Students Perception of their Educational Environment in a Medical College in India-A Survey using DREEM Questionnaire

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ABSTRACT

Introduction: Educational plays an important role in the achievement of student's academic success. Understanding the perception of students towards their educational environment helps to identify the lacunae in the curriculum and make the changes accordingly.

Aim: To assess the perceptions of the students towards medical education using Dundee Ready Educational Environment Measure (DREEM) questionnaire as a tool.

Materials and Methods: This was a cross-sectional study done at NRI Medical College, Guntur, Andhra Pradesh, India, from September 2020 to December 2020. A total of 414 students participated in the study. The DREEM questionnaire was used to collect the data. The questionnaire consists of five components with 50 statements assessed on five-point Likert scale (0-4). Data were expressed as mean and standard deviation, frequency, and percentages. Independent t-test and one-way Analysis of Variance (ANOVA) were used for comparing the groups. **Results:** Out of 600 students, 414 filled in the forms and submitted them (response rate was 69%). 266 (64.2%) were female and 148 (35.8%) were males. Age of the students ranged from 17 to 25 years with mean age 22.64 ± 2.62 years. The mean DREEM score of study population was $130\pm6.7/200$ which indicated a more positive than negative perception of learning. Subscale scores for student's perceptions, perceptions of teachers, academic self-perceptions, perceptions of atmosphere and social self-perceptions were 30.9 ± 2.4 , 28.9 ± 1.5 , 22.4 ± 3.1 , 30.8 ± 2.3 and 16.9 ± 1.7 respectively.

Conclusion: There was a positive perception of students towards their educational environment. Strong areas were student's confidence, teacher's knowledge, and curricular relevance. Weak areas were identified as the inability to provide constructive criticism by teachers, the teachers were authoritarian and necessary steps can be taken for the improvement.

Keywords: Curriculum evaluation, Dundee ready educational environment measure, Knowledge, Learning, Medical educators

INTRODUCTION

Educational environment refers to various components and activities in which learning happens and it includes faculty, teaching and learning methods, learning resources, monitoring and evaluation. Educational environment directly affects the performance of the students [1]. The quality of educational environment has been recognised to be vital for effective learning in terms of students' achievement, happiness, motivation and success [2,3]. An educational environment that is not favorable, affects learners' ability to learn and acquire knowledge and also disturbs their social life [4]. The availability of a learner-friendly environment is more essential particularly in medical curriculum which is related to healthcare and patients [5].

As education environment is a key component of the curriculum, its measurement should be a part of curriculum evaluation [6]. Modern strategies in learning and innovative curricula are shifting more towards student centered learning and accordingly learning environment is likely to be altered [7]. A number of instruments have been used in the literature to measure educational environment in medical and allied healthcare education and among them Dundee Ready Educational Environment Measure (DREEM) is the most widely used. The DREEM questionnaire which was accepted as international instrument for assessing the educational environment, was developed at Dundee and released as AMEE Medical Education Guide No. 23 by Genn JM in 2001 [8]. It is the most widely used instrument to collect information about the educational environment in many undergraduate healthcare professional institutions in various countries [9].

Medical educators are making an effort to reform the educational environment so as to make it learner friendly without compromising standards and quality of learning. As this institute strives hard to provide outstanding educational experiences to the students, this study helps to identify the strengths and lacunae to make the environment more conducive for learning to satisfy the students and achieve a far better outcome.

Objectives:

- 1. To assess the medical student's perception of their educational environment using DREEM questionnaire as a tool.
- 2. To determine the impact of gender, academic year and category of admission on the perception.
- 3. To identify strong and weak areas of each of the five domains.

MATERIALS AND METHODS

A cross-sectional descriptive study was carried out at NRI Medical College and General Hospital, Chinakakani, Guntur, Andhra Pradesh, India, from September 2020 to December 2020. Approval was obtained from Institutional Ethics Committee, NRI Medical College and General Hospital (Approval no. IEC NRIMC 239 dated 7-10-2020).

Total of 600 students studying in first, second, third and fourth year were included in the study. A total of 414 gave consent, filled and submitted the forms. Students are admitted in the college in convener and management categories. Students in convener category are merit candidates and pay the fee as Government College students. Management category students join with maximum fees.

Dundee Ready Educational Environment Measure (DREEM) questionnaire: The data was collected using the self-guided DREEM questionnaire administered to the students through Google forms. Students were briefed about the aim and importance of the study. As the participation was voluntary, return of the completed forms was taken as consent to participate. Total 15 days time was given to the students to fill the forms. Repeated reminder was given every day. Confidentiality was maintained by keeping the forms anonymous.

Validated DREEM questionnaire was used to study the perceptions of the students regarding their educational environment. It consists of 50-items which are directly related to the main areas of educational environment including-learning (12 items), teaching (11 items), academic self-perception (8 items), atmosphere (12 items), and social self-perception (7 items). These items are scored on a 5-point Likert scale: 4 for strongly agree, 3 for agree, 2 for unsure, 1 for disagree, and 0 for strongly disagree. Out of 50 items, 9 questions (number 4, 8, 9, 17, 25, 35, 39, 48 and 50) are framed negatively and they are scored reversely, i.e., 0 for strongly disagree. The total possible score is 200, which indicates an ideal educational environment. [Table/Fig-1] shows the guideline to interpret the overall and subscale DREEM score [10].

Total score	
0-50 Very poor	
51-100 Significant problem	
101-150 More positive than negative	
151-200 Excellent	
Subscales	
1. Student Perception of Learning (SPL)	
0-12 Very poor	
12-24 Negatively viewed teaching	
25-36 More positive perception	
37-48 Teaching highly regarded	
2. Student Perception of Teacher (SPT)	
0-11 Very poor	
12-22 Negatively viewed teaching	
23-33 More positive perception	
34-44 Teaching highly regarded	
3. Student Academic Self-Perception (SASP)	
0-8 Feelings of total failure	
9-16 Many negative aspects	
17-24 Feeling more on positive side	
25-32 Confident	
4. Student Perception of Atmosphere (SPA)	
0-12 Very poor environment	
13-24 Many issues need changing	
25-36 More positive attitude	
37-48 Good overall feeling	
5. Student Social Self-Perception (SSSP)	
0-7 Miserable	
8-14 Not a nice place	
15-21 Not too bad	
22-28 Very good socially	
[Table/Fig-1]: Guidelines to interpret the overall and subscale DREEM scores.	

Items with a mean score greater than 3 mainly represent strong areas, while items with a mean score of less than or equal to 2 are indicative of problem areas that require immediate review and remediation. Items with a mean score between 2 and 3 reflect areas that are neither strengths nor weaknesses but could possibly be enhanced.

STATISTICAL ANALYSIS

Continuous data was represented as mean±SD. Parametric tests were used for analysis as the data followed normal distribution. Independent t-test and one-way Analysis of Variance (ANOVA) were used for comparing the groups. Level of significance was taken at 5%. Statistical Package for the Social Sciences (SPSS) version 16.0 was used.

RESULTS

Out of 600 students, 414 filled in the forms and submitted them. A 266 are females and 148 were males. Age of the students ranged from 17 to 25 years with mean age 22.64 \pm 2.62 years. The response rate was 69%. 266 (64.2%) were female and 148 (35.8%) were males. First year had 146 (35.1%), 2nd year had 97 (23.5%), 3rd year had 85 (20.6%) and 4th year had 86 (20.8%) students. Students admitted in convener category were 200 (48.3%), management category were 214 (51.7%). The mean DREEM score of study population (n=414) was 130 \pm 6.7/200 which indicated a more positive than negative perception of learning. Total mean score for each DREEM item in different domains was presented in [Table/Fig-2-6]. [Table/Fig-7] shows comparison of mean DREEM scores for all the five domains between the year of study, gender and category of admission. There was statistically

Item no.	Student's Perception of Learning (SPL)	Mean±SD			
1	I am encouraged to participate in class	2.9±0.8			
7	The teaching is often stimulating	2.5±0.9			
13	The teaching is student centered	2.7±1			
16	The teaching is sufficiently concerned to develop my competence	2.8±0.9			
20	The teaching is well focused	2.9±1.1			
22	The teaching is sufficiently concerned to develop my confidence	2.5±1			
24	The teaching time is put to good use	2.8±1.1			
25	The teaching over-emphasises factual learning (N)	2.4±1.1			
38	I am clear about the learning objectives of the course	2.7±1			
44	The teaching encourages me to be an active learner	2.4±0.9			
47	Long-term learning is emphasised over short-term	2.7±0.9			
48	The teaching is too teacher-centered (N)	2.2±1			
[Table/Fig-2]: Mean score of each item in Student's Perception of Learning (SPL) domain.					

Item no.	Student's Perception of Teachers (SPT)	Mean±SD			
2	The teachers are knowledgeable	3.3±0.7			
6	The teachers deliver research-led teaching	1.9±1.1			
8	The teachers ridicule the students (N)	2.7±1.1			
9	The teachers are authoritarian (N)	1.6±1.1			
18	The teachers help me to develop my practical skills	2.8±1			
29	The teachers are good at providing feedback to students	2.5±1.1			
32	The teachers provide constructive criticism here	1.8±0.9			
37	The teachers give clear examples	2.5±0.8			
39	The teachers get angry in the class (N)	2.2±1.1			
40	The teachers are well prepared for their classes	2.9±1			
50	The students irritate the teachers (N)	2.1±1			
[Table/Fig-3]: Mean score of each item in Student's Perception of Teachers (SPT)					

Item no.	Student's Academic Self-Perceptions (SASP)	Mean±SD			
5	Learning strategies which worked for me before, continue to work for me now	2.2±1.1			
10	I am confident about passing this year	3.1±1			
21	The teaching helps to develop my confidence	2.5±0.8			
26	Last year's work has been a good preparation for this year's work	2.5±0.8			
27	I am able to memorise all I need	1.9±1.1			
31	I have learned a lot about the way scientific research is carried out	1.9±1			
41	My problem-solving skills are being well developed here	2.3±0.9			
45	Much of what I have to learn seems relevant to a career in biological sciences	2.9±0.9			
[Table/Fig-4]: Mean score of each item in Student's Academic Self-Perceptions (SASP) domain.					

Item no.	Student's Perceptions of Atmosphere (SPA)	Mean±SD				
11	The atmosphere is relaxed during laboratory/practical/field work classes	2.7±1				
12	The course is well timetabled	3.2±1.1				
17	Cheating is a problem in this faculty (N)	2.7±0.9				
23	The atmosphere is relaxed during lectures	2.4±0.8				
30	There are opportunities for me to develop my interpersonal skills	2.5±1.1				
33	I feel comfortable in class socially	2.9±0.8				
34	The atmosphere is relaxed during seminars/tutorials	2.6±0.9				
35	I find the experience disappointing (N)	2.6±1				
36	I am able to concentrate well	2.4±0.9				
42	The enjoyment outweighs the stress of the course	2.4±0.9				
43	The atmosphere motivates me as a learner	2.6±1				
49	I feel able to ask the questions I want	2.4±1				
[Table/Fig-5]: Mean score of each item in Student's Perceptions of Atmosphere (SPA) domain.						

Mean+SD Item no. Student's Social Self-Perceptions (SSSP) З There is a good support system for the students who get stressed 2±1.1 4 I am too tired to enjoy the course (N) 2.4±1.1 14 I am rarely bored in this course 1.9±1.2 15 I have good friends in this faculty 1.7±1.1 19 My social life is good 18+11 28 I seldom feel lonely 2.1±1 46 My accommodation is pleasant 2.6±0.9 [Table/Fig-6]: Mean score of each item in Student's Social Self-Perceptions (SSSP) domain.

significant difference in mean values for all the domains between male and females. Though there was a slight difference in mean values for various domains except Student Perception of Teacher (SPT), between convener and management category students, the difference was not statistically different. For SPT domain the difference was statistically significant.

DISCUSSION

Educational environment is everything that is happening in the classroom, department, faculty or university and it is vital in determining the progress of undergraduate medical education [11]. There is a proven connection between educational environment and the valuable outcomes of student's achievement, satisfaction and success [12]. With the implementation of new Competency Based Curriculum, in which there was more emphasis on student centered learning and role of teacher as a facilitator, it is essential to assess the educational environment in order to identify the strengths and weakness of the curriculum and to implement the required reforms.

In the present study, the mean DREEM score was $130\pm6.7/200$ which indicated a more positive than negative perception of learning. Comparison of scores with other institutions is difficult as a number of factors like culture, type of curriculum and background of the students play a role in determining the perceptions of the students. The mean score reported in various studies Sri Lanka [13], Nigeria [11], Trinidad [9], UK [14] and Saudi Arabia [15] are 108, 118, 109.9, 130 and 126.4 respectively. Similar scores were reported in few Indian studies 107.44 [16], 117 [17], 123 [18], 126.3 [19], and 123 [20].

Total scores in the present study show that first year students displayed a more positive perception of their educational environment and there was a progressive decline in the score with the year of admission. This may be due to first year students are not too stressed by their studies or because of enthusiasm and excitement of first year students entering the medical college [3]. It was suggested that this trend could be due to the fact that students genuinely believed that the learning environment was deteriorating and thus were psychologically tired of being a student

Domain	Maximum score	Total score Mean±SD	Year of study Mean±SD		p-value	Gender Mean±SD p-value		Category of a Means		p-value				
SPL	48	30.9±2.4	1 st	34.5±4.2		Male	28.1±4.4	0.001*	Convener	33.4±3.9	0.124			
			2 nd	30.9±1.3	0.712	IVIAIE								
		30.9±2.4	3 rd	29.7±1.8	0.712	Female	33.8±3.2		Management	32.2±3.1				
			4 th	28.5±1.1		I emale	00.0±0.2		Management	02.2±0.1				
SPT	0.07			1 st	31.2±4.9	0.600	0.629	26.7±3.2	0.001*	Convener	29.5±3.2	0.001*		
		44	28.9±1.5	2 nd	28.5±1.5					Convener	29.010.2			
	44	20.9±1.0	3 rd	27.9±1.1	0.029	Female	31.5±2.8		0.001					
		4 th	28.2±1.3		Ternale	31.5±2.8		Management	51.4±2.9					
			1 st	25.1±5.3	0.972	Male	20.6±2.9	0.02*	Convener	19.1±2.1				
SASP	32	22.4±3.1	2 nd	21.9±1.1					Convener	19.112.1	0.42			
	SAGE	32	32 22.4±3.1	3 rd	22.5±1.3	0.972	Female	22.7±2.4	0.02	Management		0.42		
			4 th	20.1±1.6		Ternale	22.112.4		Management	20.211.9				
			1 st	32.4±6.1		Male	28.9±2.5	Convener	30.8±2.1					
SPA	48	48	48	48	48 30.8±2.3	2 nd	30.2±1.3	0.884	Wide	20.3±2.0	0.003*		00.0±2.1	0.138
SPA		50.0±2.5	3 rd	31.2±1.9	0.004	Female	Fomolo	emale 34.1±1.9	0.003	Management	33.7±1.8	0.100		
			4 th	29.6±1.1		Ternale	34.1±1.9							
			1 st	18.2±2.9		Male 15.2±1.7	15 2+1 7		Convener	15.1±1.1				
0000	SSSP	28	16.9±1.7	2 nd	17.5±1.6	0.241 -		0.001*	Convenier	10.1±1.1	0.124			
0001	20	10.911.1	3 rd	16.7±1.3	0.241	Female	18.6±1.1	0.001	Management	15±0.7	0.124			
			4 th	15.5±0.9		Ternale	10.011.1		Management	10±0.7				
Total score				1 st	141.1±6.6		Male	119.4±14.2		Convener	127.9±9.6			
	200	130±6.7	2 nd	129±6.8	0.04*		0.01*	COnvenel	121.313.0	0.601				
	200		3 rd	127±7.4	0.04	Female	140.7±10.6	0.01	Management	132.5±7.4	0.001			
			4 th	121.9±6		remaie	14U.7±1U.0		wanagement	132.3±1.4				

[Table/Fig-7]: Comparison of mean DREEM total scores among different groups. *p-value <0.05 statistically significant. Independent t-test and one-way ANOVA was used; SPA: Student's perceptions of atmosphere; SSSP: Student's social self-perceptions; SASP: Student's academic self-perceptions; SPT: Student's perception of teachers; SPL: Student's perception of learning and looking forward to leaving student life [21]. In this study, females with total score $140.7\pm10.6/200$ showed a more positive perception compared to males ($119.4\pm14.2/200$). This observation is similar to most of the other studies [9,14,22]. This may be due to difference in learning styles between males and females. Students admitted in management quota with a total score $132.5\pm7.4/200$ displayed a slightly more positive perception compared to convener quota ($127.9\pm9.6/200$). This may be due to less stress among management category students.

In the present study, the total score in SPL domain was 30.9±2.4/48 and it was interpreted as a more positive approach. There was a decline in perception of students towards learning with the year of study which may be attributed to the enthusiasm and excitement among first year students entering the medical college. Perception of learning was more in females which may due to their learning style, spending more time in studying and being more critical about the quality of teaching [7]. The score of convener quota students was more when compared to students of management guota, which can be attributed to their inclination towards self-directed learning. All the items in this domain received mean scores between 2 and 3, which could be enhanced. Teaching-learning activities would need a change in structure and process to make learning more learners centric. Opportunities must be provided to the students for self-directed learning. The inbuilt feedback would help the students to identify their lacunae in the process of learning. Perception of learning could be improved by active involvement of students through problem based learning and structured and systematic teaching [18].

In the present study, the total score in SPT domain was 28.9±1.5/44 and it was interpreted as moving in right direction. Students' perception of teachers was more among first year students, females and management category students. Most of the items in this domain received mean scores between 2 and 3, which could be enhanced. Item 2 (The teachers are knowledgeable) received a mean score more than 3 representing strong area. There were three problematic areas with mean scores <2 - item 6 (The teachers deliver research led teaching), item 9 (The teachers are authoritarian) and item 32 (The teachers provide constructive criticism here). This indicates that teachers are still wearing their traditional hats. The teaching staff should be motivated to acquire modern teaching skills required for competency based medical education. The role of teacher training programs should be emphasised in order to reacquaint the faculty members with effective feedback techniques on learning [23].

Total score in SASP domain in the present study was 22.4±3.1/32 and it was interpreted as feeling more on the positive side. Score was more among first year students, females and management category students. Most of the items in this domain received mean scores between 2 and 3, which could be enhanced. Item 10 (I am confident about my passing this year) received a mean score more than 3 representing strong area. There were two problematic areas with mean score less than 2 - item 27 (I am able to memorise all I need) and item 31(I have learned a lot about the way scientific research is carried out). Low score of item 27 is reported in many studies [2,7,9,24,25] indicate that there should be substantial reduction of the core curriculum needs revision not only in methodological terms, but also by a judicious reconsideration of course content [27].

In the present study, the mean score in SPA domain was 30.8±203/48 and it was interpreted as a more positive atmosphere. Score was more among first year students, females and management category students. All the items in this domain received mean scores between 2 and 3, which could be enhanced. Item 12 (The course is well time tabled) received a mean score more than 3 representing strong area. Students' perception of the atmosphere represents the real life of educational environment and thus the dynamism of the curriculum [13].

In the present study, the mean score in SSSP domain was 16.9±1.7/28 and it was interpreted as not too bad. Score was more among first year students and among females. All the items in this domain received mean scores between 2 and 3, which could be enhanced. Item 14 (I am rarely bored in this course), item 15 (I have good friends in this faculty) and item 19 (My social life is good) received mean scores less than 2 representing problematic areas. Investigation should be made to know the causes of boredom. Necessary steps have to be taken to make the course more engaging. More consistent and efficient scheduling of classes; better communication between faculty and students, increased mentoring and career planning services; and improved access to health professionals may play an important role in improving the social life of the students.

Limitation(s)

In a study with voluntary participation methods and self-reporting questionnaires, sampling and response bias can be expected. Although generalisation of the findings could not be achieved, this study provides baseline data for assessing the educational environment in an institution.

CONCLUSION(S)

Overall perception of the students towards their educational environment in the present study was more positive than negative. There was a significant difference in the total mean score of perception of educational environment among students in different years. Difference of perception of educational environment among males and females was statistically significant. No significant difference of perceptions was observed among the students based on category admission except for SPT. With the help of DREEM inventory, areas of strength and weakness in the medical educational environment were identified and indicated a critical need for faculty training, improving interaction between teachers and students, providing constructive feedback and developing a good support system for the students.

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