environment in an evolving Indian medical school. An additional objective was to identify whether there is any gender difference in the students' perceptions.

MATERIALS AND METHODS

The present cross-sectional study was planned and executed by the Department of Otorhinolaryngology in collaboration with the Department of Community Medicine and Medical Education Unit, SHKM Government Medical College, Mewat, during November 2015 to January 2016 using pretested self-administered Universal diagnostic inventory, DREEM, a tool to evaluate the learning environments of medical students. DREEM is a validated tool, and it was developed by an international Delphi panel.[6]

DREEM is a 50-item inventory, consisting of 5 subscales:

a. Students' perceptions of learning (SPL)-12 items; maximum score is 48;
b. Students' perceptions of teachers (SPT)-11 items; maximum score is 44;
c. Students' academic self-perceptions (SASP)-8 items; maximum score is 32;
d. Students' perceptions of atmosphere (SPA)-12 items; maximum score is 48;
e. Students' social self-perceptions (SSSP)-7 items; maximum score is 28.

The total score for all subscales is 200, indicating the ideal educational environment. The inventory consists of 50 items and each item scored on a five-point Likert scale with 4 = strongly agree, 3 = agree, 2 = unsure, 1 = disagree, and 0 = strongly disagree. Nine of the 50 items (4. 8, 9, 17, 25, 35, 39, 48, and 50) were negative and scored in reverse. Score of two or less in any individual item indicate problem area and need a further probe to root cause of it.

This institution is currently following the traditional curricula. The total duration of the undergraduate course curriculum is 5½ years and is divided into three phases: Preclinical for first (first and second semester), paraclinical for second (third to fifth semester), and clinical for 3rd year (sixth to ninth semester), followed by an internship for 1 year.

At the time of the study, there were three batches (2013, 2014, and 2015 batch; first to fifth semester) of students were currently studying in the institution. Universal coverage of the students was planned. All the students (first to fifth semester) were included in this survey. The questionnaires were handed out to the students in the classrooms by the authors themselves just after the completion of classes following a brief explanation of the purpose of the study including anonymity and voluntary-based participation. The time allocated for the completion of the questionnaire was 45 min. Number of questionnaires equal to number of present students in classes were handed out and collected back. Absent students were tried to contact in forthcoming classes with the help of same semester students. Every effort was made to counsel students so that maximum students participate in the survey. The study adhered to the tenets of the Declaration of Helsinki for research in humans. Permission of the Institutional Ethics Committee was sought before the commencement of the study. Initially, verbal informed consent was obtained while briefing the students, but written informed consent was obtained along with the questionnaire. Attempts were made to contact every student. However, those students who could not be contacted after three attempts and those not consenting were excluded from the study.

For statistical analysis of the data, for the whole 50-item inventory, scores for categorized domains and each item were both expressed as mean ± standard deviation (SD). Data were

analyzed using the Statistical Package for Social Sciences, version 20 (IBM, Chicago, USA). Valid conclusions were drawn using appropriate statistics such as mean, SD, and proportions. One-Way ANOVA and *t* test were used to identify the level of significance between subgroups. Two tailed $P < 0.05$ was considered statistically significant.

RESULTS

The DREEM questionnaire was given to 282 students. The overall response rate was 93.97% (265/282). Eight questionnaires were incomplete; hence, they were excluded from the study. Data of 257 study subjects were finally analyzed in this study. Gender wise, 217 were male and 40 were female students. The mean age of the subjects was 21.7 years (SD = 2.7). Overall DREEM score was 130.63/200 (SD = 45.86) collectively. The mean score for SPL was 31.51/48 (SD = 9.68); for SPT 28.04/44 (SD = 8.12); for SASP 21.5/32 (SD = 6.81); for SPA 32.46/48 (SD = 9.96); and for SSSP 17.12/28 (SD = 6.11) (Table 1).

On analyzing, DREEM scores across students studying in various years, 2nd year students had highest mean DREEM score (132.13/200), followed by 1st year and 3rd year students (130.32/200 and 129.74/200), respectively. The difference was not statistically significant (Table 2).

Sex-wise and year-wise analysis of DREEM scores showed that mean DREEM values were highest among males and females of the 2nd year, whereas these scores were found to be lowest for males and females of 3rd year (Table 3).

Mean score of two or less was observed in certain individual items of DREEM. In the domain of SPL, students were of the view that teachers were teaching more of the facts and figures in the classrooms (teaching overemphasizes factual learning, mean score = 1.89). In the domain of SPT, students were in the view that teachers ridicule them. In the domain of SSSP, students did not feel existence of good support system for stressed students (Table 4).

Table 1: Subscale and total DREEM mean and percentage score in all students

Domain of DREEM	Maximum score	Mean	Percent of perception
Domain 1: SPL	48	31.51	65.65
Domain 2: SPT	44	28.04	63.73
Domain 3: SASP	32	21.5	67.19
Domain 4: SPA	48	32.46	67.63
Domain 5: SSSP	28	17.12	61.14
Total DREEM score	200	130.63	65.32

SPL: Student's perceptions of learning, SPT: Student's perceptions of teachers, SASP: Student's academic self-perceptions, SPA: Student's perceptions of atmosphere, SSSP: Student's social self-perceptions, DREEM: Dundee Ready Educational Environment Measure

Table 2: Year-wise DREEM mean score in study participants

Year	*n*	Mean±SD	*P* value*
1st	90	130.32±45.30	0.945
2nd	75	132.13±48.19	
3rd	92	129.74±47.88	

*ANOVA. SD: Standard deviation, DREEM: Dundee Ready Educational Environment Measure

Table 3: Year- and gender-wise DREEM mean score in study subjects

Year	Gender	*n*	Mean±SD	*P* value*
1st	Male	70	130.82±44.59	0.842
	Female	20	128.55±46.93	
2nd	Male	61	132.29±48.97	0.953
	Female	14	131.46±42.70	
3rd	Male	86	129.89±47.64	0.893
	Female	6	127.24±47.66	

*Independent sample *t* test. DREEM: Dundee Ready Educational Environment Measure, SD: Standard deviation

DISCUSSION

This study made a serious attempt to evaluate the students' perception of their learning environment in an evolving medical school in the state of Haryana. 5 subscales or domains of DREEM appraised weakness or strength of educational environment. Overall DREEM score was 130.63/200. The mean score for SPL was 31.51/48 (SD = 9.68); for SPT 28.04/44 (SD = 8.12); for SASP 21.5/32 (SD = 6.81); for SPA 32.46/48 (SD = 9.96); and for SSSP 17.12/28 (SD = 6.11). Mean DREEM values were highest among males and females of 2nd year. In the domain of SPL, students were of the view that teachers were teaching more of the facts and figures in the classrooms. In the domain of SPT, students were in the view that teachers ridicule them. In the domain of SSSP, students did not feel the existence of good support system for stressed students.

The overall mean DREEM score for all students was found to be 131 (65%) out of 200. There have been very few Indian studies on the students' perceptions of the medical college environment till date, so for comparison purpose, we got only a few studies. Mayya and Roff analyzed educational environment of Kasturba Medical College, Karnataka and reported a little lower DREEM score, i.e., 107/200 as compared to our study.[7] Abraham et al. and Kiran and Gowdappa reported DREEM scores as 117/200 and 121.5/200, respectively, from other parts of India.[8,9] The DREEM scores have been calculated from medical schools globally. Roff et al. calculated DREEM score among Nigerian and Nepali students and the score was 118/200 and 130/200, respectively.[10] Khan et al. studied

Table 4: Item mean score in all students

Domain	Item no.	Item	Mean
1. SPL	1	I am encouraged to participate in classes	2.80
	7	The teaching is often stimulating	2.72
	13	The teaching is student centered	2.72
	16	The teaching helps to develop my competence	2.50
	20	The teaching is well focused	2.82
	22	The teaching helps to develop my confidence	2.75
	24	The teaching time is put to good use	2.99
	25	The teaching overemphasizes factual learning	1.89
	38	I am clear about the learning objectives of the course	2.81
	44	The teaching encourages me to be an active learner	2.78
	47	Long term learning is emphasized over short-term learning	2.54
	48	The teaching is too teacher centered	2.19
2. SPT	2	The teachers are knowledgeable	2.95
	6	The teachers are patient with patients	2.67
	8	The teachers ridicule the students	1.98
	9	The teachers are authoritarian	2.40
	18	The teachers have good communication skills with patients	2.78
	29	The teachers are good at providing feedback to students	2.68
	32	The teachers provide constructive criticism here	2.12
	37	The teachers give clear examples	2.96
	39	The teachers get angry in class	2.16
	40	The teachers are well prepared for their class	2.77
	50	The students irritate the teachers	2.57
3. SASP	5	Learning strategies which worked for me before continue to work for me now	2.73
	10	I am confident about my passing this year	2.96
	21	I feel I am being well prepared for my profession	2.58
	26	Last year's work has been a good preparation for this year's work	2.67
	27	I am able to memorize all I need	2.39
	31	I have learned a lot about empathy in my profession	2.79
	41	My problem-solving skills are being well developed here	2.73
	45	Much of what I have to learn seems relevant to a career in medicine	2.65
4. SPA	11	The atmosphere is relaxed during the ward teaching	2.48
	12	This college is well time tabled	2.80
	17	Cheating is a problem in this college	2.44
	23	The atmosphere is relaxed during lectures	2.75
	30	There are opportunities for me to develop interpersonal skills	2.60
	33	I feel comfortable in class socially	2.86
	34	The atmosphere is relaxed during tutorials/seminars	2.75
	35	I find the experience disappointing	2.88
	36	I am able to concentrate well	2.94
	42	The enjoyment outweighs the stress of studying medicine	2.53
	43	The atmosphere motivates me as a learner	2.75
	49	I feel able to ask the questions I want	2.68
5. SSSP	3	There is a good support system for students who get stressed	1.86
	4	I am too tired to enjoy the course	2.22
	14	I am rarely bored on this course	2.00
	15	I have good friends in this college	3.14
	19	My social life is good	2.84
	28	I seldom feel lonely	2.43
	46	My accommodation is pleasant	2.63

SPL: Student's perceptions of learning, SPT: Student's perceptions of teachers, SASP: Student's academic self-perceptions, SPA: Student's perceptions of atmosphere, SSSP: Student's social self-perceptions

teaching-learning environment in Pakistan and obtained a score of 125/200.[11] Another study from the United Kingdom by Varma et al. reported DREEM score of 139/200.[12] It is not easy to compare DREEM scores across countries because this issue is highly dependent on local context, cultural differences, and unrecognized confounding factors. On the other hand, the type of curricula, followed by various institutions traditional, innovative, or any other type also complicates the issue.

Regarding various domains, SPL was found to be 65.65% (mean = 31.51) in our study. This figure indicates that students have perception in the right direction, i.e., positive perception

for learning. Students wish to learn more and more. SPT was 63.73% (mean = 28.04). This number signifies that students have a positive mindset for their teachers. In the domain of SASP, the score was 67.19% (mean = 21.5). This figure expresses the positive sense of self-perception of students. About SPA, the score was 67.63% (mean = 32.46). It indicates that there are many issues, which need to change. Regarding SSSP, the score was 61.14% (mean = 17.12). This figure reflects that they are enjoying the place. It can be stated that all the students agreed a more positive approach regarding their perception of learning, moving in a right direction for the perception of teachers, and feeling more on the positive side for their academic self-perception.

Regarding comparing the scores of various domains, the highest score was obtained in SPA (67.63%) and lowest score in SSSP (43.50%). A study from Trinidad[1] found the highest score in SASP and lowest in SSSP, whereas another study from Saudi Arabia found lowest score in SASP and in SPL and atmosphere.[13] Gender wise, the overall DREEM score did not show much difference in the two groups. Mayya and Roff observed that females scored lower DREEM score compared to their male counterparts in a study conducted among students of a South Indian Medical College.[7] In a study reported by Till, the mean DREEM scores were lower for female students compared to the males.[14] Some of the aspects, such as lack of confidence in passing the examination and quality of social life, were thought behind existence of such gender differences. It could also be due to more supportive/empathetic behavior among females in the study population because of relatively lesser number of female students as compared to male students.

DREEM inventory can be utilized to find out the shortcomings or gaps within the educational environment if any, which prevents to achieve highest levels of teaching and learning.[14] A score of < 2 in individual item could be because of our curriculum content overload, teachers attitude toward student, stressful environment, and too much formative assessment system. Details of DREEM say that score of two or less in any individual item indicate problem area and need further probe to root cause of it.[15]

On probing further in individual domains, in the domain of SPL, indicators state on positive side, teaching was student centered, it was well focused, helped in building the confidence, teaching time was put to good use, but teachers pressed them with factual learning. This observation is of paramount importance for the teachers so as to modify their teaching style. This is also important observation for planners involved in upgradation of teachers. Teachers should be sent to attend basic and advanced training courses in medical education at various designated nodal centers across the country in a phased manner. Teaching-learning strategies need to be tailored to meet the students' learning preferences.[16] As specified by the Medical Council of India, the Faculty Development Programs are designed to improve the quality of medical education by training and sensitizing teachers about new concepts in teaching and assessment methods.[17] Brainstorming of students with problem-based learning (PBL) sessions and short-term student (STS) research projects could be helpful in developing rationale and critical thinking among them.

In the domain of SPT, students were in the view that subject matter is taught with clear examples, teachers are good at providing feedback to students, teachers communicate well, teachers are knowledgeable on the one hand, but teachers make fun of them on the other hand. This can create an artificial gap between teachers and students. Learning environment should be a student friendly then only we can expect maximum output from our students. Student's friendly environment helps to develop the student's confidence.[18]

Students did not feel existence of good support system for stressed students as per findings of domain of SSSP. This is a real challenge for college administration and concerned authorities to find out lacunas in the existing support system for stressed students. It is time to find out current levels of stress and coping strategies among medical students. There is a need to introduce the mentoring system. Mentors may be necessary to interact the students and help them in creating the better support system for them. The importance of mentors and academic advisors have also been pointed out by AL-Faris et al. from Saudi Arabia[19] to achieve better educational environment. An innovative idea of mentoring with the name of "Anubandh" has been rolled out to develop a support system for students.[20]

This study has several strengths. First, we have evaluated the students' perception of their learning environment in an evolving medical school. This study has a more relevance as long-lasting impact can be achieved if gaps are identified well in time and bridged at the earliest. Second, all the investigations were conducted by authors of the study only, which creates a sense of uniformity. The study has some limitations as well. Some may argue that the results obtained may not be applicable to all the medical colleges. Results may vary with different geographical terrain. More multicentric studies need to be carried out. We did not measure the improvements after rectifications of deficiencies identified.

CONCLUSION

The outcomes of this investigation can be exploited in strategic planning to create a better educational environment at SHKM Government Medical College, Mewat. Interventions are needed in identified areas to make the learning experience more soothing educational environment for our students. Implementation of PBL sessions and STS research project are recommended which are intended to make the students independent learners. Mentoring may be introduced to

interact the students and help them in creating the better support system for them.

REFERENCES

1. Bassaw B, Roff S, Mc Aleer S, Roopnarinesingh S, de Lisle J, Teelucksingh S, et al. Students' perspectives on the educational environment, Faculty of medical sciences, Trinidad. Med Teacher. 2003;25:522-6.
2. Jamaiah I. Review of research in learning environment. J Univ Malaya Med Cent. 2008;11(1):7-11.
3. Imran M, Singh A, Goel S, Sharma P, Vakil N, Bharathi M, et al. Identifying scope of improvement in educational environment in the subject of pharmacology using DREEM inventory. Indian J Sci Res. 2015;6(2):97-102.
4. 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;12 Suppl 1:120-30.
5. Genn JM. AMEE Medical Education Guide No 23 (Part 1): Curriculum, environment, climate, quality and change in medical education-a unifying perspective. Med Teach. 2001;23(4):337-44.
6. 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.
7. Mayya SS, Roff S. Students' perceptions of educational environment: A comparison of academic achievers and under-achievers at Kasturba medical college, India. Educ Health. 2004;17:280-91.
8. Abraham R, Ramnarayan K, Vinod P, Torke S. Students' perceptions of learning environment in an Indian medical school. BMC Med Educ. 2008;8:20.
9. Kiran HS, Gowdappa BH. 'DREEM' comes true-students' perceptions of educational environment in an Indian medical school. J Postgrad Med. 2013;59(4):300-5.
10. Roff S, McAleer S, Ifere OS, Bhattacharya S. A global diagnostic tool for measuring educational environment: Comparing Nigeria and Nepal. Med Teach. 2001;23(4):378-82.
11. 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;61(9):885-8.
12. Varma R, Tiyagi E, Gupta JK. Determining the quality of educational climate across multiple undergraduate teaching sites using the DREEM inventory. BMC Med Educ. 2005;5(1):8.
13. Al-Hazimi A, Al-Hyiani A, Roff S. Perceptions of the educational environment of the medical school in King Abdul Aziz University, Saudi Arabia. Med Teach. 2004;26(6):570-3.
14. Till H. Identifying the perceived weaknesses of a new curriculum by means of the Dundee Ready Education Environment Measure (DREEM) inventory. Med Teach. 2004;26(1):39-45.
15. Roff S, McAleer S. What is educational climate? Med Teach. 2001;23(4):333-4.
16. Kharb P, Samanta PP, Jindal M, Singh V. The learning styles and the preferred teaching-learning strategies of first year medical students. J Clin Diagn Res. 2013;7(6):1089-92.
17. Zodpey S, Sharma A, Zahiruddin QS, Gaidhane A, Shrikhande S. Faculty development programs for medical teachers in India. J Adv Med Educ Prof. 2016;4(2):97-101.
18. Patil AA, Chaudhari VL. Students' perception of the educational environment in medical college: A study based on DREEM questionnaire. Korean J Med Educ. 2016;28(3):281-8.
19. Al-Faris EA, Naeem N, McAleer S, Qureshi R, Vleuten CV, Irfan F, et al. Why a teacher-centered medical school curriculum may result in a poor educational environment? J Contemp Med Educ. 2014;2(2):85-90.
20. Dashputra A, Chari SS, Gade S. Perception of educational environment in a private medical college in central India. Int J Educ Sci. 2014;6(3):489-96.

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