Students Perception of Educational Environment During Paraclinical Training in a Government Medical College in North-East India - A Cross-Sectional Study

Abhijit Datta[1], Sayantika Ghosh[2], Rituparna Das[3]

[1]Department of Pathology, Agartala Government Medical College, Agartala, Tripura, India. [2]Department of Haemato-Oncology and Bone Marrow Transplant, BLK Super speciality Hospital, New Delhi, India. [3]Department of Community Medicine, Agartala Government Medical College, Agartala, Tripura, India.

ABSTRACT

BACKGROUND

A warm, optimally supportive, challenging, and competitive environment is widely regarded as an essential pre-requisite for best possible learning. Students' satisfaction on educational environment influences their learning approach and outcome. The Dundee ready educational environment measure (DREEM) is a globally accepted valid tool to assess educational environment during undergraduate medical education, in which students are scored for 50 items with a total global score of 200. This study was undertaken, as there had been paucity of relevant data from north-east India, with the aim of assessing students' perception of their educational environment in paraclinical training during second professional MBBS course.

METHODS

This was a cross-sectional survey-based study conducted during the months of September and October, 2017 involving 168 second professional MBBS-students of third and fifth semesters of Government Medical College of north-east India. DREEM questionnaire was used to assess the educational environment, as perceived by the students, during paraclinical training.

RESULTS

This study showed that the mean global score involving all the domains was 119.58 ± 46.95, suggesting a 'more positive than negative' educational environment prevailing in the institute during paraclinical training. The individual domain scores for their - perception of learning was 29.90 ± 5.32, perception of teachers was 27.68 ± 4.13, academic self-perception was 18.96 ± 3.78, perception of atmosphere was 26.93 ± 6.40 and social self-perception was 16.11 ± 3.34, suggesting that the training was moving in right direction across all the domains of educational environment, though was not optimally perfect.

CONCLUSIONS

The present study revealed a suboptimal perception of undergraduate medical students in all the domains of educational environment in paraclinical phase. The overall educational environment during paraclinical teaching moving in a satisfactory direction though was not excellent. Social perspectives of the educational environment need to be further improved.

KEYWORDS

Educational Environment, DREEM Inventory, Paraclinical Training, Students' Perception, Global Score

Corresponding Author:
Dr. Abhijit Datta,
Professor,
Department of Pathology,
Agartala Government Medical College,
Agartala-799006, Tripura, India.
E-mail: abhijitpath62@gmail.com

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BACKGROUND

A warm, supportive, challenging and competitive environment is generally considered as an essential pre-requisite for optimal learning. Even modification of the mere infrastructure of a classroom is also an important step to improvise the environment, which may significantly boost the student's learning. Educational environment is one of the most important determining factors of an effective curriculum. Knowing the perception of students of their educational environment is very vital for operation of a holistic curriculum.[1] Student's academic progress, behaviour and sense of well-being are greatly influenced by prevailing educational environment in which they carry out their learning activities.[2,3,4]

The World Federation for Medical Education highly stressed upon the learning environment for evaluation of medical education system.[5] Studies on impact of educational environment on learning dates back to 1970s. In 1970, Arnold Rothman and his colleague from University of Toronto studied on learning environment questionnaire (LEQ). It was a 65 item survey with scales for goal direction, orientation to learning, internal and external pressure on students, student interaction and authoritarianism in the medical school.[6] Few years later in 1978 RE, Marshall from Chicago Medical School adopted 55 items, over half of Rothman's total items, in the Medical School Learning Environment Survey (MSLES) to measure the significant dimensions of learning environment during his research on the matter.[7] And finally, the Dundee ready educational environment measure (DREEM) questionnaire, developed by Delphi panel was introduced in 1990s and was validated and published by Roff in 1997.[8] The DREEM has been widely used to generate institutional profiles on educational environment.[8,9,10] With the application of DREEM, the main aim is to evaluate whether the current educational system provides a student-satisfactory learning environment and to analyse the variables responsible for the discrepancies, if present in the institution. This will eventually provide baseline information that can be used for remediation of the areas required and thus it may be considered as a very effective step in the assessment of success in implementation and monitoring of a holistic curriculum in teaching medical institutes.

Data on educational environment in paraclinical training of undergraduate medical students in India, as a whole, is inadequate and in north-east India it is quite deficient. Hence, this study was conducted to assess undergraduate-student's perception of educational environment during para clinical training in a Govt. Medical College in north-east India.

Objectives

To estimate undergraduate student's perception of educational environment during paraclinical training in a Government Medical College in north-east India.

METHODS

This was a cross-sectional survey-based study carried out, during the two months period of September and October, 2017, amongst the third and fifth semester students of second professional MBBS course of this Government Medical College of north-east India. All the 200 undergraduate medical students enrolled in second professional MBBS course (third and fifth semesters) were eligible to participate in the study. However, the present study included 168 such students who consented to take part in the study and provided their written feedback by filling in DREEM questionnaire and submitting the same for analysis by the study team (response rate of 84 %).

The students were also informed that all their responses would be anonymous and would be kept confidential. After taking written informed consent, the DREEM questionnaire was administered to them for assessing their perception of educational environment during paraclinical training. The DREEM is a self-administered, close ended inventory that gives a possible minimum score of 0 to a maximum score of 200 against 50 statements (items). Each of the 50 items/statements is scored on a five-point Likert scale (4 = strongly agree, 3 = agree, 2= unsure, 1 = disagree and 0 = strongly disagree). Negatively keyed items are scored in reverse order while computing.

The present study considered a mean score for each item of ≥ 3 as positive perception, a score of ≥ 2.0 to < 3.0 as that the item could be enhanced and a mean score of < 2.0 was considered problematic areas.

The guidelines suggested by McAleer and Roff in 2001, as represented in Table-1, were followed for the interpretation of the overall DREEM score.[11]

Domain	Score	Interpretation
Student's perceptions of learning	0–12	Very poor
	13–24	Teaching is viewed negatively
	25–36	A more positive approach
	37–48	Teaching highly thought of
Student's perceptions of teachers	0–11	Abysmal
	12–22	In need of some retraining
	23–33	Moving in the right direction
	34–44	Model teachers
Student's academic self-perception	0–8	Feeling of total failure
	9–16	Many negative aspects
	17–24	Feeling more on the positive side
	25–32	Confident
Student's perception of atmosphere	0–12	A terrible environment
	13–24	There are many issues that need changing
	25–36	A more positive atmosphere
	37–48	A good feeling overall
Student's social self-perceptions	0–7	Miserable
	8–14	Not a nice place
	15–21	Not too bad
	22–28	Very good socially
Overall / Global score	0–50	Very poor
	51–100	Plenty of problems
	101–150	More positive than negative
	151–200	Excellent

Table 1. McAleer and Roff Practical Guidelines to Interpret DREEM Scores[11]

Statistical Analysis

The data was subjected to statistical analysis using Statistical Package for Social Sciences (SPSS) software package 19 (IBM Corp, USA) for descriptive and inferential investigation. Mean, standard deviation and standard error of the mean (with 95 % confidence intervals) were generated for each item on the DREEM inventory along with the total score and item / subscale scores for the DREEM, as per the scales detailed by Roff et al. Those items with a mean-score of ≥3 was considered as true positive scores whereas items with a mean score of ≤ 2.0 were examined more strictly, as they were indicative of problem areas. Items with a mean score of 2.0 to 3.0 were the aspects of the educational environment that could be improved.

The study was duly approved by the Institutional Ethics Committee of the Medical College.

RESULTS

The present study included 168 students, out of maximum possible 200 students of second professional MBBS course (third and fifth semesters), with a response rate of 84 % (n = 168). The mean global DREEM score was found to be 119.58 ± 46.95 / 200.Table 2 shows the mean scores with interpretation for individual domains and global score of educational environments using DREEM inventory. The present study revealed a suboptimal perception in all the domains of educational environments suggesting that the paraclinical teaching though not best, but moving in a satisfactory direction. The mean global DREEM score in the study was 119.58 ± 46.95, suggesting though the educational environment was not excellent, but it was more positive than negative.

DREEM Domains	Maximum Score	Mean Score ± SD	Interpretation	Cronbach's α
Student's perceptions of learning	48	29.89 ± 5.31	A more positive approach	0.732
Student's perceptions of teachers	44	27.67 ± 4.12	Moving in the right direction	0.569
Student's academic self-perception	32	18.95 ± 3.78	Feeling more on the positive side	0.539
Student's perception of atmosphere	48	26.93 ± 6.40	A more positive atmosphere	0.746
Student's social self-perceptions	28	16.11 ± 3.33	Not too bad	0.048
Global Mean score	200	119.58±46.95	More positive than negative	-

Table 2. Domain Wise Mean Scores with Interpretation

The present study revealed that the students' perception of teachers, academic self-perception and social self-perception were having Cronbach's alpha value of < 0.70 showing less internal consistency in the above items. (Table 2). Table-3 shows the main items with mean score indicating problematic areas and positive perception in all the five domains. The study revealed that in majority of the item-areas, enhancement/improvement is needed (39 items/50 items). The students had positive attitude on only three out of 50 items of the inventory on educational environment.

	Item	Mean ± SD	Interpretation
Student's perception of learning	The teaching over emphasizes factual learning*	1.67 ± 0.87	Problematic areas
Student's perception of teachers	The teachers are knowledgeable	3.11 ± 0.72	Positive perception
	The teachers are authoritarian*	1.60 ± 0.94	Problematic areas
	The teachers are well prepared for their teaching sessions	3.40 ± 0.62	Positive perception
Student's academic self-perception	I am able to memorize all I need	1.66 ± 1.44	Problematic areas
Student's perception of atmosphere	Cheating is a problem in this course*	1.75 ± 1.25	Problematic areas
	The enjoyment outweighs the stress of studying medicine	1.98 ± 1.06	Problematic areas
Student's social self-perception	There is a good support system for students who get stressed	1.69 ±1.06	Problematic areas
	I am too tired to enjoy this course*	1.92 ± 1.14	Problematic areas
	I am rarely bored on this course	1.50 ± 1.03	Problematic areas
	I have good friends in this course	3.02 ± 0.99	Positive perception

Table 3. DREEM Main Items with a Mean Score of ≥ 3 (Positive Perception) and < 2.0 (Problematic Areas) in all the Five Domains

*Negatively keyed items were subjected to reverse scoring

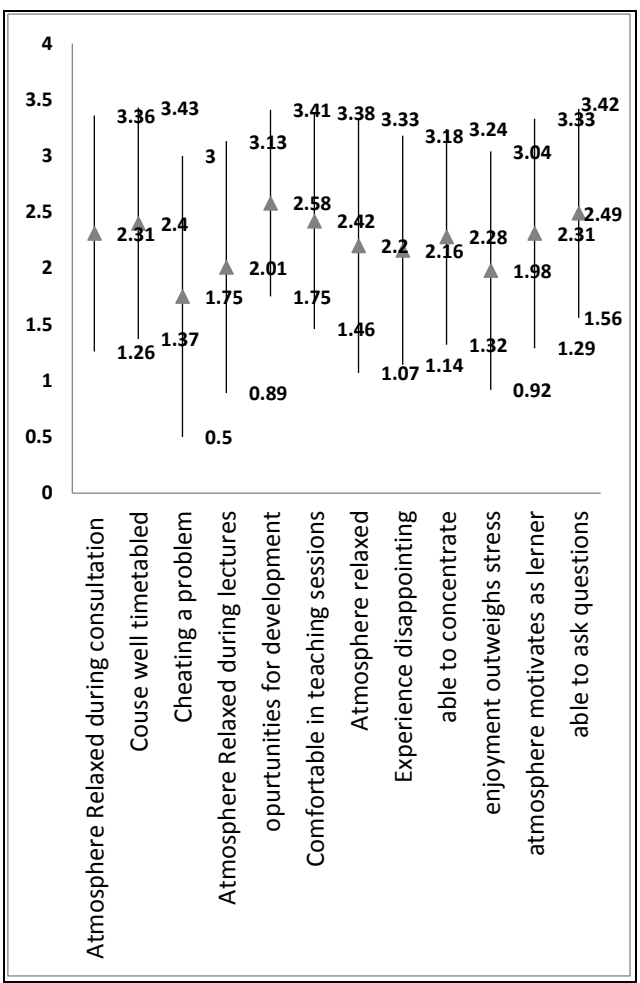

Figure 1. Mean ± SD Scores of Student's Perception of Atmosphere

The students had positive perception on the teachers being knowledgeable (mean score - 3.11 ± 0.72), as they

were well prepared for their teaching sessions (mean score - 3.40 ± 0.62). Besides, they had positive perception of having good friends during the course (mean score - 3.02 ± 0.99).

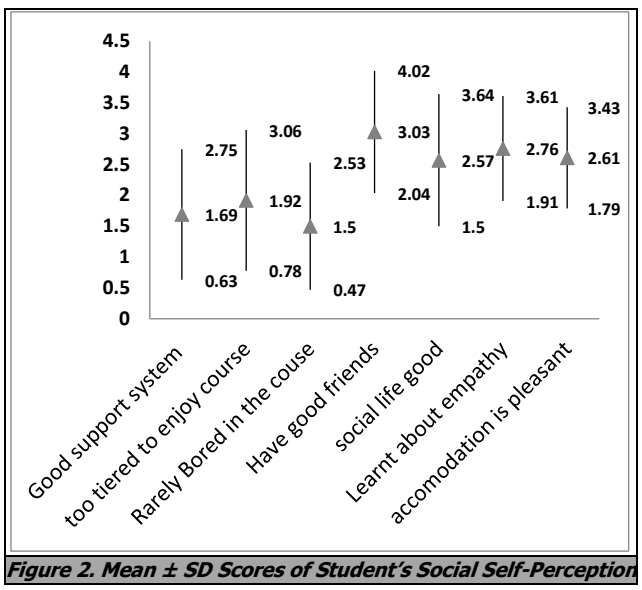

Figure 2. Mean ± SD Scores of Student's Social Self-Perception

The study highlighted problematic areas like, being able to memorize all needed (mean score -1.66 ± 1.44) [45.2 % students responded as negative perception], the enjoyment outweighing the stress of studying medicine (mean score-1.98 ± 1.06), good support system for stressed students (mean score - 1.69 ± 1.06), being rarely bored on the course (mean score - 1.50 ± 1.03) [57.7 % students had negative perception]. Applying reverse scoring to the negatively keyed items, some more problematic areas were identified like teaching over emphasizing factual learning (mean score -1.67 ± 0.87) [around 48.8 % students responded below score 2], teachers being authoritarian (mean score - 1.60 ± 0.94) [55.4 % students responded as negative attitude], cheating being a problem in the course (mean score - 1.75 ± 1.25) [47.6 % students responded as negative attitude] and too tired to enjoy the course (mean score - 1.92 ± 1.14). (Table-3).

Maximum number of problematic areas were observed under the sub-scales/domains of student's perception of atmosphere and student's social self-perception. Item mean ± SD scores under those two sub-scales are depicted in figure-1 and figure-2 respectively.

DISCUSSION

The present study showed that the educational environment during paraclinical training in our institution was rated by the students to be more positive than negative with a global mean score of around 120. Similar response was obtained from the various medical schools in India where the mean global DREEM scores had been found to be 101 to 123.[12-16] The DREEM global scores reported from medical schools in Nigeria (118/200) and Trinidad (109.9/200) were also found to be consistent with the finding of present study.[11,17] A more positive than negative educational environment like that observed in this study was also found by an Asian team in a Philippine University in their study involving students of medical laboratory sciences and nursing sciences where they got a global score of 121.26 ± 20.18 which is very close to global score of 119.58 ± 46.95 / 200 which was found in our study.[18]

A study was conducted among the chiropractic students in University of Dundee, which reported the highest published scores yet [mean: 156.7; standard deviation (SD): 3.7].[19] In another large scale DREEM survey conducted in Australia in 2011 involving 548 participants from most major health science courses in Monash University, Victoria, a positive perception, was reflected from the students, towards medical education and learning environment with a fairly high score (mean: 137.3; SD: 18.3).[20] In comparison to those studies conducted in developed nations, the Indian studies including the present study ended up with a much lower global score in DREEM inventory. As far as medical undergraduate curriculum is concerned, the competency based medical education (CBME) system has been in practice in most of those developed countries. Whereas, in India we have been following a conventional undergraduate medical education system of curriculum instead of CBME and this fact may be largely responsible for this difference in global score between those countries and ours, although there are only limited number of studies from India on this matter.[12-16] However, with recent introduction of curriculum based on CBME in place of conventional curriculum in undergraduate medical education, from the year 2019, it is expected that the educational environment in Indian medical colleges will also significantly improve.

It is true that DREEM has been the tool for investigation for different purposes and is regarded as a very useful tool by the users while evaluating educational environment. But it should be kept in mind that the reporting system and analytical angles differ between studies and because of this lack of homogeny, the comparison between different institutes becomes a tricky affair. Moreover, most of the users of DREEM are not formally trained in statistics and therefore an informed guidelines on the use and reporting of statistical results may prove to be helpful.[21] In this respect some important recommendations and guidelines were put forward by Swift L, Miles S, Leinster SJ from a Medical School under University of East Anglia, UK.[22] However, DREEM is thought to be certainly valuable in pointing out areas of concern by the students. Analysis of each statement of the questionnaire allows the identification of areas that require remediation and results providing base line information might be the starting point of educational reforms to facilitate improvement of the prevailing educational environment that will strongly influence a future physician's competencies.

The scores in all the five subscales revealed that the educational environment was moving towards the positive direction but not optimal in any of the domains. Regarding perception of learning, the teaching over emphasizing factual learning was found to be a problematic area. Similar finding was obtained from a study conducted in University College of Medical Sciences in a major Australian University.[20] Regarding student's perception on teachers, the

students had positive perception towards teachers being knowledgeable and the teachers being well prepared for their teaching sessions. However, in the present study, majority of the students responded that the teachers being authoritarian in the institute. Similar finding was obtained from a study conducted by Rani et al. in a South Indian rural college where students had positive perception towards teachers being knowledgeable but negative perception as the teachers being authoritarian.[1]

Regarding student's academic self-perception, the total mean score in this domain put the atmosphere on a more positive side. Item in this domain that scored less than two points indicated student's inability to memorize all they require to do. A low score in this domain have been reflected in many studies, suggesting the universal nature of this problem of the curriculum over load.[12,14] This clearly indicates that the curriculum needs judicious reconsideration regarding the content of the course. However, with the introduction of CBME the scenario is expected to change.

With respect to student's perception of atmosphere, the students had negative perception on cheating being a problem among the students and on the point of "The enjoyment outweighs the stress of studying medicine". Similar finding was obtained from the study conducted by Rani et al. where students had negative perception towards cheating being a problem.[1] This suggests that cheating is a major problem in different institutes.

In regards to student's social self-perception, the students had negative perception with the item of being rarely bored in the course. However, majority of the students had positive perception of having good friends in the course indicating students have established a healthy friendship among them. The mean score of this subscale of DREEM inventory in this study was found to be 16.11 with an interpretation of 'Not too bad'. In this regard, our finding is quite comparable to another Asian study conducted in two phases by Iranian medical sciences university in 2011 and 2016 where the scores were found to be 15.4 and 17.8 respectively.[23] A result of similar nature was also observed in an Australian study conducted at Victoria University, Melbourne.[24] Encouragement for formative assessment which is the most vital part of CBME curriculum, may have a significant positive bearing on considerable improvement of educational environment, as indicated by Varma et al.[25]

Classical test theory property of DREEM: It is generally accepted that Cronbach's alpha scores over 0.7 indicate internal consistency.[26] However in our study, Perception of teachers, academic self-perception and social self-perception subscales were below this threshold. Cronbach's alpha is a measure of internal consistency (how closely the items are related to each other) and reliability analysis. If the average inter-item correlation is low, alpha will be low. As the average inter-item correlation increases, Cronbach's alpha increases as well (holding the number of items constant). It seems inclusion of negatively keyed items are mostly responsible for a low Cronbach's alpha score here and removal of negatively keyed items may improve the alpha score which would indicate a better internal consistency of the system.

CONCLUSIONS

The present study revealed a suboptimal perception of students, in all the domains of educational environment in paraclinical training, using DREEM inventory. The overall educational environment during paraclinical teaching though was not excellent but moving in a satisfactory direction. There is need of intervention to enhance the overall educational environment with a special focus on teaching methodology, atmosphere and social aspects.

Limitations of This Study

A limitation of this study is that it used a questionnaire with predetermined choices; some factors that impact the environment in our institution may have been left out. Secondly, a survey may not capture all the information that a qualitative interview can. Moreover, another major limitation of this study lies in the fact that this study only focused on the educational environment prevailing during paraclinical or second professional phase of MBBS course only and thus the educational environment prevailing during first and third professional phases remained unexplored. However, this is the first assessment of student's perception of the educational environment at this institution, which may serve as an eye opener for the health professions educators within the institute and in the north-eastern region of India as well.

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