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## **Full Length Research Article**

### **FIRST YEAR DENTAL STUDENTS' PERCEPTIONS ABOUT EDUCATIONAL ENVIRONMENT: EXPECTED VERSUS ACTUAL PERCEPTIONS**

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#### **ABSTRACT**

**Objective:** To estimate the difference between students' expected and actual perceptions about their educational environment.

**Method:** A prospective study was conducted in the College of Dentistry, University of Dammam, Saudi Arabia involving first year dental students of the academic year 2013-14. The students were asked to fill out two versions of the Dundee Ready Education Environment Measure (DREEM), one in the beginning (expected DREEM) and the other at the end (actual DREEM) of their academic session. The sum of students' responses (scored on a Likert scale ranging from 0 to 4) and a mean with standard deviation was calculated for every question. Then a mean for each of the five subscales of the expected and actual DREEM, and an overall score for the two versions of DREEM were estimated.

**Results:** Fifty five students (response rate: 72%) including 25 males (45%) and 30 females (55%) filled out the DREEM questionnaire on both occasions. The total scores for the expected and actual DREEM questionnaires were 114.47 and 105.5 respectively, the difference between the two scores being statistically insignificant at  $P < 0.05$ . There was no statistically significant difference between male and female students' perceptions in any of the five subscales of the expected and actual DREEM questionnaires.

**Conclusion:** The overall results of the study illustrated a healthy educational environment in the College of Dentistry, University of Dammam, Saudi Arabia. Some problems areas were, however, identified that need to be addressed in future to further improve the quality of learning environment in the college.

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#### **INTRODUCTION**

Since past few years, Medical schools have been taking interest to examine perceptions regarding educational environment (Genn, 2001). Educationists from all over the world have modernized the medical education system to match students' perceptions and actual educational environment (Roff *et al.*, 1997) (Miles and Leinster, 2007) (Henning *et al.*, 2011). There is definite and positive effect of curriculum on learning environment (Plucker, 1998) (Pimparyon *et al.*, 2000) (Lizzio, Wilson and Simons *et al.*, 2002) (Mayya and Roff, 2004). The educational climate of a school, which suits or attracts a student more, can play an important role in producing a good professional (Roff and McAleer, 2001).

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To provide an educational environment which is comfortable to students, it is critical to explore their perceptions. Many questionnaire-based studies have been performed to evaluate educational environment in different educational institutes. We used Dundee Ready Educational Environment Measure (DREEM) because it has been commonly used by researchers (Bassaw *et al.*, 2003) (Till, 2004) (Pololi and Pololi, 2000). The DREEM is one of the methods prepared to measure educational climate especially in health professional education system (Roff *et al.*, 1997). This method helps to assess students' perceptions and also gives a chance to find areas of strength and weakness in the present curricula and in educational environment (Roff *et al.*, 2001). It can also be used to evaluate students' perceptions at different course levels (Jiffry *et al.*, 2005). DREEM can also find change in students' expectations by performing the study at the beginning of each year. Till (2005) used DREEM to compare differences between actual educational environment and

students' ideal environment. The purpose of the study was to identify gap between ideal and actual environment. Health education system is changing rapidly in Saudi Arabia and with time, the number of medical and dental institutes which were following conventional curricula has now shifted to a more innovative curricula and community oriented program. In order to identify the strengths and weaknesses of the educational environment in the College of Dentistry in Jazan, DREEM was used to assess' female students' perceptions about institutional environment (Hasan and Gupta, 2013). Another study was performed recently in college of medicine, Qaseem University about perception of new students regarding medical college (Al-Mohaimed, 2013). In King Abdulaziz University, Al-Hazimi *et al.* (2004) studied medical students' perceptions about educational environment. We chose Dundee Ready Educational Environment Measure (DREEM) for assessing student's perceptions because of its consistency and strength which is well recognized in literature since more than a decade. DREEM claimed as "culture free tool" to compute the educational environment and broadly used in health and medical institutions across the countries and nationalities (Yousoff, 2012). No prospective or Expected versus Actual DREEM study was done before in Saudi Arabia or no previous study on male dental students in Dammam. That is why the present study was undertaken. This study was conducted in College of Dentistry, University of Dammam Saudi Arabia. The aim of the study was to evaluate the difference between students' expected and actual DREEM.

### Methods and study subjects

A prospective study was conducted in the College of Dentistry, University of Dammam, Saudi Arabia involving first year dental students of the academic year 2013-14. Ethical Approval for conducting the study was taken from Scientific Research Committee, University of Dammam holding certificate number IRB-2014-02-026. The purpose of the study was described to all students and they were briefed about the questions and grading. The students were asked to fill out two versions of the Dundee Ready Education Environment Measure (DREEM), one in the beginning (expected DREEM) and the other at the end (actual DREEM) of their academic session. They were informed to respond on the basis of their expectations about starting their professional education in a dental school. The expected DREEM was distributed to 76 students (total students) and it was filled by 58 (76%). The actual DREEM was answered by 61 (80%) students (present on the day of the study) at the end of the academic year. 55 (72%) students who participated in DREEM survey on both occasions made up the final sample for the study.

All 50 questions were close ended and the respondents had to score their responses using a Likert scale ranging from 0 (strongly disagree) to 4 (strongly agree). Nine questions having negative statements were scored as 0 (strongly agree) to 4 (strongly disagree). Reverse coding was done for negative items presented in Table 1 in italic font (item # 4, 8, 9, 17, 25, 35, 39, 48 and 50). The questions were categorized into five subscales. Perception of learning had 12 questions and maximum score was 48, perception of teaching had 11 questions and maximum score was 44, academic self-

perception had 8 questions and score was up to 32, regarding atmosphere there was 12 questions and maximum score was 48 and social self-perception had 7 questions and maximum possible score was 28. The maximum possible DREEM score was 200.

### Data Analysis

Statistical package of social sciences (SPSS version 19) was used for data entry and data analysis. The response to each question was entered using codes 0 to 4. The sum of students' responses and a mean with standard deviation was calculated for every question. Then a mean for each of the five subscales of the expected and actual DREEM, and an overall score for the two versions of DREEM were estimated. The Magnitude of difference between students' expected and actual DREEM was derived by subtracting mean of actual DREEM from mean of expected DREEM. The criterion suggested by McAleer and Roff (2001) was used for interpretation of the scores. The expected and actual mean DREEM scores for all individual questions, subscales and the overall DREEM scores were compared using Wilcoxon sign rank test while Mann-Whitney U-test was used to compare the respective scores of the male and female participants. P-value less than 0.05 were considered as significant.

### RESULTS

There were 25(45%) male Students and 30(55%) females who participated in the study. The average score was 114.47 for expected and 105.5 for actual DREEM out of 200. The score for every sub-scale of DREEM along with the overall score are shown in Table 1. The mean score of individual items of expected and actual DREEM of students are presented in Table 1. The results of the study showed that only 1 item (The teacher will be knowledgeable) in the expected DREEM received a score >3, 40 items got scores ranging from 2 to 3 and 9 items carried scores ≤2. In the actual DREEM again only one item (I will have good friends on this course) received a score of >3 while the number of items receiving scores from 2 to 3 and ≤2 was 34 and 15 respectively. The magnitude of difference (dissonance) between students expected and actual DREEM is shown in Table 2.

The dissonance score were between ±0.01 – ±1.01. The biggest difference was observed in their expected and actual DREEM when they were asked "The teaching helps to develop my confidence" (1.01). There were some responses which were noticeably away from their expectations. For example, "The atmosphere motivates me as a learner" (0.89), "The enjoyment outweighs the stress of the course" (0.84), "The teaching encourages me to be an active learner" (0.73), "The teaching is often stimulating" (0.61), "The teacher have good communication skills with patients" (0.61), "I am able to memories all I need" (0.56), "I am too tired to enjoy the course" (0.56) and "The teacher are knowledgeable" (0.51). In many areas students' expectations were very close to their actual experience. For example; "The teachers are good at providing feedback to students" (0.04)(p-0.461), "There are opportunities for me to develop interpersonal skills" (0.04)(p-0.394), "I feel able to ask the questions I want" (0.05)(p-.0487), "Learning strategies which worked for me before

Table 1. Summary of Dental Students' Expected and Actual DREEM item means, standard deviation, and differences

Expected DREEM	Actual DREEM	Expected		Actual		Difference
		Mean	SD	Mean	SD	
Students' Perception of Learning						
I will be encouraged to participate during teaching sessions	I am encouraged to participate during teaching sessions	2.53	(0.89)	2.27	(0.95)	0.25
The teaching will often be stimulating	The teaching is often stimulating	2.47	(0.73)	1.86	(0.88)	0.61*
The teaching will be Students centered	The teaching is Student centered	2.18	(0.8)	2.24	(0.82)	-0.05
The teaching will help to develop my competence	The teaching helps to develop my competence	2.66	(0.91)	2.39	(1.08)	0.27*
The teaching will be well focused	The teaching is well focused	2.61	(0.75)	2.35	(1.00)	0.26
I feel I will be well prepared for my profession	I feel I am being well prepared for my profession	2.66	(0.91)	2.20	(1.11)	0.45*
The teaching time will put to good use	The teaching time is put to good use	2.47	(0.65)	2.07	(0.97)	0.41*
<i>The teaching will overemphasize factual learning</i>	<i>The teaching overemphasize factual learning</i>	1.86	(0.59)	1.88	(0.77)	-0.02
I will be clear about the learning objectives of the course	I am clear about the learning objectives of the course	2.55	(0.83)	2.30	(1.04)	0.25
The teaching will encourage me to be an active learner	The teaching encourages me to be an active learner	2.68	(0.7)	1.95	(1.19)	0.73*
Long term learning will be emphasized over short term learning	Long term learning is emphasized over short term learning	2.45	(0.6)	2.20	(1.03)	0.25
<i>The teaching will be too teacher centered</i>	<i>The teaching is too teacher centered</i>	1.94	(0.53)	1.79	(1.02)	0.15
Students' Perception of teachers:						
The teachers will be knowledgeable	The teachers are knowledgeable	3.08	(0.71)	2.57	(0.97)	0.51*
The teachers will espouse a patient centered approach to consulting	The teachers espouse a patient centered approach to consulting	2.53	(0.8)	2.07	(0.9)	0.46*
<i>The teachers will ridicule the students</i>	<i>The teachers ridicule the students</i>	1.78	(0.63)	1.80	(0.68)	-0.02
<i>The teachers will be authoritarian</i>	<i>The teachers are authoritarian</i>	1.62	(0.89)	2.20	(0.68)	-0.58*
The teachers will have good communication skills with patients	The teachers have good communication skills with patients	2.82	(0.83)	2.20	(1.15)	0.61*
The teachers will be good at providing feedback to students	The teachers are good at providing feedback to students	2.32	(0.9)	2.28	(0.98)	0.04
The Teachers will provide constructive criticism here	The teachers provide constructive criticism here	2.29	(0.9)	2.30	(0.89)	-0.01
The Teachers will give clear examples	The teachers give clear examples	2.71	(0.84)	2.47	(1.01)	0.25
<i>The Teachers will get angry in teaching sessions</i>	<i>The teachers get angry in teaching sessions</i>	1.76	(0.78)	1.84	(1.09)	-0.08
The Teachers will be well prepared for their teaching sessions	The teachers are well prepared for their teaching sessions	2.58	(0.83)	2.49	(1.08)	0.09
<i>I will feel able to ask the questions I want</i>	<i>I feel able to ask the questions I want</i>	2.39	(0.97)	2.35	(1.07)	0.05
Students' Academic Self-Perception						
Learning strategies which worked for me before will continue to work for me now	Learning strategies which worked for me before continue to work for me now	2.21	(0.91)	2.16	(0.96)	0.05
I will be confident about passing this year	I am confident about passing this year	2.79	(1.07)	2.64	(1.38)	0.15
The teaching will help to develop my confidence	The teaching helps to develop my confidence	2.84	(0.89)	1.83	(1.12)	1.01*
Last year's work will have been a good preparation for this year's work	Last year's work has been a good preparation for this year's work	2.29	(0.84)	2.05	(1.29)	0.24
I will be able to memorize all I need	I am able to memorize all I need	2.29	(0.96)	1.73	(1.11)	0.56
I will learn a lot about empathy in my profession	I have learnt a lot about empathy in my profession	2.58	(0.68)	2.42	(0.98)	0.16
My problem solving skills will be well developed here	My problem solving skills are being well developed here	2.66	(0.81)	2.40	(0.88)	0.26
Much of what I have to learn will be relevant to a career in healthcare	Much of what I have to learn seems relevant to a career in healthcare	2.45	(0.72)	2.40	(1.03)	0.05
Students' Perceptions of Atmosphere						
The atmosphere will be relaxed during consultation teaching	The atmosphere is relaxed during consultation teaching	2.26	(0.83)	1.95	(1.08)	0.31
This course will be well timetabled	This course is well timetabled	2.45	(0.76)	2.36	(1.06)	0.08
<i>Cheating will be a problem on this course</i>	<i>Cheating is a problem on this course</i>	1.81	(0.96)	2.36	(1.31)	-0.55
The atmosphere will be relaxing during lectures	The atmosphere is relaxing during lectures	2.39	(1.08)	2.07	(1.13)	0.33
There will be opportunities for me to develop interpersonal skills	There are opportunities for me to develop interpersonal skills	2.29	(0.77)	2.25	(1.08)	0.04
I will feel comfortable in teaching sessions socially	I feel comfortable in teaching sessions socially	2.39	(0.64)	2.18	(1.04)	0.21
The atmosphere will be relaxing during seminars / tutorials	The atmosphere is relaxing during seminars / tutorials	2.50	(0.76)	2.36	(1.1)	0.14
<i>I will find the experience disappointing</i>	<i>I find the experience disappointing</i>	1.53	(0.86)	2.23	(1.05)	-0.70*
I am able to concentrate well	I am able to concentrate well	2.53	(0.69)	2.09	(1.03)	0.44*
The enjoyment will outweigh the stress of the course	The enjoyment outweighs the stress of the course	2.32	(0.84)	1.48	(1.04)	0.84*
The atmosphere will motivate me as a learner	The atmosphere motivates me as a learner	2.47	(0.73)	1.59	(1.02)	0.89*
The students will irritate the course organizers	The students irritate the course organizers	1.78	(0.76)	1.98	(0.75)	-0.20
Students' Social Self Perceptions						
There will be good support system for students who get stressed	There is a good support system for students who get stressed	2.05	(1.09)	1.68	(1.16)	0.37
<i>I will be too tired to enjoy the course</i>	<i>I am too tired to enjoy the course</i>	1.83	(0.82)	1.27	(1.24)	0.56*
I will be rarely bored on this course	I am rarely bored on this course	2.05	(0.9)	1.95	(1.48)	0.10
I will have good friends on this course	I have good friends on this course	2.74	(1)	3.14	(0.9)	-0.40
My social life will be good	My social life is good	2.63	(0.71)	2.32	(1.25)	0.31
I will seldom feel lonely	I seldom feel lonely	2.11	(0.92)	2.14	(1.25)	-0.03
My accommodation will be pleasant	My accommodation is pleasant	2.42	(0.6)	2.33	(0.81)	0.10

\* Results significant at p&lt;0.05

**Table 2. Overall scores of actual and expected DREEM's subscales'**

Subscale	Expected DREEM			Actual DREEM			Difference
	Mean	(SD)	Max	Mean	(SD)	Max	
Students' Perception of Learning	28.16	5.56	48	25.95	5.96	48	2.21*
Students' Perception of teachers	25.05	5.17	44	23.89	5.56	44	1.16
Students' Academic Self-Perception	19.71	3.75	32	16.09	4.40	32	3.62*
Students' Perceptions of Atmosphere	26.26	4.60	48	24.64	5.67	48	1.62*
Students' Social Self Perceptions	15.29	2.77	28	14.94	4.56	28	0.35
Total	114.47		200	105.51		200	8.96

\*Results significant at  $p < 0.05$

continue to work for me now” (0.05)(0.607), “Much of what I have to learn seems relevant to a career in healthcare” (0.05)(0.702), “This course is well timetabled” (0.08)( $p = 0.413$ ), “The teachers are well prepared for their teaching sessions” (0.09)(0.493). And in some areas they experienced more than what they were expecting. The negative differences in Table 1 symbolized that realities got higher score than expectations. Some important differences were in items: “I find the experience disappointing” (-0.7)(0.005), “The teachers are authoritarian” (-0.58)(0.007), “Cheating is a problem in this course” (-0.55)(0.060), “I have good friends on this course” (-0.4)(0.178).

**DISCUSSION**

The ' DREEM' questionnaire was used in the present study because of its validity and reliability that is well recognized in the literature (Ostapczuk, 2012). To enhance their learning experience institute should aspire to provide the best possible educational environment and learning experience to students in order to promote them for their complete potential in which dream is a very helpful (Preethi, 2014). In the present study the total score obtained for actual DREEM was 105.5/ 200 that indicated 'a more positive than negative learning environment' in the College of Dentistry, Dammam University (McAleer and Roff, 2001). Even though the actual DREEM score of the College of Dentistry, Dammam University was less than the recommended score of 120 (Roff, 2005) but still it was higher than the respective scores of other institutions in Saudi Arabia and neighboring countries including, King Saud University's medical college (89.9) (Al-Ayed and Sheik, 2008), King Abdulaziz University's medical college (102) (Al-Hazimi, 2004), Sana'a University Yemen (100) (Al-Hazimi, 2004), Kuwait University (105) (Bouhaimed, Thalib and Doi, 2008), Gulf Medical University UAE (100) (Roff *et al* 2001) with the expectation of Umm Ul Qura University (107) (Al-Hazimi 2004).

The actual DREEM score of the College of Dentistry, Dammam University when compared with scores of universities outside the Kingdom, it appeared less than the ones accomplished by total score accomplished in Dundee (139) (Al-Hazimi, 2004) Koirala institute of Health Science, Dahrnan, Nepal (130) (Shehnaz and Sreedharan, 2011), Nigerian Medical School (118) (Roff *et al.*, 2001) but comparatively better than Canadian Memorial Chiropractic College (97) (Till, 2004). All 5 subscales of DREEM received scores from students which were more towards constructive perception in actual DREEM. But in some areas, difference between students' expected and actual DREEM were found significant.

Namely; student's perception of learning ( $p = 0.004$ ), academic self-perception ( $p = 0.001$ ) and perception of atmosphere ( $p = 0.049$ ). There are few limitations with this study. Firstly the English version of the questionnaire was used because no validated Arabic version was available. As the students are getting their education in English, so the chance of threat is very low. Another limitation with low expected DREEM scores about college environment could be because of the fact that students are enrolled after high school, so they don't have enough experience about college life.

**Students Perception of Learning (SPL)**

The difference between expected and actual students' perception was 2.21 which was statistically significant ( $p = 0.004$ ). Another area receiving a high dissonance score was 'Teaching is too teacher centered'. It may be showing a cultural trend but requires serious attention.

**Students Perception of Teachers (SPT)**

Student's perception about teacher received quite low dissonance compare with the perceptions in other areas (table 2). Among the questions which were asked to evaluate perceptions regarding teaching, two scores in both actual and expected perception. These scores affect the aggregated mean when coalesced with other responses. Questions, which got low scores, need to study more to describe the possible reasons of low score.

**Students Academic Self Perception**

None of item in this domain received score lesser than 2.0 for their expectations and nearly all the value were matched in the actual DREEM score showing a positive environment except for two items. Although according to criteria of McAleer and Roff 2001 this subscale shows many negative aspects in the educational environment as compare to other domains. One of the items was; I am able to memorize all I need (1.73). The reason for this could be because this was their first exposure to the professional education and they were not fully aware of the challenges. With passage of time and with a little help and guidance they will improve. The second item; teaching helps develop my confidence (1.83), with a dissonance factor of 1.01 is point to look at. The students had high hopes from their professional education in boosting their confidence but it hasn't. The reason could be that the students feel teaching is teacher centered which may not help them in building their confidence.



## Students' Perceptions of Atmosphere

It is known that atmosphere represents the true life of educational environment. Student's experienced well time tabled course and opportunities, which enhanced their interpersonal skills, same as what they had expected. Cheating was more difficult than what they expected. Even though this domain represented a positive side, few areas of concerns were also highlighted. It seems that students are more stressed which is evident by the low score in 'enjoyment outweighs stress of the course (1.48)' and 'the atmosphere motivates me a learner (1.59)'. These two areas need more focus as the dissonance was also high for them 0.84 and 0.89 respectively. A corrective measure is already in place (new student support system) which hopefully will monitor and correct these issues.

## Students' Social Self Perceptions

Students who participated in this study showed a very positive response to this domain and believe that their social life is better than what they had expected. The only concern they have shown is with the student support system (1.68). This is a very critical area and needs improvement. As of now a new support system is already in practice and maybe we will see healthy scores in next evaluation.

## Conclusion

The present study the provided the useful information regarding the students' perceptions about their learning environment. Most of the DREEM domains were perceived as positive by the students indicating a healthy educational environment in the College. Some problematic areas were identified that should be looked into for exact causes and rectification.

## Recommendations

- Corrective measures are to be taken to address the areas of weakness in the educational environment of College of Dentistry highlighted by the present study.
- Once the strategies for improvement are implemented the DREEM surveys need to be repeated periodically to monitor the situation.

## Conflict of Interest Statement

The Authors Report no financial or personal conflict of interest in this research.

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