

Study to assess perceptions of the Educational Environment among medical undergraduate students using the Dundee Ready Education Environment Measure (DREEM)

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ABSTRACT

Background: The educational environment can be described as the atmosphere perceived by the students and teachers. It affects the transfer/acquisition of knowledge and skills needed in training medical students. Assessing the Educational environment of medical schools is a current global trend and has even been suggested by the National Medical Commission. The DREEM tool is a widely accepted and globally validated instrument for assessing the educational environment in undergraduate medical institutions and has five subscales including perceptions of learning, perceptions of teachers, academic self-perceptions, perceptions of the environment and social self-perceptions. DREEM is a valid tool in referring to deficient areas in the learning process. **Objective:** To assess the student's perception of the educational environment using the Dundee Ready Education Environment Measure (DREEM) questionnaire among undergraduate medical students. **Methodology:** A Cross-sectional study was conducted at Dr. Shankarrao Chavan Government Medical College, Nanded from January 2022 to December 2022 among 450 first to final-year MBBS students using the DREEM inventory scale. **Results:** The first-year students perceived the Educational environment most positively, with the highest global DREEM score of 120/200. The global scores of the 4th-year students were the lowest. The highest scores were recorded for the Student's perceptions of learning (SPL) domain (34.19/48, 71.23%), followed by student's academic self-perceptions (SASP) (22.21/32, 69.41%), student's perceptions of atmosphere (SPA) (32.25/48, 67.19%), student's perceptions of teachers (SPT) (30.48/44, 69.27%). **Conclusion:** The undergraduate medical student's perception of the educational

environment is positive and there is scope for improvement and some general measures like improvement of student's accommodation, inclusion of stress relieving measures in the curriculum, encouragement of extra-curricular activities etc.

KEYWORDS: DREEM, educational environment, Dundee ready scale, Nanded, Adult Learning

INTRODUCTION

The educational environment can be described as the atmosphere perceived by the students and teachers.^[1] Hutchinson suggests in adult learning theories that teaching is more dependent on setting the atmosphere for learning rather than imparting and sharing knowledge.^[2] The significance of the learning environment on student's academic advancement, behavior, and overall well-being is a matter of great concern.^[3] In the academic setting, regular teaching activities and teacher-student interactions are the important dimension. The learning environment available in educational campuses highly affects the learning ability and behaviour of students.^[4] To improve the quality of education and effectiveness of educators in medical colleges, one must identify the best clinical teacher who is enthusiastic, well organized and adopt interactive teaching with students.^[5] An ideal and positive educational environment prepares students for professional life in the future. The educational environment should promote the physical and mental status of students' intellect.^[6,7] There is a strong relationship between the learning environment to the students' satisfaction and success. To impart better results to improve learning quality, the strengths and weaknesses

of the learning environment should be identified to help change, adjust, and manage training programs.^[8] The educational environment impacts medical students' motivation, satisfaction, and ability to study and thrust of knowledge.^[9] Medical students participate in a lot of learning activities in the medical college's surroundings. Students' achievement, happiness, motivation, and success are all influenced by their educational environment, according to studies conducted around the world.^[10-12]

In India, national accreditation agencies like the National Assessment and Accreditation Council (NAAC) emphasize the educational environment as one of the important criteria in improving the quality system of an institution.^[13] Currently, the National Medical Commission has formed a Medical Assessment and Rating Board (MARB) to evaluate the educational environment of medical students.

The admission process in all the medical colleges is through an entrance exam conducted by the same competent authority and hence the students belong to different financial, sociocultural & environmental areas & their objectives towards the course are entirely different.^[14] Students' perception of the educational climate can be swayed by the growing diversity of the students' population, educational infrastructure & their expectations.^[15] Teaching and learning in effective clinical setup is a matter of interest in medical colleges and clinical attachments have a big influence in developing the budding doctors' competencies.^[16] Evaluating a learning environment facilitates quality improvement and innovation in the medical college and curriculum development.^[17]

The Dundee Ready Educational Environment Measure (DREEM) questionnaire is the most specific tool for the investigation of the unique environment experienced by students in medical and healthcare-related courses.^[18] This instrument was developed by an international Delphi panel and has been applied to a number of undergraduate courses for health professionals worldwide. The DREEM tool is a widely accepted and globally validated instrument for assessing the educational environment in undergraduate medical institutions and has five sub-scales including perceptions of learning, perceptions of teachers, academic self-perceptions, perceptions of the environment and social self-perceptions.^[19, 20] The study aimed to assess the student's perception of the educational environment using the Dundee Ready Education Environment Measure (DREEM) questionnaire among undergraduate medical students. The objectives of the study were to assess the Educational Environment of Undergraduate Medical students using DREEM, compare students' responses based on the year of study and gender and identify areas of strengths and weaknesses in the current educational environment.

MATERIALS AND METHODS

A Cross-sectional study was conducted at Dr Shankarrao Chavan Government Medical College, Nanded from January

2022 to December 2022 among first to final-year MBBS students.

Sample Size:

Dr. Shankarrao Chavan Government Medical College has an annual intake of 100 undergraduate medical students per year till 2019. Since 2020, the student intake per batch has been expanded to accommodate 150 students. All students from the First MBBS to the Fourth MBBS who gave voluntary consent were included in the study.

Data collection procedure:

The study's objectives were clarified, and once anonymity was assured, students were enrolled in the study. Each participant willingly provided their consent, and any unfamiliar terms were explained to them..

Inclusion criteria:

All MBBS students giving voluntary consent were included.

Exclusion criteria:

Students not giving voluntary consent and interns were excluded.

Instrument for Data Collection:

The Dundee Ready Education Environment (DREEM) measure is a highly generic and internationally validated study tool used to assess student perception of their educational environment.

- The DREEM questionnaire has five domains with 50 statements which are assessed on a five-point Likert scale ranging from strongly agree (4) to strongly disagree (0).
- However, negative statements were scored in reverse order. These 50 items will have a maximum score of 200 which indicates an ideal situation.

The five domains of DREEM inventory are,

1. Students' perceptions of learning (SPL) – 12 items; maximum score is 48;
2. Students' perceptions of atmosphere (SPA) – 12 items; maximum score is 48;
3. Students' perceptions of teachers (SPT) – 11 items; maximum score is 44;
4. Students' academic self-perceptions (SASP) – 8 items; maximum score is 32;
5. Students' social self-perceptions (SSSP) – 7 items; maximum score is 28

Each item is rated on a five-point Likert scale with scores ranging from 0 to 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 is made by reversing the scores; thus, after correction, higher scores indicate disagreement with that item. Items with a mean score of ≥ 3.5 are true positive points; those with a mean of 2 are problem areas; scores in between these two limits indicate the 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; and 151–200 = excellent.^[15]

Ethical issues:

Permission from the institutional ethical committee was obtained before the start of the study.

RESULTS

The mean global DREEM score of students of all years was 115 out of 200. Table 1 shows the demographic details of the participating students. Figure 1 shows the DREEM domain scores (converted to 100) for the first, second, third and fourth MBBS students. Evaluating the sub-domains of perception, students had a more positive perception of learning (Average mean score: 34.19), their perception of teachers moved in the right direction (Average mean score: 30.48), their academic self-perception was more on the positive side (Average mean score: 22.21), they had a more positive perception of atmosphere (Average mean score: 32.25) and their social self-perception could be graded as not too bad (Average mean score: 18.44).

The first-year students perceived the EE most positively, with the highest global DREEM score of 120/200. The global scores of the 4th year students were lowest (112/200).The highest scores were recorded for the students' perceptions of learning (SPL) domain (34.19/48, 71.23%), followed by Students' academic self-perceptions (SASP) (22.21/32, 69.41%), Students' perceptions of atmosphere (SPA) (32.25/48, 67.19%), Students' perceptions of teachers (SPT) (30.48/44, 69.27%), and lastly Students' social self-perceptions (SSSP) SPT (18.44/28, 65.86%). When comparing the global and different domain scores of all years were similar as shown in Table 2. Of these the three highest scored items were 31 (I have learnt a lot about empathy in my profession) 14 (I am rarely bored on this course) and 15 (I have good friends in this school), which received scores of 3.93, 3.83, and 3.71, respectively. The items that received the lowest scores were items 46 (My accommodation is pleasant), 49 (I feel able to ask the questions I want) and 3 (There is good support system for students who get stressed), with scores of 1.18, 1.56 and 1.6 respectively. The individual item scores of all semesters were tabulated in Tables 3, 4, 5, 6 and 7

Details	1 ST YEAR	2 ND YEAR	3 RD YEAR	4 TH YEAR	Total
GENDER					
MALE	64	60	34	42	200
FEMALE	76	72	56	46	250
AGE					
18 Years	78	0	0	0	16
19 Years	46	32	0	0	110
20 Years	16	100	11	0	157
21 Years	0	0	79	72	151
22 Years	0	0	0	16	16
TOTAL	140	132	90	88	450

Table 1: Demographic details of the students.

DISCUSSION

DREEM questionnaire was used to assess the student's perception about their educational environment. The total duration of an undergraduate medical course is four and a half years with a one-year internship. We only took 4 batches

Five subdomains of DREEM inventory including range of score	Mean score (SD) among all students	Avg. score among all MBBS students out of 100 points
Student's Perceptions of learning (0-48)	34.19±6.87	71.23
Student's Perceptions of teachers (0-44)	30.48±2.52	69.27
Student's Academic self-perceptions (0-32)	22.21±1.69	69.41
Student's Perceptions of the atmosphere (0-48)	32.25±6.62	67.19
Student's Social self-perceptions (0-28)	18.44±1.54	65.86
Over-all DREEM score (0–200)	115.36±17.5	

Table 2: Mean Dundee Ready Education Environment Measure subscale scores according to institution among medical undergraduate students

Students' Perception of Learning	MEAN	SD
I am encouraged to participate in class	3.34	1.08
The teaching is often stimulating	3.22	0.85
The teaching is student centred	2.18	0.69
The teaching helps to develop my competence	3.01	0.19
The teaching is well focussed	2.96	0.26
The teaching helps to develop my confidence	2.58	0.77
The teaching time is put to good use	2.22	0.94
The teaching over emphasizes factual learning	3.02	0.39
I am clear about the learning objectives of the course	3.62	0.8
The teaching encourages me to be an active learner	3.02	0.33
Long term learning is emphasized over short-term learning	2.98	0.14
The teaching is too teacher-centred	3.02	0.39

Table 3: Mean, standard deviation DREEM score of participants

of MBBS students. From First MBBS to Fourth MBBS with mainly preclinical and paraclinical subjects in the first 2 years and clinical for 3rd and 4th years students.

The global DREEM score was 115.36 ± 17.5 which indicates a more positive than negative educational environment. This was similar to various studies all over the world with a range from 101 to 150 which is comparable with findings from established international medical schools in the UK, South Africa, Ireland and Oman.^[19-22] Higher mean scores were reported from medical schools at the University of East Anglia, and the University of Birmingham in the UK and the

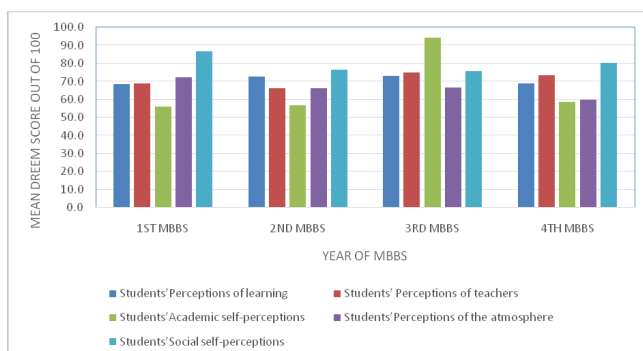


Figure 1: Mean Dundee Ready Education Environment Measure scores per subscale among medical undergraduate students

Students' perception of teachers	MEAN	SD
The teachers are knowledgeable	3.13	0.53
The teachers are patient with patients	3.2	0.61
The teachers ridicule the students	2.69	0.74
The teachers are authoritarian	2.54	0.73
The teachers have good communication skills with patients	2.42	1.24
The teachers are good at providing feedback to students	2.2	0.86
The teachers provide constructive criticism here	2.07	1.08
The teachers give clear examples	2.99	0.67
The teachers get angry in class	2.98	0.87
The teachers are well prepared for their classes	3.26	1.03
The students irritate the teachers	3.13	0.53

Table 4: Mean, standard deviation DREEM score of participants

University of Lund in Sweden.^[23-25] Studies from India also showed similar mean score values.^[26-28]

Students' academic self-perceptions	MEAN	SD
Learning strategies which worked for me before, continue to work for me now	2.16	0.97
I am confident about my passing this year	3.42	0.49
I feel am well prepared for my profession	1.65	1.11
Last year's work has been a good preparation for this year's work	3.08	0.18
I am able to memorise all I need	2.05	1
I have learnt a lot about empathy in my profession	3.93	0.76
My problem-solving skills are being well developed here	3.22	0.42
Much of what I have to learn seems relevant to a career in health care	2.75	0.72

Table 5: Mean, standard deviation DREEM score of participants

Students' perception of atmosphere	MEAN	SD
The atmosphere is relaxed during the ward teaching	3.1	0.3
This school is well timetabled	2.94	0.25
Cheating is a problem in this college	2.91	0.38
The atmosphere is relaxed during lectures	2.75	0.61
There are opportunities for me to develop interpersonal skills	2.57	0.65
I feel comfortable in class socially	2.57	0.74
The atmosphere is relaxed during seminars/tutorials	2.77	0.5
I find the experience disappointing	2.56	0.76
I am able to concentrate	2.94	0.33
The enjoyment outweighs the stress of the course	2.79	0.62
The atmosphere motivates me as a learner	2.8	0.6
I feel able to ask the questions I want	1.56	0.9

Table 6: Mean, standard deviation DREEM score of participants

However, studies of medical schools in Korea, Germany and Spain have reported lower DREEM scores. [29–31] This could be due to potential differences in the learning preferences and social lives of these diverse student populations.

Comparisons between different year students revealed that the global DREEM score as well as the domain scores of first-year students were more positive than other semester students. Similar findings were reported by studies in India. [26] The first-year students are fresh to the course and naïve and have less clinical exposure. They are more enthusiastic and excited for their future and perceive the EE more positively.

While taking into consideration the DREEM subscale score, of the individual domains, students scored highest in the domain of Student's perceptions of learning and felt it towards the positive side. This could be due to their interest in the medical field, that their learning is essential to provide health care needs and also that they are empathetic towards it. Other domains showed Students' perceptions of

Students' social self-perception	MEAN	SD
There is good support system for students who get stressed	1.6	0.64
I am too tired to enjoy the course	2.46	0.57
I am rarely bored on this course	3.83	0.59
I have good friends in this college	3.71	0.77
My social life is good	2.29	0.73
I seldom feel lonely	3.38	0.64
My accommodation is pleasant	1.18	0.39

Table 7: Mean, standard deviation DREEM score of participants

the atmosphere (SPA) towards a more positive atmosphere, Students' perceptions of teachers (SPT) were found to be moving in the right direction, Students' academic self-perceptions (SASP) feeling more on the positive side and Students' social self-perceptions (SSSP) was not very bad.

In terms of percentages of the total available score, the highest scores were recorded for the student's perceptions of learning (SPL) domain followed by Students' academic self-perceptions (SASP), Students' perceptions of the atmosphere (SPA) Students' perceptions of teachers (SPT), and lastly Students' social self-perceptions (SSSP).

Even though overall there is a positive environment, improvement is still in needed in all domains especially students' social self-perception and the social self-perception of teachers.

There are certain limitations of our study like the study tool; The DREEM Questionnaire and fixed options being used hence some aspects that affect the EE of our institution might have been missed. Also, for the study, a qualitative component could have been included that may have covered all the aspects of the EE that were overlooked in our study. Focused group discussions could have been included which could have given a clearer picture of their perceptions.

Our study being the first evaluation of students' perception of the EE at our institution could be useful to monitor the effects of curricular transformation over a period of time in the future. To conclude, the overall perception of our students about the Educational Environment was positive. The first-year student's perception was more positive than that of other batch students. The positive points were that the students are empathetic; students have good friends; and are rarely bored in courses. The most problematic fields

Domains	1st YEAR Mean ± SD	2nd YEAR Mean ± SD	3rd YEAR Mean ± SD	4th YEAR Mean ± SD
Students' Perceptions of learning (0-48)	32.94 ±2.24	34.86 ±20.5	35.16 ±2.10	33.07 ±0.66
Students' Perceptions of teachers (0-44)	30.36 ±1.62	29.15 ±1.55	33.07 ±3.22	32.25 ±2.61
Students' Academic self-perceptions (0-32)	17.96 ±1.09	18.17 ±1.52	30.25 ±1.22	18.83 ±1.59
Students' Perceptions of the atmosphere (0-48)	34.78 ±.80	31.84 ±1.77	31.95 ±1.21	28.79 ±5.04
Students' Social self-perceptions (0-28)	24.3 ±1.15	21.43 ±3.07	21.24 ±1.84	22.48 ±2.04
Total DREEM Score	120.71 ±24.28	114 ±5.6	118.87 ±7.85	112.94 ±2.428

Table 8: Differences in mean DREEM domain and total scores between students according to MBBS Batch

were their accommodation, freedom to ask questions and no supportive system for students who are stressed.

The areas with scope for improvement and the areas of weakness will be addressed with a positive perspective to improve and strengthen the EE in our institute.

CONCLUSION

In our study, we can conclude that the undergraduate medical students' perception of EE is positive in general and even though there is scope for improvement and some general measures like improvement of student accommodation, inclusion of stress relieving measures in the curriculum, encouragement of extra-curricular activities, provision of adequate security measures, etc., might be helpful to improve the students' perception of the educational environment.

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