

Assessing the educational environment using the DREEM Inventory at a Govt Medical College in (C.G.) India

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Abstract

Introduction: - The validity and reliability of the DREEM inventory was established across educational institutes. It has been translated into various languages and has been claimed to be a "culturally unbiased tool" to measure the educational climate at educational institutions. To the best of authors knowledge none of the articles have ever reported their validity and reliability among the students in the state of Chhattisgarh in India.

Purpose: - A newly formed state in the vast demographically rich country, with its limitations and newer establishments of medical institutes, made the Author take this test in the present institute, so as to access the student's perception of the educational environment here.

Method: - The DREEM inventory was administered to all the students enrolled in the Medical College at Raigarh (C.G.) during the academic year (2015-16). Inferential and co-relational statistics were employed to investigate the educational environment based on the score obtained from DREEM.

Result: - A response rate of 96% was achieved. The mean total DREEM score was 136.24/200, with the scores ranging from 96-172. All the results indicate that the students perception towards the educational environment were positive for all the five domains.

Conclusion: - There are number of areas in the programme that are performing better than our expectation, while some aspects could be improved upon. Over all the students' voluntary participation, suggests that they are very enthusiastic about newer trials and interested in their outcomes. The information sought from the present study identified our power zones and underlined our weaknesses, which can enable the program leaders to facilitate changes. It can also serve as a guide to other institutes to compare their data with.

Keywords: - Validity, Educational environment, DREEM, Medical students.

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I. Background:-

Learning is a continuous process which starts from the day we are born till its end. Learning environment depends on various factors which are interdependent and integrally related to each other. A learning environment has been defined as, "Everything that, is happening in the class room or department or faculty or university".¹ More recently the educational environment is recognized as a concept of great teaching experience as it, in turn affects the level of learning, degree of satisfaction of the learner and the academic success of the student.^{2,3} Learning environment is also defined as the; Environment experienced or perceived by students as well as the faculty. These perceptions are based on three important factors which are: the physical environment, emotional climate and intellectual climate.⁴ Learning depends on the engagement of the learner which is affected by their perception of relevance and degree to which they get motivated.⁵ Past experience, the preferred learning styles, the context of the curriculum and the environment in which the learning takes place also influences the learner.

Day by day the educationist and the educational institutes are trying to become more student oriented. Students perceptions of higher education, educational facilities and services related to the same are becoming increasingly important.⁶ Educational environment has been studied across the entire spectrum from primary to tertiary level, and even beyond to the post graduate level in various developed countries.⁷ The world federation for medical education highlighted the learning environment as one of the targets for the evaluation of medical education programmes.⁸ A widely agreed perception among the medical educators is that the effects of the educational environments, both academic and clinical are important determinants of medical students attitude, knowledge, skill, progression and behaviour, and that an optimal educational climate is an important factor for effective learning to occur.^{9,10,11}

Every year thousands of health sciences professional graduate from Indian universities many of whom are then employed as medical professionals, nurses, paramedics or any one of the number of health care disciplines. As these students enter their respective professions, their level of competence, knowledge, attitude reflects the educational institutions they attended, it is not only important for their own career prospects but also for the future of their patients and the community they are serving on a broader prospective.¹²

A positive learning environment for a student can lead to increased satisfaction, achievement and success as a practioner.^{13,14} By understanding an educational programme environment, the educationalists can assist with the quality assurance, by indentifying the areas which need improvement and subsequently evaluating changes that are implemented.^{1,9,15} Such measures have been instigated by various educationalists across the globe during past 10-15 years for exploring the educational environment in medical school in order to ascertain what is happening and the impact on the educational outcome.^{7,9,16}

Various methodologies have been utilised to investigate educational climate, although not based on any specific theory, numerous measures have been published previously studying the health professional programme.^{17,18} Therefore to conduct such evaluation a valid and reliable tool is desired. Recent studies include qualitative approaches or the use of questionnaires.^{5,16,19,20} Of these the DREEM (Dundee Ready Educational Environment Measure) questionnaire is specific to the unique environment experienced by the students of medical and health care courses. Utilizing a combination of quantitative and qualitative techniques, the methodology was designed to develop a non- culturally specific instrument. Medical educationalists through DREEM have been able to apply a much greater degree of empirical introspection to the learning environment of the student.¹² The DREEM was originally used to evaluate the learning environments of medical student whose courses curriculum had rapidly changed during a period of rapid reform in traditionally teaching methods up until and during 1990: a trend particular to more student centered curriculum. In past years DREEM has been used by a dozen of countries across the global universities of Europe, Asia, North - South America, Middle East and still per collating through many more such countries.²¹

In the process of study the educationists have been able to achieve a number of goals including the generation of a profile of an institution, their courses with their strengths and weakness making a comparative analysis within the institutions or bench marking between them and another institution and test and apply it as a predictor of student performance.²²

Additionally this tool can be used to help amend the curriculum in comparing the present and past programme and for the examination and evaluation of the effectiveness of a university curriculum.^{23,24} World over DREEM has allowed the medical educationalist to standardize their educational environments. It has been widely accepted and put to use in many countries.²¹ Given the potential use of the DREEM not only to the institution that utilizes it, but to other institutions that can use it as a reference point and the broader international community, it is regretful that use of such a tool has not been more wide spread across Indian health science courses.

Applying the DREEM to medical science students could be invaluable on a range of levels especially in a new establishment like ours. It could provide an insight snapshot on the way these young learners views their respective course structure, just like past several institutes have done.^{25,26,27,28} This in turn would have a positive impact on the learning practices currently undertaken and therefore on a broader aspect to the national Indian health care service provider sector. These finding may infer parallel information about other institutes that run on the same course structure. Lastly, if this DREEM study is administered in conjunction with the demographic details it would allow for exploration of trends like those found previously between course type, academic year, gender as well as other variables like in our set up students coming from various means of languages, background and other higher secondary course structure (like CBSE, ICSE, state board), medium of education predominantly Hindi or English which might add a greater depth of information for both the university and teachers to setup and come up with a better equipped course structure.^{1,22,25,27-31}

Therefore the aim of this study is to evaluate by way of student perceptions recorded on the DREEM questionnaire the overall education environment within the health science course applied in the state of Chhattisgarh India, so as to formulate and pin point the areas of difficulty in the education system and thus bringing about some constructive Ideas to solve the issues to generate a harmonious balance between the learner and the learning environment.

II. Method

1.Study location-

This study was carried out in the department of anatomy at Government medical college, Raigarh Chhattisgarh, enrolled under the Pt. D.D.U.H. University during the academic year (2015-16). The course gives a traditional 5¹/₂ year training to students : devoting initial 2¹/₂ years for pre and para clinic subjects and rest for clinical and internship postings . As the college is a new set up in the state of Chhattisgarh with its new opportunities and probabilities of difficult areas, the study was a good source of gathering information.

2. Study Population-

The target population were the medical students in the 1st, 2nd, 3rd at Govt. medical college Raigarh. Each batch consisted of 50 students therefore a total of 150 students were studying at given point of study in the college but 2 of the students were not present at the time of study. Out of the rest 4 students failed to complete the questionnaire or did not return them. Therefore in total 144 students questionnaires were analysed (Response rate = 96)

3. Data Collection-

The students were delivered with the questionnaires early in the morning before the 1st class after talking due consent from the respective HOD'S. Each group of 25 students were taken care by a collaborator and students were briefly explained about the objectives of the study and its data processing characteristics giving special emphasis to the importance of voluntary participation and the anonymity of the process. The average time taken was 15 minutes. Participants were invited to complete the questionnaires. We used combined DREEM questionnaires in English and Hindi without modification.

DREEM

The DREEM was developed by the international Delphi panel, involving more than eighty health and medical professions, educators from all continents. The fifty items in the scale were considered to be the constituents of a good learning environment for undergraduates in the health professions.^{2,21,23,31} The development and validation of DREEM has been reported.²

The DREEM contains 50 statements relating to a range of topic directly relevant to education climate, students were asked to read each statements carefully and to respond using a 5 point Likert – type scale ranging from strongly agree to strongly disagree. It is important that each student applies the items to their own current learning situation and responded to all the 50 item.

4. Scoring the DREEM-

DREEM gives a global score (out of 200) for the 50 items and has five sub- scales relating to :

1. Students' perceptions of Learning;
2. Students Perceptions of Teachers;
3. Students' Academic Self- Perceptions;
4. Students' Perceptions of Atmosphere and
5. Students' Social Self- Perceptions.

It has a consistently high reliability and data can be collected and analysed according to variables such as year of study, ethnicity, gender, age and courses/attachments. We note that Pololi & Price (2000) had developed a thirty one question survey in four US medical school with three sub- scales. Their one inventory does not claim to be non- culturally specific nor generic to the health profession beyond medicine; the two inventories do share several items, which might be taken as an indication that there is something generic about what is considered to be an effective educational environment in the undergraduate health professions. As

Item are scored as below

- a) Strongly Agree(SA): 4 points
- b) Agree (A): 3 points
- c) Uncertain(U): 2 points
- d) Disagree (D): 1 Points and
- e) Strongly Disagree (SD): 0 points

However, 9 of the 50 item (number 4,8,9,17,25,35,39,48 and 50) are negative statements and should be scored 0 for SA, 1 for A, 2 for U, 3 for D, and 4 for SD. The 50 item DREEM has a maximum score of 200 indicating the ideal educational environment as perceived by the students. A score of 0 is the minimum and would be a deeply worrying result for any medical educator and warrant intervention (0-50 very poor, 51-100 plenty of problem and 101-150 More positive than Negative ,151-200 Excellent). An Item that has a mean score of 3.5 or over is real positive points. Any item with a mean of 2 or less should be examined more closely as they indicate problem areas. Item with a mean between 2 and 3 are aspects of the climate that could be enhanced.

As far as the total DREEM score, the data was later regrouped according to the five domains as questions about perception were in different location in the original questionnaire. These domains as discussed previously along with their interpretations are as follows:

Students' perception of learning (with 12 items and a maximum score of 48);

(0-12 Very' poor, 13-24 Teaching is viewed negatively, 45-36 A more positive perception, 37-48 Teaching highly thought of)

Students' perception of Teachers (with 11 items and a maximum score of 44);

(0-11 Abysmal, 12-22 in need of some retraining, 23-33 moving in the right direction, 34-44 Model course organization)

Students' academic self- perception (with 8 items and a maximum score of 32);

(0-8 Feeling of total failure, 9-16 Many negative aspects, 17-24 Feeling more on the positive side, 25-32 Confident)

Students' perception of academic atmosphere (with 12 items and a maximum score of 48);

(0-12 a terrible environment, 13-24 there are many issues which need changing, 25-36 A more positive attitude, 37-48 A good feeling overall)

And

Students' social self- perception (with 7 items and a maximum score of 28);

(0-7 Miserable, 8-14 not a nice place 15-21 not too bad, 22-28 Very good socially)

III. Results

Table 1- DREEM domains for medical students (n=144)

Items	Number of question	Maximum DREEM	Mean	SD
Students' Perceptions of Learning (SPoL)	12	48	32.30	8.71
Students' Perceptions of Teachers (SPoT)	11	44	27.98	9.89
Student's Academic Self-Perception (SASP)	8	32	22.05	7.34
Students' Perceptions of Atmosphere (SpA)	12	48	32.50	11.70
Students' Social Self-Perceptions (SSSP)	7	28	21.40	5.90
Total DREEM Score	50	200	136.76	43.53

Table 2- Students' perceptions of learning, among medical students (n=144)

Items	Mean	SD
1. I am encouraged to participate in class	3.24	0.53
7. The teaching is often stimulating	3.02	0.60
13. The teaching is student centred	2.74	0.66
16. The teaching helps to develop my competence	2.71	0.99
20. The teaching is well focused	2.95	0.62
22. The teaching helps to develop my confidence	3.02	0.52
24. The teaching time is put to good use	2.90	0.79
25. The teaching over-emphasizes factual learning	1.05	0.93
38. I am clear about the learning objectives of the course	2.95	0.54
44. The teaching encourages me to be an active learner	2.98	0.72
47. Long term learning is emphasized over short term learning	2.90	0.79
48. The teaching is too teacher-centered	1.83	1.01
Total mean score	32.31	8.71
Maximum Score	48	

Table 3- Students' perceptions of teachers, among medical students (n=144)

Items	Mean	SD
2. The teachers are knowledgeable	3.31	0.47
6. The teachers are patient with students	2.64	0.78
8. The teachers ridicule the students	2.45	1.01
9. The teachers are authoritarian	1.71	1.24
18. The teachers have good communication skills with students	2.36	0.71
29. The teachers are good at providing feedback to students	2.76	0.76
32. The teachers provide constructive criticism here	2.21	0.98
37. The teachers give clear examples	2.93	1.02

39. The teachers get angry in class	1.98	1.24
40. The teachers are well prepared for their classes	2.83	0.66
50. The students irritate the teachers	2.79	1.02
Total mean score	27.98	9.89
Maximum Score	44	

Table 4- Students' academic self-perception, among medical students (n=144)

Items	Mean	SD
5. Learning strategies which worked for me before continue to work for me now	2.26	0.96
10. I am confident about my passing this year	3.31	0.90
21. I feel I am being well prepared for my profession	3.05	0.79
26. Last year's work has been a good preparation for this year's work	2.48	1.14
27. I am able to memorize all I need	2.29	1.09
31. I have learned a lot about empathy in my profession	3.10	0.73
41. My problem solving skills are being well developed here	2.52	1.06
45. Much of what I have to learn seems relevant to a career in Healthcare	3.05	0.66
Total mean score	22.05	7.34
Maximum Score	32	

Table 5 - Students' perceptions of atmosphere, among medical students (n=144)

Items	Mean	SD
11. The environments are relaxing during the ward teaching	2.76	0.73
12. This school is well timetabled	2.79	0.88
17. Cheating is a problem in this school	2.12	1.47
23. The atmosphere is relaxing during lectures	2.71	0.72
30. There are opportunities for me to develop interpersonal skills	2.93	1.07
33. I feel comfortable in class socially	3.10	0.48
34. The atmosphere is relaxing during seminars/tutorials	2.71	0.81
35. I find the experience disappointing	2.67	1.14
36. I am able to concentrate well	2.74	0.91
42. The enjoyment outweighs the stress of the course	2.50	1.52
43. The atmosphere motivates me as a learner	2.93	0.77
49. I feel able to ask the questions I want	2.55	1.19
Total mean score	32.50	11.70
Maximum Score	48	

Table 6 -Students' social self-perception. Among medical students (n=144)

Items	Mean	SD
3. There is a good support system for students who get stressed	3.24	0.53
4. I am too tired to enjoy the course	2.86	1.05
14. I am rarely bored on this course	2.38	1.15
15. I have good friends in this school	3.60	0.70
19. My social life is good	3.48	0.67
28. I seldom feel lonely	2.69	1.07
46. My accommodation is pleasant	3.17	0.73
Total mean score	21.40	5.90
Maximum Score	28	

DREEM was administered to the students of all the present batches of the college, for all the students taken together (n=149), the global DREEM score out of a maximum possible of 200, was 136.295 ± 43.53 (Table I)

Students' perception of learning. (Table II).

In SPOL subscale, the total mean score was 32.31 ± 8.71 out of a maximum score of 48, which perceived 'a more positive approach; three questions scored above the average mean of 3 (i) I am encouraged to participate in class,(ii) the teaching is often stimulating and (iii)teaching helps to develop my confidence).seven questions ranged between 2-3, suggesting the domains which could be improved.

Students' perceptions of teachers (Table III)

In SPOT, the subscale included a total of eleven items, with the total mean score of 27.98 ± 9.89 out of maximum total of 44, also suggested the environment was 'moving in the right direction; students agreed with a score of 3.31 ± 0.47 , that the teachers were knowledgeable. There is a strong co- relation between the negative scoring questions, the teachers get angry in class and the students irritate the teachers having a score of 1.98 ± 1.24 and 2.79 ± 1.02 respectively. Rest all items ranged between 2-3

Students' Academic self- perception (Table IV)

With the total mean score of 22.05 ± 7.34 out of the possible maximum score of 32 in SASP. Four items scored more than 3 (i) I am confident about passing this year, (ii) I feel I am being well prepared for my profession (iii) I have learned a lot about empathy in my profession and (iv) much of what I have been learning seems relevant to a career in health care). Rest all items scored between 2-3 which indicates that the students 'feel more on positive side'

Students' perception of atmosphere (Table V)

In SPOA which included 12 subscales, the total mean score of 32.50 ± 11.70 out of 48 indicated a 'more positive attitude'. The question that ' I find the experience disappointing ' scored 2.6 ± 1.14 which is item to be improved upon and discussed with students.

Student's social self- perception (Table VI)

The SSSP subscale included seven items, with these questions scoring more than the average mean 3(i) there is a good support system for students who get stressed ,(ii) I have good friends in the school and (iii) my social life is good) indicated that the environment was nearly very good socially with a total mean score of 21.40 ± 5.90

All the results indicate that the student's perceptions towards the educational environment were positive for all five DREEM domains.

IV. Discussion

This study originated with a desire to learn how students perception and the educational environment in this budding institutions. The govt medical college at Raigarh is set up in a small city in the developing state of Chhattisgarh with students representing , minority and those from rural background with a mixture of few handful students from the privileged class majority of students coming from such educational environments which are not very supportive and with Hindi as the language of instruction in contrast to the medium of education in all medical college in India, where in English in the mode of instruction and available literature on medical education.

An overall response rate was 96 (i e. 144/150 questionnaire were returned with completed data). This shows the interest taken by the students towards the importance of the study, as it was one of its kind ever conducted in the state of Chhattisgarh. With a global score of 136/200, the students rated the overall experience at the institute as more positive than negative. Such high scores have been appreciated in very few centres of international repute. Table 7 shows the comparative data on the total scores of DREEM with various other universities national and international repute. Table 8 shows the comparative data of DREEM inventory with various other countries. Comparatively lower score were reported in from studies previously conducted in our country (119/200, 114/200, 107/200), such similar lower scores were also reported from other countries like Srilanka, U.A.E., Nigeria, Trinidad as 108/200,120/200,118/200,109/200 respectively.^{1,23,32-38}

Lowest scores were seen in Saudi Arabia and Canada 89/200 and 97/200 respectively.^{36,37} Scores in harmony with the present study were seen in some studies from Malaysia, Nepal as their global scores marred 133/200, 134/200, 130/200 respectively.^{1,38,39} Highest scores were found during the study in the University of Birmingham, and Dundee Medical School as 139/200, which indicate that these institutes are somewhat more innovative in providing student centered approach to education and support the importance of problem based learning curriculum.^{31,40,41}

At our institute we got an over whelming response and a very good global score, but being a part of the institute the author feels that at some places and items, students gave an exaggerated response; this could be

because of the comparative background from which some students have come where they have not seen such teaching environment (i.e. primary and secondary schools in rural areas, where in the education system is very disheartening) the dearth of good teachers, poor infrastructure , lack of motivation, good mentors, qualified educationalist and many more such problems which are a routine to students coming from rural areas. All students perceived a more positive approach for their learning on the whole. The limitations of the study remain under some factors as discussed previously, the overwhelming response of the students and the scores reaching a fairly higher value than the reality could be because of the students never having been exposed to an environment as conducive as the present institute. An informal feedback from the students revealed that some students faced difficulty in understanding the complex use of words in the questions, both in English and Hindi as these students hailed from actual rural backgrounds where the medium of instruction in school was in the local dialect spoken in the state of Chhattisgarh (Chhattisgarhi), nevertheless all respondents returned complete questionnaires. Each educational institute is a complex mixture of various factors which are institute specific and thus the results obtained in our institute may not hold good for any other institute in the country or world over. Being the first assessment of educational environment in the present institute and in the state of Chhattisgarh, the study may serve as a reference to monitor the change in the environment in due course of time.

V. Conclusion:-

An overall positive response was generated from the above study. The students assessed the educational environment at the present institute more positive than negative, although some areas need to be checked and corrected. Voluntary participation of students was seen, which suggests that they are open to new ideas and were interested in the outcome. Being a new set up a constant monitoring and mentorship of senior students and faculty is advised.

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Table no 8: Comparison of Dundee Ready Education Environment Measure (DREEM) inventory Score at Govt Medical College, Raigarh (C.G) (present study) with that of other countries.

Country (refrence)	Year of study	n	SCORE (%)				
			SPL	SPT	SASP	SPA	SSSP
Canada(14)	2004	407	39.6	54.6	46.9	52.1	53.6
Nepal (16)	2001	86	68.8	59.1	68.8	66.7	64.4
Nigeria (16)	2001	127	68.8	59.1	65.6	56.3	46.4
Thailand (23)	1997	236					
UK (24)	1997	7905	65.8	65.8	64.3	68.6	65.4
Saudi Arabia (36)	2005	222	40.7	48.3	46.3	4.4	46.3
Trinidad(42)	2001-2002	106	58.3	53.6	58.8	52.2	51.6
Saudi Arabia(43)	2004	450	45.8	45.5	53.1	47.9	53.6
Present study INDIA	2015-16	144	67	63.5	68.8	66.7	76

SPL = students'perceptions of learning : SPT = students perceptions teachers:

SASP = students academic self- perception;

SPA= students'perceptions of atmosphere ;

SSSP = students'social self -perception.

Table 7: Comparison of DREEM total score with international universities of repute.

Author	Year	University	Overall DREEM score
Mayya and Roff (1)	2004	Kasturba Medical College ,India	107
Till(14)	2004	Canada Memorial Chiropractic College ,Canada	97
Al-Hazimi et al(24)	2004	Dundee Medical School,Dundee	139
Al- Hazimi et al.(31)	2004	Umm Al-Qura University, KSA	107
Al- Hazimi et al.(31)	2004	King Abdulaziz University, KSA	102
Al- Hazimi et al.(31)	2004	Sana'a University, Yemen	100
Abraham et al.(32)	2008	Melaka Manipal Medical College ,India	117
Roff and McAleer (33)	2001	Nigeria Undergraduate Medical School,Negeria	118
Shehnaz and Sreedharan(35)	2011	Gulf Medical University, UAE	120
Al-Ayed and Sheik(36)	2008	KSU,KSA	89.9
Varma et al.(40)	2005	Birmingham University, UK	139
Zawawi AH and Eizuber M.(41)	2012	KSAU-HS,KSA	131
Zawawi AH and Eizuber M.(41)	2012	KSAU,KSA	100
Bouhaimed et al.(44)	2009	Kuwait University, Kuwait	105
Present study	2015-16	Govt. Medical College Raigarh Chhattisgarh, India	136.24

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