PERCEPTION OF LEARNING ENVIRONMENT AMONG MEDICAL STUDENTS IN A GOVERNMENT MEDICAL COLLEGE- KERALA

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ABSTRACT

BACKGROUND

Learning environment in any medical school is found to be important in determining students' academic success. But one deterrent factor has been the lack of students' perceptions about the educational atmosphere in their institution.

This study was undertaken to compare the perceptions of preclinical (year 1), paraclinical (year 3) and clinical phase (year 5) students regarding the learning environment at Government medical college, Alappuzha in Kerala and also to identify the gender wise differences in their perception using DREEM (Dundee Ready Education Environment Measure).

MATERIALS AND METHODS

A cross sectional study was conducted among the 1st year, 3rd year and final year students. Data was collected using a 50 item DREEM questionnaire. Non-parametric tests were used to find out the difference between the mean scores. Mean scores and domain scores were computed.

RESULTS

Among the three batches, year 3 (paraclinical) students were found to be more satisfied with the learning environment in this college as indicated by their higher DREEM score compared to the pre-clinical and clinical batch students. There was no significant Gender wise difference in the students' perceptions.

CONCLUSION

Identifying the strengths and weakness of the educational environment will help the institute to facilitate student- centered learning and achieve better learning outcomes. Improvement is required across all domains of the educational environment at this institution. Thus, a hybrid curriculum that includes problem-based learning might provide a stimulated learning to students. The study also revealed problematic areas of learning environment in our medical school which enabled us to adopt some remedial measures.

KEYWORDS

Dundee Ready Educational Environment Measure; Educational environment; Medical student; Perception; Kerala.

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BACKGROUND

Medical students experience a variety of learning activities in different semesters in medical college. One of the most important determinants is the curriculum.[1,2] and the learning environment. The assessment of the educational environment can help in identifying the draw backs and formulate changes in the curriculum.[1,3,4] Successful management of the curriculum is only possible with systematic feedback and analysis.[4,5]

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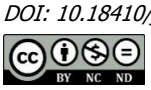

Moreover, the students are coming from different socio-economic background and families. [6] The way they adjust to the new course and college has to be evaluated and followed up consistently. The stress[7,8] they undergo in each semester and among their own colleagues and teachers vary. The gender wise differences.[6,9] in various matters of concern can also be established by a simple questionnaire analysis.

DREEM is a widely used tool to gather information about the learning environment in many institutions. (Roff et al 1997).[10] The validity and reliability of the DREEM inventory is deeply established across educational settings.[11] It has been validated as a universal diagnostic inventory for assessing the quality of learning environment of different institutions. A motivating learning environment fosters deep self-directed learning in the student and subsequently in a good medical practitioner. There are only limited studies undergone in medical colleges in Kerala and India.[3,9,12,13] in this regard. No studies regarding the medical students' perspective have been published from central Kerala so far.

This study aims to understand the students' perception of educational environment and thus recognise both

strengths and weakness. Remedial measures can be implemented to enhance learning experience of medical students.

Objectives

1. To understand the students' perceptions of the educational and social environment of the institution.
2. To compare the results in different semesters– pre-clinical, para clinical and clinical phase.
3. To estimate gender wise differences in the scores.

MATERIALS AND METHODS

Approval from Institutional Research committee and Institutional Ethics Committee was obtained before starting the study. It was a cross-sectional, questionnaire based study conducted among MBBS students from preclinical, para clinical and clinical side in Government TD Medical College, Alappuzha. The medical curriculum in this college is traditional and discipline-based; the intake is 150 students per year. Preclinical subjects are taught in the first two semesters (Year 1); students Year 3 study para- clinical subjects; students are exposed to all clinical subjects mainly in year 5 (Final year).

For the current study, we planned to recruit all students from every year (n = 450). Students who could not contact after repeated effort were excluded from the study.

DREEM is a questionnaire with 50 items that assess five domains.[10]: students' perceptions of learning which was measured by 12 items with a maximum score 48; students' perceptions of teachers (11 items, maximum score 44); students' academic self-perception (8 items, maximum score 32); students' perceptions of atmosphere (12 items, maximum score 48); and students' social self-perception (7 items, maximum score 28). Each item is rated on a 5-point Likert scale from 0–4 where 0= strongly disagree, 1= disagree, 2= unsure, 3= agree, and 4= strongly agree. There are nine negative items (items 4, 8, 9, 17, 25, 35, 39, 48, and 50), for which correction was made by reversing the scores; thus, after correction, higher scores indicated disagreement with that item. Items with a mean score of ≥ 3.5 are considered as true positive points; those with a mean of ≤ 2 are problem areas; scores in between these two limits indicate aspects of the environment that could be enhanced. The maximal global score for the questionnaire is 200, and the global score is interpreted as follows: 0–50 = very poor; 51–100 = many problems; 101–150 = more positive than negative; 151–200= excellent.[11]

The questionnaire was distributed to all students present in the class after a routine lecture class towards the end of their term. In advance to administration of the questionnaire, the class was addressed regarding the purpose and process of collecting data, stressing the anonymity of the participants. The information sheet also gave a brief introduction of the aim of the study and of DREEM. Students completed the questionnaire anonymously. In the event that questionnaires returned filled, consent was implicit; non-consent was presumed if questionnaires were returned blank. We could collect 345 filled questionnaires; 135 from pre-clinical; 124 from para clinical and 86 from clinical batches. The data was handled and stored in accordance with the tenets of the Declaration of Helsinki (1964, amended in 2008).

The data was coded and entered in Ms Excel and further analysis was done using SPSS statistical package. Qualitative variables were summarised using frequency and percentage. Quantitative variables were summarised using mean, median, standard deviation and inter-quartile range. Non-parametric tests were used to compare the DREEM scores. Difference in the total global score and total sub - domain scores between the various academic years were compared using Kruskal Wallis test. The gender difference of the scores was assessed using Mann Whitney U test. Significance level was fixed at a p value <0.05.

RESULTS

DREEM questionnaire was distributed to the students of pre-clinical (year 1), para clinical (year 3) and clinical (year 5) batches. The students were of mostly 18 -22 years with maximum number being of age 20. Of the 345 students who willingly filled the DREEM questionnaire, 138 were males (40%) and 207 were females (60%). 135 students were from first year; 124 from third year and 86 were from final year. The Total median value and Interquartile range for the DREEM score was 112.5 ± 18.4 (possible maximum = 200). The global score was lowest for the first-year students (103.03 ± 17.04) when compared to those of the third years (117.98 ± 17.2) and final year students (115.3 ± 17.02) which is shown in table no. 1. The difference in the DREEM score between the batches was statistically significant. (p value< 0.001) tested using Kruskal-Wallis test.

Year	Mean Score out of 200	Standard Deviation	Significance between Groups (p value)
5	115.3	17.02	0.001
3	117.9	17.2	
1	103.05	17.04	
Total Students	**111.44**	**18.36**	

Table 1. Global DREEM Score for all Students (n= 345)

Table 2 shows the items with their median scores in different domains and the median sub-total score of each domain. 33 items scored between 2 and 3; 15 items scored less than 2 and 2 items scored greater than 3. The two most highly rated items were 'The teachers are knowledgeable,' and 'I have good friends in this college.' The three items that students had the greatest problem with were 'There is a good support system for students who get stressed,' 'I am able to memorize all I need,' and 'I am able to concentrate well.'

	Domain items	Median Score	Inter Quartile Range
Students' perception of learning			
1	I am encouraged to participate in class	2.43	1.08
7	The teaching is often stimulating	2.23	0.99
13	The teaching is student-centered	1.88	1.14
16	The teaching is sufficiently concerned to develop my competence	1.99	1.06
20	The teaching is well focused	2.24	0.92
22	The teaching is sufficiently concerned to develop my confidence	1.85	1.56
24	The teaching time is put to good use	2.22	1.05
25	The teaching over-emphasizes factual learning*	2.29	0.95
38	I am clear about the learning objectives of the course	2.35	1.03
44	The teaching encourages me to be an active learner	1.89	1.11
47	Long-term learning is emphasized over short-term	2.2	1.15
48	The teaching is too teacher-centered*	2.22	1.03
Subtotal score (out of 48)		**25.8**	**6.54**
Students' perception of teachers			
2	The teachers are knowledgeable	3.07	0.74
6	The teachers are patient with patients	2.29	1.01
8	The teachers ridicule the students*	2.09	1.08
9	The teachers are authoritarian*	2.61	1.41
18	The teachers have good communications skills with patients.	2.43	1.09
19	The teachers are good at providing feedback to students	2.76	0.94
32	The teachers provide constructive criticism here	2.26	1.05
37	The teachers give clear examples	2.22	1.01
39	The teachers get angry in class*	2.42	1.06
40	The teachers are well prepared for their class	2.81	0.88
50	The students irritate the teachers*	2.04	1.24
Subtotal score (out of 44)		**27.00**	**3.90**
Students' academic self-perception			
5	Learning strategies which worked for me before, continue to work for me now	1.81	1.11
10	I am confident about my passing this year	2.75	0.95
21	I feel I am being well prepared for my profession	1.79	1.06
26	Last year's work has been a good preparation for this year's work	2.51	1.10
27	I am able to memorize all I need	1.18	1.02
31	I have learned a lot about empathy in my profession	2.80	0.92
41	My problem-solving skills are being well developed here	2.23	1.04
45	Much of what I have to learn seems relevant to a career in medicine	2.86	0.95
Subtotal score (out of 32)		**17.93**	**4.39**
Students' perception of atmosphere			
11	The atmosphere is relaxed during the ward teaching	2.14	1.22
12	This school is well time-tabled	2.38	2.68
17	Cheating is a problem in this school*	1.84	1.15
23	The atmosphere is relaxed during the lectures	2.14	1.23
30	There are opportunities for me to develop inter-personal skills	2.62	0.99
33	I feel comfortable in class socially	2.66	0.98
34	The atmosphere is relaxed during seminars/tutorials	2.05	1.25
35	I find the experience disappointing*	1.88	1.20
36	I am able to concentrate well	1.51	1.08
42	The enjoyment outweighs the stress of studying medicine	1.92	1.29
43	The atmosphere motivates me as a learner	1.92	1.93
49	I feel able to ask the questions I want	1.61	1.20
Subtotal score (out of 48)		**24.73**	**6.90**
Students' social self-perception			
3	There is a good support system for students who get stressed	1.39	1.21
4	I am too tired to enjoy this course*	2.14	1.29
14	I am rarely bored on this course	1.63	1.30
15	I have good friends in this school	3.25	0.95
19	My social life is good	2.76	0.94
28	I seldom feel lonely	2.18	1.19
46	My accommodation is pleasant	2.69	2.06
Subtotal score (out of 28)		**16.03**	**3.44**

Table 2. Median Scores of 50 items and Five Domains of Dundee Ready Educational Environment Measure (DREEM) from 345 Students

* Negative item; low score indicates agreement.

As shown in Table 3, when individual domains were considered, the subtotal score for all domains were significantly higher among 3rd year students except for the perception of atmosphere which was higher for 5th year students. In all domains, the subtotal score was lowest among first year students. The difference of subtotal score of all domains was statistically significant between the students of different academic year except social self-perception, found out using Kruskal wallis test.

Domains of DREEM	Year 1 (n=135)	Year 3 (n=124)	Year 5 (n=86)	Significance
Perception of learning	22.94 ± 6.1	28.02 ± 5.99	27.07 ± 6.39	0.001
Perception of teachers	26.38 ± 3.98	27.83 ± 3.79	26.8 ± 4.16	0.012
Academic perception	16.85 ± 4.61	19.1 ± 3.95	17.93 ± 4.24	0.001
Perception of atmosphere	21.35 ± 6.36	26.61 ± 6.62	27.31 ± 5.94	0.001
Social self-perception	15.57 ± 3.19	16.51 ± 3.75	16.16 ± 3.28	0.06

Table 3. Mean ± SD of Three Student Groups for the Five Domains of DREEM

Domain	Gender	Mean	Standard Deviation	Significance (p value)
Learning	Males	25.83	6.83	0.95
	Females	25.78	6.36	
Teachers	Males	26.94	4.07	0.80
	Females	27.05	3.96	
Academic	Males	18.33	4.63	0.17
	Females	17.67	4.22	
Atmosphere	Males	24.83	6.74	0.82
	Females	24.66	7.02	
Social	Males	15.92	3.06	0.62
	Females	16.10	3.68	

Table 4. Gender Wise Differences in Average Scores of Individual Domains Among 345 Students

Table 4 shows the gender differences in mean scores in each domain of all the students under study. There is no statistically significant difference in the total sub- score values of each domain between male and female students tested by Mann Whitney U test.

DISCUSSION

The overall median DREEM score for our medical school was found to be 111/200 (n = 345), indicating that, students' perceptions are more positive. The DREEM global scores for medical schools in Srilanka, Nepal, Nigeria and UK were reported as 108/200.[14], 130/200, 118/200.[15] and 139/200.[5] respectively. The mean DREEM score for a medical school in India was reported as 101/200.[3] and in Manipal medical school it was 117/200.[9] The results of the present study showed that Year 3 students had a more positive perception of the educational environment than year 1 and 5 students. Although Till.[14] has found the lowest DREEM score was for year 3 students, our results were comparable with the results of Turkish and Nepalese students showing the highest scores for year 3 students.

An item that scores 3.5 or more was considered to represent a positive aspect of the curriculum. As viewed in Table– 2, two items scored above 3 in the present study; but majority of the items scores ranged between 2 and 3, indicating that there is a need for improvement in the learning environment.

An inevitable adaptation period for year 1 students, just graduated from 11 years of a traditional education system to a completely different learning and teaching environment, should be regarded as a factor for the lower scores of year 1 students. On the other hand, it is critical to discuss why the scores of year 5 students are the lowest. One of the reasons could be the academic stress since they are approaching the final exams. This should be accepted as an opportunity to find out the weaknesses of the curriculum and environment.

Students' Perception of Learning- The mean domain score was highest for year 3 students and lowest for year 1 students. "The teaching is concerned to develop my confidence" and "teaching is student centered" were the lowest scored items. Many institutions globally report similar concerns.[2,3,5,9] these difficulties should be addressed. The course duration for year 1 students have been shortened to 9 months and the time taken for them to adapt to the new course create issues for them.

The Medical Education Unit of the institution could train faculty on appropriate teaching and assessment methods that might drive active learning. The literature suggests that such a change might provide students with stimulating opportunities for learning, thereby building confidence as well.[3,9,10] For the year 5 students, Bed-side teaching is an effective instrument to teach clinical skills, communication, ethics, empathy, and professionalism; however, in overburdened government hospitals such as ours, teachers are overwhelmed with patient care responsibilities. Added to that, overcrowded, noisy wards and outpatient departments also serve as obstructions to clinical teaching. The year 3 students get ample time for learning and are relatively stress free and their scores were high.

Students' Perception of Teachers- The teachers in the institution where study was conducted, can be proud that none of the items scored less than 2. Moreover, the item no: 2 "teachers are knowledgeable" scored more than 3. The mean domain scores were highest for year 3 students and lowest for year 1. With the current emphasis on self-directed and life-long learning, teachers are no longer simply providers of information, but should facilitate the acquisition of attitudes and skills necessary for learning.[16] Ability to give timely and specific feedback is an important skill that sets students on the right path to learning. Excessively harsh criticism, on the other hand is considered to be discouraging to students' self-confidence.[3,12] it has been shown that

fostering active student participation, taking responsibility, effective supervision and giving positive feedback is vital for making the role of a teacher perfect.[16,15]

Students' Academic Self Perception- While year 3 students achieved the highest score for academic self-perception, Year 1 students attained the lowest score. Such a discrepancy might be related to the lesser experience of year 1 students in educational and assessment measures. Most studies have reported low scores in this domain, suggesting that curriculum overload is a universal problem.[1,6,7,10] Clearly, the curriculum needs revision not only in methodological terms, but also by a judicious reconsideration of course content. Of all, year 3 students had the highest scores on academic self-perception; they have a longer span to the next professional examination, and may feel less overwhelmed with course overload. The lowest score was for the items like "I am able to memorise all I need" shows the methodology of learning to be altered in the students.

Students' Perception of Atmosphere- Items in this domain that scored less pertained to inability to concentrate well and unable to ask questions they want. Contrary to other domains, year 5 students perceived the least difficulty. This finding again draws attention to differences in the experience of pre-clinical and clinical batch students.[17] The clinical environment is rich with real-world exposure and their experiences from the initial years in the college might have helped for a better score.[16] A critical review of the current practice of teaching at this institution is necessary, followed by implementation of contemporary recommendations for improving student learning in the first year.[4]

Social Self-perception- Items in this domain that scored less than 2 points pertained to a poor support system for students who get stressed. There was no statistically significant difference between the groups for this domain though the highest score was for year 3 students. This institution has a mentoring program or tutorial programme for first-year students where each faculty engage with a small group of students to reduce stress and provide support. Perhaps mentoring, as a means of providing academic and social support, could be extended to senior students as well. Students reported that they were happy with their friends and had a good social life and this item scored highest.

Gender wise (as in Table 4), the overall DREEM score did not show much difference in the three groups. Reem reported same finding in a study conducted at an Indian medical school.[9] In a study reported by Hettie Till.[18] the mean DREEM scores were lower for female students compared to the males.

CONCLUSION

Students assessed the educational environment in this institution as more positive than negative; however, improvements are required across all five domains. The greatest difficulty was with 'students' perception of learning'; the most troubled were the year 1 students. Specifically, students gave the lowest scores to the institutional support system and burdensome course content. A curriculum that includes some elements of problem-based learning and assessment might provide students with stimulating opportunities for learning assisted by medical education unit.

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