

## ORIGINAL ARTICLE

# Perceptions of Dental Students Studying at Ras Al Khaimah College of Dental Sciences to Their Educational Environment Using the Dundee Ready Educational Environment Measure –DREEM

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**ABSTRACT**

**Objective:** To measure the perceptions of the dental students studying in Ras al Khaimah College of Dental Sciences regarding the educational environment using the DREEM questionnaire.

**Study Design:** Cross sectional descriptive study.

**Place and Duration of Study:** The study was conducted at Ras al Khaimah College of Dental Sciences from 15<sup>th</sup> of November 2015 to the 1<sup>st</sup> of March 2016.

**Materials and Methods:** The study was conducted on dental students of Ras Al Khaimah College of Dental Sciences (RAKCODS) from first till fifth year. DREEM questionnaires were distributed to a total of 320 students out of which 245 students returned filled up questionnaires which were collected at the end of the week. DREEM questionnaire comprises of a set of 50 questions which are graded on a likert scale of 0-4 by students. All the data was tabulated in SPSS 16.0 and the results were compared against the fixed values given in original DREEM inventory.

**Results:** Out of n=320 students, 245 responded which gave us a response rate of 76.5%. Of all the participants, 94 (38%) were male students and 151 (62%) were female students. The total mean scores for the five major categories, namely, Student's perceptions of learning (SPL), Student perceptions of teachers (SPT), Students' academic self-preparation (SAP), Students' perception of atmosphere (SPA), and Students' self-perception (SSP), in the respective order, were 31.08/48, 28.15/44, 21.03/32, 29.87/48, 16.65/28. The global score was 126.78 out of 200 which indicates the students find the educational environment of RAKCODS more positive than negative.

**Conclusion:** This study indicates that students find the dental environment provided within RAKCODS more positive than negative. High scores have been identified in student's perception of learning and the faculty. Low scores have been attributed to the teaching methodology particularly teacher centered learning.

**Key Words:** Dentistry, Dental Students, DREEM, Educational Environment, RAKCODS.

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## Introduction

The educational environment comprises of physical and psychological that tends to happen in a classroom, faculty, department and the institution. The environment provided within any institute, be it, medicine or dentistry, is vital in determining the success or failure of any institute.<sup>1</sup> As the times are changing, so is the teacher's role from being an educator to being a guide in helping students to learn

new experiences.<sup>2</sup> An established correlation has been stated between an educational environment provided to a student and its impact on the students' achievement, satisfaction and success.<sup>3</sup> For this reason, it is the responsibility of all dental and medical educators, in all dental or medical institutions, to make sure that all dentists are being trained in an environment that is supportive yet challenging in a healthy way so as to promote learning.<sup>4</sup> The educational environment is considered as one of the areas that should be addressed while evaluating any medical or dental program within an institute, by the world federation for medical education.<sup>5</sup>

In order to make improvements within the curriculum of any educational institution, the understanding of its education environment is very important to determine the strengths and weaknesses within that institution, in order to enhance student's learning. In order to do so, Roff et

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al developed a useful tool at Dundee University UK, "Dundee Ready Education Environment Measure (DREEM).<sup>6</sup> It is a validated tool and highly reliable which can be used for multiple purposes such as comparative analysis between students' perceptions of an educational climate within any institution.<sup>7</sup>

The DREEM questionnaire consists of fifty questions subdivided into 5 sub-domains, with a total global score of 200. Because of its high reliability and validity, it has been tested on student's populations in Pakistan, India, UK, Malaysia, Greece, Saudi Arabia, Bangladesh, Thailand, Ethiopia, Argentina and many other countries.<sup>8</sup>

Ras Al Khaimah College of Dental Sciences (RAKCODS) was built in the year 2007 in Ras Al Khaimah, United Arab Emirates. It consists of a vast diversity of students from different countries. There is a lot of effort done by the institution to provide the highest standard of education and to provide them with the suitable environment that helps and motivates them to build their clinical and interactive skills, which are very important in the dental field. For this reason, the study was conducted in order to understand the student's perceptions of the educational environment provided within RAKCODS, so as to bring a positive change, if needed, for the benefit of the dental students.

### Materials and Methods

A cross sectional descriptive study was conducted at Ras Al Khaimah College of dental sciences within a span of 3 months from 15<sup>th</sup> November 2015 to 1<sup>st</sup> March 2016. All the students studying in Ras Al Khaimah College of Dental Sciences were included in the study. Student who did not consent to participate in study or incompletely filled questionnaires were automatically excluded from study.

The duration of dental program is five years followed by one year of internship, in first 3 years students are taught preclinical subjects, and in last two years they are taught the clinical subjects. The students within the college are exposed to the clinical environment from their first year for clinical observation rounds to familiarize them with the clinical environment by the time they start their clinical training in the third year. The DREEM questionnaires were distributed in each class, to a total of 320 students. Before the questionnaires were distributed, the aim of the

research was explained to the students and clear instructions were given to them regarding the data collection process, this was followed by their consent. The questionnaires were collected from the participating students after a week, by the co-investigators.

The DREEM questionnaire principally comprises of fifty questions subdivided into five main categories; (1) Student's perceptions of learning (SPL), (2) Student perceptions of teachers (SPT), (3) Students' academic self preparation (SAP), (4) Students' perception of atmosphere (SPA), and (5) Students' self perception (SSP). All of these categories contain corresponding questions which were measured using the Likert scale 0-4 where 0 stands for strongly disagree, 1 for disagree, 2 for unsure, 3 for agree and 4 for strongly agree. The Likert scale is used to evaluate all the questions except nine questions (4, 8, 9, 17, 25, 35, 39, 48 and 50) which are negative statements and, are analyzed in a reverse score such as, 0 for strongly agree, 1 for agree, 2 for unsure, 3 for disagree, and 4 for strongly disagree.

The maximum score within each sub category depending upon the number of questions each category, are, category 1 (SPL) contains 12 questions giving the maximum score of 48 (12x4), category 2 (SPT) contains 11 questions giving the maximum score of 44 (11x4), category 3 (SAP) contains 8 questions giving the maximum score of 32 (8x4), category 4 (SPA) contains 12 questions giving the maximum score of 48 (12x4), category 5 (SSP) contains 7 questions giving the maximum score of 28 (7x4). The total global score of DREEM questionnaire is 200 encompassing all the sub-categories.

The scores were interpreted according to the following criteria, for each subscale; Category 1 (SPL)- 0-12 means very poor, 13-24 means teaching is viewed negatively, 25-36 means a more positive perception, 37-48 means teaching is highly thought of. Category 2 (SPT)- 0-11 means Abysmal, 12-22 means in need of some retraining, 23-33 means moving in the right direction, 34-44 means model teachers. Category 3 (SAP)- 0-11 means Abysmal, 12-22 means in need of some retraining, 23-33 means moving in the right direction, 34-44 means model teachers. Category 4 (SPA)- 0-12 means a terrible environment, 13-24 means there are many issues that need changing, 25-36 means a more positive

attitude, 37-48 means a good feeling overall. Category 5 (SSP)- 0-7 means miserable, 8-14 means not a nice place, 15-21 means not too bad, 22-28 means very good socially. For the interpretation of global DREEM score, 0-50 means very poor, 51-100 means plenty of problems, 101-150 means more positive than negative, 151-200 means excellent Scores of individual questions determined a more specific response to the educational environment. Questions with a mean score of 2 and below, with the exception of negative questions, were considered problem areas that required more attention. Questions with a mean score between 2 and 3 were considered neither weak nor strong, but could be further improved. Mean scores of 3 and above were considered as positive points whereas, a mean score of 3.5 or above, for any question, were considered as the real positive points. Similarly, for negative questions, any mean score of 2 and above indicates problem areas which require attention. The Global DREEM score of 200 indicates an ideal educational environment.

All the data collected from the questionnaires were analyzed using SPSS 22.0 and Microsoft Excel. Mean scores were calculated for every individual item, sub-categories and finally the DREEM total score.

**Results**

Out of 320 students, only 245 filled the questionnaires and returned them, which gave us a response rate of 76.5%. Of all the participants, 94 (38%) were male students and 151 (62%) were female students.

Table I indicates the total mean scores for the five major categories, namely, Students' perceptions of learning (SPL), Students' perceptions of teachers (SPT), Students' academic self preparation (SAP), Students' perception of atmosphere (SPA), and Students' self perception (SSP), in the respective order, are 31.08/48, 28.15/44, 21.03/32, 29.87/48, 16.65/28. The table also gives mean values based on gender, where male students are rated higher than female students by a very little margin. The total DREEM score was 126.78/200.

Table II shows the mean values for each individual question with respect to gender of the students. Only 1 question, "The teachers are knowledgeable", had a score >3 which indicates a real positive point, majority of the questions had the score above 2,

**Table I: Total mean scores of the responses within each sub category along with their interpretation**

Sub Categories	Max Score	Mean as per Gender of Participant		Total Mean	Interpretation
		Male	Female		
Students' perceptions of learning	48	31.19	31	31.08	A more positive perception
Students' perceptions of teachers	44	28.25	28.08	28.15	Moving in the right direction
Students' academic self preparation	32	21.13	21	21.03	Feeling more on the positive side
Students' perception of atmosphere	48	30.43	29.53	29.87	A more positive attitude
Students' self perception	28	17.11	16.37	16.65	Not too bad
Total DREEM Score	200	-	-	126.78	More positive than negative

which indicates neutrality, but a little improvement would help. Amongst negative questions, "The teaching overemphasizes factual learning", "The teaching is too teacher-centered", "The teachers are authoritarian", "The students irritate the teachers", "Cheating is a problem in this school " had scores >2, which means this is a problematic area that requires attention.

**Discussion**

For the assessment of the educational environment, feedback by the students is important. Between the two groups, the ratio of female participants to male participants is higher, considering, the total number of female students are higher in number than male students within university.

The overall DREEM score was 126.78 out of 200 which indicates the students find the curriculum within RAKCODS more positive than negative. Although the differences between the mean values of male and female participants is barely minimum, however, the mean values of male students (128.11) are a bit higher than female students (125.98).

The overall response of the students to sub category 'Students' perceptions of learning' were 31.08 out of a total score of 48 indicating a more positive perception of the learning environment attained within the institution, which means the students find

the teaching experience interesting, focused and motivates them to be a good learner.

The response of students to 'students' perception of teachers' was 28.15/44 indicating the students find the teachers moving in the right direction when it comes to teaching them. Questions such as 'The teachers are knowledgeable' (Table II, question 2) have a mean score of 3.11 which is a real positive point. Questions like 'The teachers have good communications skills with patients' (Table II question 18), 'The teachers give clear examples' (Table II, question 37), 'The teachers are well prepared for their classes' (Table III, question 40) have high mean values, 2.77, 2.74, 2.86, in respective order, which means the students find the teachers having good communication skills with both the students in class and with patients in clinics and both of these factors are important for effective diagnosis, management and treatment of patients and to attain a comfortable relation with the patient which automatically aids them in trusting the students as a doctor in clinical years and, therefore, be compliant. This also indicates the students find the teachers well prepared for the class. It should be noted, being able to communicate with patients is quite fundamental for any dentist. Since the students are exposed to the clinical environment from the first year, being able to observe the teachers within the clinical environment proves to be a good role model to them in developing attitudes and morality to treat patients.

The overall response rate of students to academic self-preparation was 21.08 out of 32 which indicates students find the curriculum more towards the positive side. The response of the students to atmosphere and self-perception, respectively, were 29.87 out of 48, 16.65 out of 28 indicating a high score. Students find the educational environment within the institute quite positive and their social perception isn't too bad either. A very high mean score was observed for 'have good friends in this school' (Table 3, question 15) and 'My social life is good' (Table III, question 19) which means the students are comfortable within the university, are able to bond well which indicates generally a good and friendly environment.

The response rate of students to negative statements were generally favorable except questions like 'The teaching overemphasizes factual learning' (Table III,

question 25), 'The teachers are authoritarian' (Table II, question 9), 'The students irritate the teachers' (Table II, question 50), 'Cheating is a problem in this school' (Table II, question 17), teaching is too teacher centered, (Table II, question 48) which had a high mean score, in respective order, 2.56, 2.29, 2.34, 2.19, 2.13. These scores indicate a problem area which requires attention.

The overall DREEM score of the students with respect to the curriculum offered in Ras al Khaimah college of Dental Sciences, shows a higher score if we compare our values with international universities, such as, medical and dental schools in Sri Lanka, Nigeria, Pakistan and India which were 108<sup>8</sup>, 118<sup>9</sup>, 114.4<sup>10</sup> and 124<sup>11</sup> respectively. The score of UK medical schools (139) is a bit higher than our score.<sup>12</sup> All of these studies provide a comparative analysis of our university with the internationally recognized institutions.

The important questions raised from the results are that there are many reasons which can render a student from irritating a teacher such as if they find the professor disorganized with their lecture, or not interacting with them, starting a class early and ending it late, teaching directly from their notes or board, not being innovative during teaching session, never grading the assessment papers or assigned work on time. Creating a positive environment is a matter of great concern for all the teachers.<sup>13</sup> Being authoritative towards students in order to facilitate learning will never make the students interested enough to do that on their own. The teaching sessions should be stimulating, organized and innovative on daily basis as the teachers being in a dental profession are more of cultivator's proper human relationships and how to induce a good morality.<sup>14</sup> We must always remember, a good teacher is one who knows where to begin, what to include and omit, know the stages that motivate students to master the subject.<sup>15</sup>

The main limitation we had in the study was the students who did not fill out or complete the questionnaires, because of which the students were explained the logic behind each and every question and a week's time was given to them in order to obtain accurate results.

The concept of factual learning is not really induced within the institution as much as it is adapted by the

students to find an easy way out for their exams. For this reason, all the lectures should be precisely centered on guiding the students on what aspects of a particular subject they should focus on, and the sessions should be based on problem based learning which lets the students to collectively brainstorm their way to a dental solution. With these questions we still cannot identify what aspects of the teacher's mannerism end up making the students to irritate them, which again, will require a more detailed study.

**Table II: Mean dream results of each question within sub category, along with gender and mean score**

Item	Questions corresponding to main category	Mean Values		
		Male	Female	Total Mean
	<b>1. Students' perceptions of learning:</b>			
1	I am encouraged to participate in class	2.64	2.67	2.66
7	The teaching is often stimulating	2.59	2.64	2.62
13	The teaching is student-centered	2.67	2.50	2.57
16	The teaching is sufficiently concerned to develop my competence	2.78	2.62	2.68
20	The teaching is well focused	2.74	2.63	2.67
22	The teaching is sufficiently concerned to develop my confidence	2.38	2.42	2.40
24*	The teaching time is put to good use	2.67	2.85	2.78
25	The teaching overemphasizes factual learning	2.56	2.56	2.56
38	I am clear about the learning objectives of the course	2.85	2.78	2.81
44	The teaching encourages me to be an active learner	2.69	2.85	2.79
47	Long term learning is emphasized over the short term	2.44	2.39	2.41
48*	The teaching is too teacher-centered	2.18	2.09	2.13
	<b>II. Students' perceptions of teachers:</b>			
2	The teachers are knowledgeable	3.10	3.11	3.11

6	The teachers are tolerant	2.89	2.81	2.84
8*	The teachers ridicule at the students	2.11	1.83	1.93
9*	The teachers are authoritarian	2.41	2.22	2.29
18	The teachers have good communications skills with patients	2.72	2.79	2.77
29	The teachers are good at providing feedback to students	2.70	2.85	2.80
32	The teachers provide constructive criticism	2.59	2.50	2.53
37	The teachers give clear examples	2.71	2.76	2.74
39	The teachers get angry in class	1.86	1.99	1.94
40	The teachers are well prepared for their classes	2.79	2.91	2.86
50	The students irritate the teachers	2.38	2.31	2.34
	<b>III. Students' academic self-perceptions:</b>			
5	Learning strategies which worked for me before continue to work for me	2.50	2.52	2.51
10	I am confident about passing this year	2.93	2.81	2.85
21	I feel I am being well prepared for my profession	2.61	2.84	2.75
26*	Last year's work has been good preparation for this year's work	2.23	2.45	2.37
27	I am able to memorize all I need	2.55	2.50	2.52
31*	I have learned a lot about empathy in my profession	2.63	2.59	2.60
41	My problem-solving skills are being well developed here	2.85	2.52	2.64
45	Much of what I have to learn seems relevant to a career in Dentistry.	2.83	2.77	2.79
	<b>IV. Students' perceptions of atmosphere:</b>			
11	The atmosphere is relaxed during the ward teaching	2.60	2.60	2.60
12	This school is well timetabled	2.47	2.55	2.52
17	Cheating is a problem in this school	2.02	2.30	2.19

23	The atmosphere is relaxed during lectures	2.68	2.67	2.67
30	There are opportunities for me to develop interpersonal skills	2.71	2.63	2.66
33	I feel comfortable in class socially	2.86	2.67	2.74
34	The atmosphere is relaxed during seminars/tutorials	2.57	2.60	2.59
35	I find the experience disappointing	1.79	1.52	1.62
36	I am able to concentrate well	2.68	2.66	2.67
42	The enjoyment outweighs the stress of studying Dentistry.	2.47	2.34	2.39
43	The atmosphere motivates me as a learner	2.72	2.42	2.54
49	I feel able to ask the questions I want	2.86	2.57	2.68
<b>V. Students' social self-perceptions:</b>				
3	There is a good support system for students who get stressed	2.22	1.99	2.08
4	I am too tired to enjoy this course	1.93	1.90	1.91
14	I am rarely bored on the courses	2.09	1.99	2.02
15*	I have good friends in this school	3.15	2.88	2.98
19	My social life is good	2.97	2.83	2.89
28	I seldom feel lonely	1.98	2.04	2.02
46	My accommodation is pleasant	2.77	2.74	2.75

Efforts should be made by the teachers to shift the teaching from teacher centered to more of a student centered, encouraging them to be active learners. Once the students enter into a clinical environment, a more mature, complex and integrated approach should be employed to facilitate effective learning and these sessions should be innovative and targeting each student.

The strategies employed by SPICE model should be incorporated by all the medical and dental facilitators, which states that teaching should be innovative and based on community problems encountered on daily basis.<sup>16</sup> This allows for a more systematic and organized approach which aids in active learning by students and, at the same time, shifts the focus of the pattern of education from

teacher to student.

FAIR principles further states that the teaching methods employed by facilitators may include any activity that is relevant to the student's educational system and allows an active participation from every individual.<sup>17</sup> This will give a feedback to student to assess their own knowledge and improve themselves in the areas they lack.

In order to minimize the occurrence of cheating, exam methods should be conducive and innovative. Various strategies should be used such as computer based exam system; increase the number of invigilators and more than one assessment methods can be used to ensure students are not given an opportunity to cheat. Examination should be valid and reliable with more emphasis on OSCE's especially in clinical subjects

Apart from this, faculty development and training is also very important and this can be implemented by the teachers by keeping themselves upto date with the highest standards of teaching methods which are used internationally by attending the seminars and workshops on medical education annually.

### Conclusion

The overall results obtained from the students of RAKCODS indicates, the environment attained by students is more positive than negative. Factors such as cheating, emphasis on factual learning, teachers being authoritarian, students irritating teachers, are all factors that require attention. Also, a better support system from the staff and the peers will improve the intellectual development of the students; so that they are able overcome their insecurities, and actively participate in problem based active learning. A collective change in the attitude and approach is imperative to enthuse a positive environment for these young minds, in order to mold them into a professional and competitive dental professionals.

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