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RESEARCH ARTICLE

Gender Comparison of Students' Perception of Educational Environment using DREEM Inventory, College of Dentistry, Jazan University

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Abstract:

Background:

The Educational Environment (EE) has an extremely important role in effective student learning. The Dundee Ready Education Environment Measure (DREEM) is a validated and widely tool to assess the EE in health and particularly in dental professional education programs.

Objective:

This study aimed to compare male and female dental students' perception regarding DREEM inventory of EE in Jazan University. A cross-sectional questionnaire included questions on demographic information and the DREEM of EEs.

Methods:

DREEM was used to gather information from our BDS students' program about the environment in our institution. The data were selected from 3rd, 4th, 5th, 6th year students. Data from 330 participants were distributed manually. Other factors such as type of graduated school, level of education, student's GPA, and monthly income of family were assessed. All the data were analyzed.

Results:

286 (86%) of the students completed and returned the DREEM questionnaires. There was no statistically significant difference between genders with respect to mean scores of perceptions of learning. Also, there was a significant difference in terms of educational level, but no significant differences were observed in the DREEM subscales. The average overall DREEM score of the study subjects indicated a positive learning perception of 130.8 for males and 130.2 for females. The subscale for both genders involved students' perception of learning as 32.1, the students' perception of teaching as 29.1, while the students' academic self-perception was 21.7. The students' self-perception of atmosphere was 30.0 while students' social self-perception accounted for 17.5.

Conclusion:

Both gender students recorded positive values of the learning environment. Further, a qualitative investigation is recommended to be done on every single course to evaluate the changes and make necessary alterations.

Keywords: Dental students, DREEM, Educational environment, Student perceptions, Saudi riyal, Mean scores.

Article History

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1. INTRODUCTION

The perceptions held by students seeking careers in the dental health profession form a key component of the

evaluation process in academic medical programs [1]. The Educational Environment (EE) plays a crucial role in effective student learning because it influences students' enthusiasm and their degree of learning effectiveness [2]. The EE generally

refers to what happens inside a university facilities, and this can contribute in particular to the success of undergraduate education in the medical field including dentistry; in that appreciating what students think of EE not only informs the planning and implementation of the medical or dental school curriculum, but it also guides the policymakers and facilities towards fostering a high-quality EE [3].

The DREEM is a robust method to assess EE [4]. The DREEM's tools were first developed at the University of Dundee, Scotland, and currently, it provides and achieves validation as a global, generic "diagnostic inventory for assessing and evaluating the quality of EE at health care institutes" [4 - 6]. Since its introduction, DREEM has been used in more than 33 countries and translated into more than eight languages, with this questionnaire applied and completed by many undergraduates of medical faculties worldwide. According to Rahman *et al.* [7], this questionnaire is "an ideal instrument for examining students' opinions and it is likely to be the most suitable instrument for undergraduate medicine, nursing, pharmacy, paramedical and dental education" [7]. It was planned and designed to accurately quantify the EE for all health-related professional schools [5], consisting of 50 questions related to a range of topics directly relevant to EE. This inventory can be administered during a teaching session with written or verbal responses, or *via* students' email or through a postal survey. Students are asked to read each statement carefully and to respond using a 5-point Likert-type scale, ranging from "strongly agree" to "strongly disagree" [1, 2]. It is imperative, however, that each student respondent applies the items to their own current learning situation and that all 50 questions are answered [5, 7]. Not surprisingly, as an ideal instrument to evaluate and to collect evidence about EE and learning climates, academic achievement, and social support, DREEM has also been widely used in both developed and developing countries by various dental schools [4-5, 8-14]. In summary, given its global recognition and acceptance as a robust tool for measuring the EE, many studies have relied upon the DREEM questionnaire, whose findings are regularly published in highly reputable journals [4 - 6, 8].

The College of Dentistry, Jazan University, established in 2010, which is one of three governmental schools in the Southern of Kingdom of Saudi Arabia. The college includes an undergraduate dental program named as Bachelor in Dental Science (BDS), which consists of 12 semesters divided as follows; two semesters comprising the premedical preparatory year, four semesters of pre-clinical subjects, followed by the last 6 semesters devoted to clinical subject areas. Further, all dental students must participate in a one-year internship program [15]. Over the past few years, the college has worked diligently to maintain world-class standards by adopting best practices across the globe. The college holds a 5-star category rating by the National Assessment and Accreditation Committee and was awarded ISO 9001-2000 certification [11]. Yet, one major drawback has always existed, *i.e.* insufficient knowledge of students' perceptions about their academic learn-

ing in the BDS program as well as the overall educational atmosphere of the institution. To fill this lacuna, we decided to conduct a study to ascertain the perceptions of enrolled dentistry students. Thus, this cross-sectional empirical study aimed to assess and evaluate the EE and learning climate of an innovative undergraduate dental program from students' perceptions at Jazan University. Another aim of this study was to examine the associations between several student traits (gender, graduate school type, educational level, total accumulated grades, family monthly income, and age) and the college's EE.

2. MATERIALS AND METHODS

A cross-sectional study design was used to determine and investigate the perception of EE among students in the College of Dentistry of Jazan University (Jazan city, Kingdom of Saudi Arabia). Ethical clearance was obtained from the Institute's Ethics Committee (19212). This research was conducted between March 2019 and Dec 2019. A list of enrolled dental students was obtained from the school's administration. A total of 330 undergraduate students (students in 3rd to 6th-year) who were studying in the BDS program in the academic year of 2018-2019 were identified as potential sampling.

A self-administered questionnaire was distributed in person among the selected dental students at the college. In the beginning, all potential subjects were asked to read the consent carefully and decide whether to participate or not.

Those who agreed to participate were given a copy of the consent form after signatures from the participant and PI. Then, the questionnaire was given to complete within 40 to 60 minutes in the participants' free time.

The DREEM is a 50-item, closed-ended questionnaire that is scored on a five-point Likert scale. Students were asked to read each statement carefully and to respond, ranging from strongly agree to strongly disagree. It was emphasized that each student, of both genders, should apply the items to their own particular current learning situation and that it was obligatory to answer all questions [4, 6-7, 9]. Items were scored in this way: 4 for Strongly Agree (SA), 3 for Agree (A), 2 for uncertain (U), 1 for Disagree (D) and 0 for Strongly Disagree (SD). However, 9 of the 50 items (*i.e.*, numbers 4, 8, 9, 17, 25, 35, 39, 48, and 50) are negative statements and should be reverse-scored, that is 0 for SA, 1 for A, 2 for U, 3 for D, 4 for SD. The 50-item DREEM has a maximum score of 200, corresponding to the ideal EE, as perceived by the respondent. A score of 0 is the minimum possible, and it would be a very worrying result for any dental educator. The following is an approximate guide to interpreting the overall score: (0-50) *very poor*; (51-100) plenty of problems, suggesting the environment to be viewed with considerable issues of the students which ought to be improved; (101-150) indicates a more positive than negative environment; (151-200) is an *excellent* EE. These scores were investigated at three different levels; individual items, subscales, and overall DREEM score [10, 11].

The questionnaire was pre-coded for entry into a database. To analyse the data, SPSS v20.1 (IBM Corp., USA) software was used. Descriptive statistics (percentages and means) were

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utilized to provide an overview of each response variable. T-test and Chi-square statistics were conducted to establish factors associated with DREEM scores. The significance level was set at < 0.05.

3. RESULTS

Out of 330 questionnaires that were disseminated, 286 questionnaires were fully completed, which represented a response rate of 86%. There were 57% male and 43% female participants. The highest response rate was among the 6th- and 3rd-year students (respectively, 92% and 90%), being slightly less for the 4th and 5th-year students (85% and 79%, respectively). The majority of the respondents had graduated from governmental schools (98%). Considered with respect to study year, the highest participant numbers and percentages were nearly identical for the 4th- and 6th-year students (27%), being lowest in the 5th year group (22%). Just over half (50.3%) of the students had an average of good grade point average (GPA) (*i.e.*, 2.75-3.74), followed by one-third of the students (31.8%) whose grades were very good (3.75-4.49). Almost 45% of the respondents had a monthly income between 10,000 and 15,000 Saudi Riyals (2661- 3992 US Dollar). The participants were aged between 19 to 25 years, with a mean age of 22.4 (SD = 1.4) (Table 1).

To pinpoint the specific strengths and weaknesses within the students' perception of their EE, the study analysed the individual items of the questionnaire. The items with a mean score of more than 3 were considered real "positive" points. Conversely, any item that had a mean of less than 2 should have been examined more closely as it could indicate a problem area. Items having a mean score between 2 and 3 showed aspects of the learning environment that need some attention and could be enhanced. The questions that scored < 2 and the least were "There is a good support system for registrars who get stressed" and "I am too tired to enjoy this course"; these corresponded to items Q3 ($\mu=1.86$, $SD=0.992$) and Q4 ($\mu=1.95$, $SD=0.954$) relating to SSSP (student's social self-perceptions). By contrast, the highest scores recorded were for the questions "Long term learning is emphasized over short term learning" Q47 ($\mu=3.04$, $SD=0.941$), in the SPL (students' perceptions of learning); "The teachers are knowledgeable" Q2 ($\mu =3.15$, $SD=0.566$), in the SPT (students' perception of teachers); "I am confident about passing this year" Q 10 ($\mu=3.02$, $SD=0.737$) in the SASP (students' academic self-perception), and; "I have good friends in this course/school" Q15 ($\mu=3.07$, $SD=0.978$), and "My accommodation is pleasant" ($\mu=3.01$, $SD= 0.959$), both in SSSP (students' social self-perceptions) (Table 2).

Table 1. Characteristics of study participants (N = 286).

Variable		N	%
Gender	Male	163	57
	Female	123	43
Age (years)	19-21	75	26.2
	22-24	141	49.3
	> 24	70	24.5
Type of high school	Governmental	279	97.6
	Private	7	2.4
Educational level	Third Year	68	23.8
	Fourth Year	77	26.9
	Fifth Year	63	22.0
	Sixth Year	78	27.3
University GPA	Pass	18	6.3
	Good	144	50.3
	Very good	91	31.8
	Excellent	33	11.5
Family monthly income (SR Currency)	< 3000	11	3.8
	3000-10 000	86	30.1
	10 000-15 000	126	44.1
	> 15 000	63	22.0

Abbreviation: GPA, grade point average, SR, Saudi Riyal.

Table 2. The DREEM¹ items of EE among dental students at Jazan University (N= 286).

Domain	Item	Mean (SD)
SPL	I am encouraged to participate in teaching sessions	2.84 (0.661)
1	The teaching is often stimulating	2.63 (0.910)
7	The teaching is registrar centered	2.79 (0.854)

(Table 2) contd....

Domain	Item	Mean (SD)
13	The teaching helps to develop my competence	2.61 (0.902)
16	The teaching is well focused	2.93 (0.679)
20	The teaching helps to develop my confidence	2.82 (0.787)
22	The teaching time is put to good use	2.50 (0.865)
24	The teaching over emphasizes factual learning*	2.12 (0.774)
25	I am clear about the learning objectives of the course	2.85 (0.854)
38	The teaching encourages me to be an active learner	2.68 (0.910)
44	Long term learning is emphasized over short term learning	3.04 (0.941)
47	The teaching is too teacher-centered*	2.28 (1.011)
48		
SPT	The teachers are knowledgeable	3.15 (0.566)
2		
6	The teachers espouse a patient centered approach to consulting	2.95 (0.900)
8	The teachers ridicule their registrars*	2.48 (0.987)
9	The teachers are authoritarian*	2.05 (0.906)
18	The teachers appear to have effective communication skills with patients	2.71 (0.860)
29		
32	The teachers are good at providing feedback to registrars	2.64 (0.917)
37	The teachers provide constructive criticism here	2.67 (0.869)
39	The teachers give clear examples	2.78 (0.885)
40	The teachers get angry in teaching sessions*	2.46 (0.931)
50	The teachers are well prepared for their teaching sessions	2.69 (0.952)
	The registrars irritate the course organizers*	2.57 (0.907)
SASP	Learning strategies which worked for me before continue to work for me now	2.35 (0.946)
5		
10	I am confident about passing this year	3.02 (0.737)
21	I feel I am being well prepared for my profession	2.78 (0.854)
26	Last year's work has been a good preparation for this year's work	2.63 (0.844)
27	I am able to memorize all I need	2.32 (0.888)
31	I have learned a lot about empathy in my profession	2.98 (0.894)
41	My problem-solving skills are being well developed here	2.73 (0.867)
45	Much of what I have to learn seems relevant to a career in healthcare	2.96 (0.882)
SPA	The atmosphere is relaxed during consultation teaching	2.54 (0.877)
11		
12	The course is well timetabled	2.56 (1.064)
17	Cheating is a problem in this course *	2.43 (1.009)
23	The atmosphere is relaxed during lectures	2.41 (0.840)
30	There are opportunities for me to develop interpersonal skills	2.32 (1.009)
33	I feel comfortable in teaching sessions socially	2.49 (0.858)
34		
35	The atmosphere is relaxed during seminars/tutorials	2.58 (0.929)
36	I find the experience disappointing *	2.64 (0.914)
42	I am able to concentrate well	2.85 (0.877)
43		
49	The enjoyment outweighs the stress of studying medicine	2.26 (1.068)
	The atmosphere motivates me as a learner	2.49 (1.162)
	I feel able to ask the questions I want	2.43 (1.088)
SSSP	There is a good support system for registrars who get stressed	1.86 (0.992)
3		
4	I am too tired to enjoy this course	1.95 (0.954)
14	I am rarely bored in this course *	2.15 (1.122)
15	I have good friends in this course/school	3.07 (0.978)
19		
28	My social life is good	2.92 (0.844)
46	I seldom feel lonely	2.51 (0.965)
	My accommodation is pleasant	3.01 (0.959)

Note: * represents items crafted as negative statements.

¹Dundee Ready Education Environment Measure (maximum score 200)

Abbreviation: SPL, students' perceptions of learning; SPT, students' perception of teachers; SASP, students' academic self-perception; SPA, students' perceptions of the atmosphere; SSSP, students' social self-perceptions; SD, standard deviation.

Table 3 shows the results of the independent t-test and one-way ANOVA test, which were used to determine any significant difference in mean DREEM scores based on demographic and education characteristics of dentistry students

at Jazan University. The overall scores for DREEM domains showed that both gender groups had more positive views about the EE, with nearly identical means of 130 (out of 200). The study found that only the education level of participants was

significantly associated with students' perception of learning and EE among dental students in the college of dentistry at Jazan University ($p < 0.05$). This result indicates that the students in the 4th year showed significantly better SPL than the other groups [(3rd Year: $\mu=31.2$, $SD = 5.15$); (4th Year: $\mu=33.4$, $SD=4.34$); (5th Year: $\mu=32.1$, $SD= 4.79$); (6th Year: $\mu=31.6$, $SD= 4.57$)]. The study also found that age and education level were significantly associated with students' perceptions of teachers and EE ($p < 0.05$). Younger students (19-21: $\mu=29.2$, $SD=4.81$; 22-24: $\mu=29.5$, $SD= 4.48$) showed significantly better SPT and of EE compared to older group (>24 : $\mu = 24.3$, $SD=6.14$). In addition, the students at 4th year exhibited significantly better students' perceptions of teachers and of EE ($\mu=30.5$, $SD = 4.72$) compared to the groups at other years [(3rd year: $\mu=29.1$, $SD = 4.98$; 5th year: $\mu=28.3$, $SD = 4.99$; 6th year: $\mu=28.8$, $SD = 4.13$). Also, the education level was significantly associated with students' academic self-perception and students' social self-perceptions. The students at the 4th year exhibited significantly better SASP and SSSP and of EE compared to the groups at other years. Only the high school type was significantly associated with the students' perceptions of the atmosphere. The students who graduated from private high schools showed better SPA and of EE compared to students in public high schools. Family monthly income was not significant as an influential factor of the DREEM items of EE among students in the College of Dentistry of Jazan university.

SPL, min score = 0, max score = 48; SPT, min score = 0, max score = 44; SASP, min score = 0, max score = 32; SPA,

min score = 0, max score = 48; SSSP, min score = 0, max score = 28.

The association between gender and DREEM Inventory domains among different gender groups is presented in Table 4. Regarding the SPL, the male students' records were more positive in terms of the perception of learning (128; 44.7%) and teaching was indicated highly thorough (27; 9.4%), whereas the females scored the same characteristics as low (94; 32.9 and 20; 7.0%). In SPT, the perception of the male students that the teaching is moving in the right direction was more positive than females (128; 44.8% and 87; 30.4), whereas the female students felt that model course organizers were more than according to male students (26; 9.09% and 20; 7.00%). Regarding the SASP, again, more male students held more positive attitudes, that is "feeling more on the positive side" and "confident" (122; 42.7% and 33; 11.5%), than did the female counterparts pursuing dentistry. For the characteristic "many negative aspects", twice as many female students reported negative aspects. Concerning SASP, the perception of the male students that the teaching is moving in the right direction was more positive than females (128; 44.8% and 87; 30.4), whereas the female students felt that model course organizers were more in number than according to male students (26; 9.09% and 20; 7.00%), respectively. Finally, for SSSP, the relative proportion of males harboring positive opinions, "not too bad" and "very good socially", was nearly double to that of female students (Table 4). However, all the above levels of score based on domain showed no statistically significant differences between genders with p -value > 0.05 .

Table 3. DREEM inventory domains of educational environment with respect to gender, age, high school type, education level, university gpa, family monthly income among dental students at jazan university (N = 286).

Variable	N	Mean (SD)					
		Overall	SPL	SPT	SASP	SPA	SSSP
Gender¹	163						
Male	123	130.8 (18.0)	32.0 (4.73)	28.9 (4.63)	21.9 (3.48)	30.3 (5.84) *	17.5 (3.26)
Female		130.2 (19.8)	32.2 (4.81)	29.4 (4.89)	21.5 (3.86)	29.7 (5.69) *	17.5 (3.55)
Age² (years)	75	128.2 (17.64)	31.4 (4.77)	29.2 (4.81) *	21.2 (3.83)	29.3 (6.17)	17.2 (3.03)
19- 21	199	132.0 (19.05)	32.5 (4.74)	29.5 (4.48) *	22.0 (3.58)	30.5 (6.13)	17.6 (3.57)
22-24	12	120.3 (17.98)	30.9 (4.58)	24.3 (6.14) *	20.8 (3.33)	26.7 (6.81)	17.6 (2.11)
>24							
High school type¹	279	130.4 (18.61)	32.1 (4.75)	29.2 (4.74)	21.7 (3.67)	30.0 (6.05) *	17.4 (3.34)
Governmental	7	135.4 (26.06)	33.9 (5.24)	28.9 (5.15)	23.3 (2.81)	30.4 (11.77) *	19.0 (4.69)
Private							
Education level²	68	127.3 (18.56)	31.2 (5.15) *	29.1 (4.98) *	20.9 (3.62) *	17.2 (3.41)	28.8 (6.47) *
3rd Year	77	136.3 (18.96)	33.4 (4.34) *	30.5 (4.72) *	22.8 (3.77) *	17.6 (3.52)	31.9 (6.33) *
4th Year	63	130.1 (19.98)	32.1 (4.79) *	28.3 (4.99) *	21.9 (3.50) *	17.4 (3.53)	30.4 (6.21) *
5th Year	78	128.0 (16.74)	31.6 (4.57) *	28.8 (4.13) *	21.3 (3.50) *	17.6 (3.12)	28.8 (5.40) *
6th Year							
University grade point average²	18	126.2 (27.17)	31.9 (6.23)	28.5 (8.33)	19.8 (5.47) *	17.2 (3.67)	28.7 (8.10)
Pass	144	128.6 (18.33)	31.5 (4.77)	28.6 (4.37)	21.6 (3.58) *	17.5 (3.25)	29.4 (6.18)
Good	91	133.1 (18.34)	32.9 (4.58)	29.7 (4.36)	22.1 (3.19) *	17.6 (3.62)	30.8 (6.11)
Very good	33	134.2 (15.53)	32.5 (4.08)	30.6 (4.44)	22.8 (3.64) *	17.1 (3.24)	31.2 (5.27)
Excellent							
Family monthly income² (SAR)	11	138.1 (13.32)	34.2 (4.56)	31.2 (3.46)	23.2 (2.09)	18.5 (2.42)	31.0 (5.04)
Up to 3000	86	129.2 (18.76)	32.1 (5.08)	28.5 (4.63)	20.9 (4.03)	17.3 (3.31)	30.2 (5.25)
3000 – 10 000	126	128.1 (18.0)	31.4 (4.42)	29.1 (4.30)	21.4 (3.28)	17.5 (3.46)	28.8 (6.47)
10 000 – 15 000	63	135.9 (20.06)	33.1 (4.82)	29.9 (5.72)	23.3 (3.60)	17.5 (3.48)	32.1 (6.61)
Above 15 000							

Note: * Statistically significant.

¹ t-test used to compare the two groups; ² ANOVA used to compare the means among groups.

Table 4. Frequency distribution of DREEM inventory domains among different gender groups of dental students at Jazan university (N = 286).

Level of score based on domain ¹	Gender N (%)		Overall N (%)	P-value
	Male	Female		
SPL				0.695
Very poor	0.00	0.00	0.00	
Teaching is viewed negatively	8 (2.8%)	9 (3.1%)	17 (5.9%)	
More positive perception	128 (44.7%)	94 (32.9%)	122 (42.7%)	
Teaching is highly thorough	27 (9.4%)	20 (7.0%)	47 (16.4%)	
SPT				0.190
Abysmal	1 (0.3%)	0 (0.0%)	0 (0.0%)	
In need of some retraining	14 (4.9%)	10 (3.5%)	24 (8.4%)	
Moving in the right direction	128 (44.8%)	87 (30.4%)	215 (75.2%)	
Model course organizers	20 (7.0%)	26 (9.09%)	46 (16.1%)	
SASP				0.187
Feeling of total failure	0 (0.0%)	1 (0.3%)	1 (0.3%)	
Many negative aspects	8 (2.8%)	13 (4.4%)	21 (7.3%)	
Feeling more on the positive side	122 (42.7%)	84 (29.4%)	206 (72.0%)	
Confident	33 (11.5%)	25 (8.7%)	58 (20.3%)	
SPA				0.469
A terrible environment	1 (0.3%)	0 (0.0%)	1 (0.3%)	
There are many issues that need changing	29 (10.1%)	25 (8.7%)	54 (18.9%)	
A more positive attitude	113 (39.5%)	80 (28.0%)	193 (67.5%)	
A good feeling overall	20 (7.0%)	18 (6.3%)	38 (13.3%)	
SSSP				0.687
Miserable	0 (0.0%)	1 (0.3%)	1 (0.3%)	
Not a nice place	30 (10.5%)	28 (9.8%)	58 (20.3%)	
Not too bad	114 (39.9%)	83 (29.0%)	197 (68.9%)	
Very good socially	19 (6.6%)	11 (3.8%)	30 (10.5%)	

Abbreviations: SPL, students' perceptions of learning; SPT, students' perception of teachers; SASP, students' academic self-perception; SPA, students' perceptions of atmosphere; SSSP, students' social self-perceptions; SD, standard deviation.

On the basis of further analysis, for both genders pooled, the study found only two (4%) of the 50 DREEM items that indicated a problematic area (*i.e.*, mean score ≤ 2), while the

other 43 (86%) items had scores that suggested scope for their improvement or enhancement (mean score of 2-3); and five items (10%) were deemed positive areas by the dentistry students (*i.e.*, mean score ≥ 3.0) (Fig. 1).

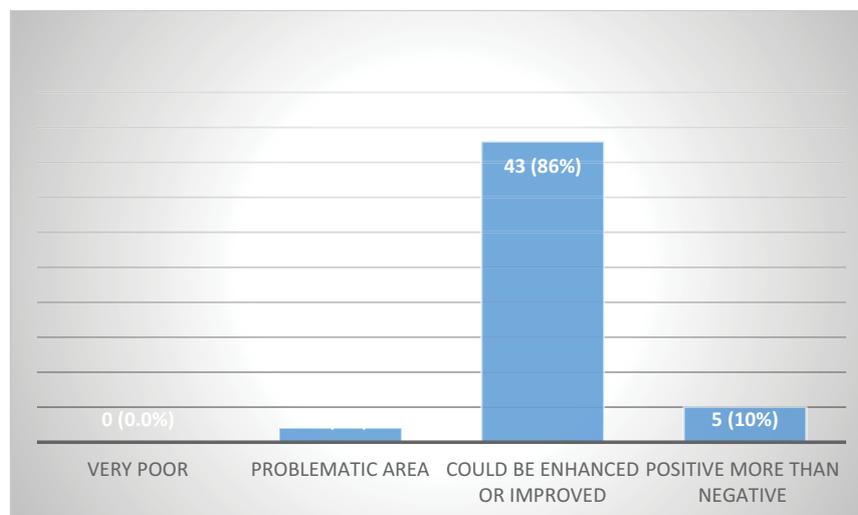


Fig. (1). DREEM items Score obtained (N=50).

4. DISCUSSION

Accreditation is one of the most important goals for institutions of higher education. The current study applied DREEM, a universal scale used worldwide to detect any deficiency or glaring gaps in an education program, to see how close or far a program meets international standards. The DREEM inventory is usually used to produce a profile of a college's strengths and weaknesses, enabling comparative analyses of students' perceptions of EE within the student body at different levels and also among colleges of different universities [1, 2]. Although the DREEM inventory has been extensively applied in medical schools, the data on its application in a dental academic environment remains less and scarce. Only a single study was conducted in SA among dental students, and it was carried out at the King Saud University [12 - 16]. Abroad, several similar studies have been conducted in dental colleges, namely in Greece [12], Malaysia [14], India [10, 11, 17], Nigeria [18], New Zealand [19] and Germany [20].

This cross-sectional study sought to assess and evaluate the EE and learning climate of the undergraduate dental program at Jazan University, based on the perceptions of students relating to different education levels and genders. The study also explored the associations between gender, graduated high school type, age, total accumulative grades, the income of the family, and the EE.

The response rate of the current study was 86%, which was marginally near to the percentages of the previous dental studies conducted in India, Nigeria, and New Zealand (92.68%, 95%, 94%), respectively [10, 18, 19], but it was much higher than studies conducted in Greek, Croatia, Nibal & India, and Saudi Arabia (60.73%, 26.9%, and 64%), respectively [12, 16, 21]. Generally, the result showed a positive perception of their program and its EE. Most students held a positive perception of all five domains tested in the DREEM inventory. No significant gender-based differences were detected, yet the study found significant effects of education level on the mean scores of four domains of DREEM.

The study showed that the overall mean DREEM score was 130.5/200 (130.8 for males and 130.2 for females), which means more positive than negative results, totally in parallel with most of the previous dental studies conducted worldwide. This score is higher than the score recorded by dental students in SA, Riyadh city [16], in India, Bhubaneswar city [17] and Manipal city [11], but less than scored estimated in New Zealand, Otago [19], and equal to the scores obtained in both Nigeria, Maiduguri [18], and Germany [20].

In addition, the study found that students' perceptions regarding their EE were more negative after the 3rd year of their studies, in all domain areas, except that of academic self-perception (*i.e.*, SASP). Similarly, according to a DREEM inventory performed for an Indian dental school, the scores given by final-year students were lower than those from 1st-year students in every subscale assessed [16, 17]. The same trend was observed for medical students in India [10], for which the decline in DREEM scores after the 3rd year of the program coincided with the students' active involvement in the

clinical courses. In our study, the dentistry students had begun to treat patients on their own from the beginning of the 7th semester (4th year).

Most of them believed that 'much of what they have to learn seems relevant to a career in healthcare' (71%, statement Q # 45), while the final-year students believed that 'last year's work had been a good preparation for this year's work (72%, statement Q # 26). Gender did not significantly affect the students' self-perceptions of DREEM in the current study, except in the SPA. This might be because dental male and female students attend different classes, different buildings, phantom and clinical sections. Controversy regarding the findings among medical students was recorded in Dundee [4, 5] and in Malaysia [8]. The current study agreed with the results recorded among dental students in Greece [12], New Zealand [19], and SA [16]. However, gender differences were recognized in other DREEM dental studies in India [10, 21]. There were no significant differences between the different subscales SPL, SPT, SASP, and SSSP in terms of gender, but a significant difference was detected in SPA. This could be related to the teaching strategies in the university and the sociocultural behaviour such as religion and Saudi culture in the city.

In the current study, the questions that scored < 2 and the least were two (Q # 3 and Q4), "There is a good support system for registrars who get stressed" and "I am too tired to enjoy this course", and they were related to students' social self-perceptions; this was in agreement with studies done earlier [11, 12], in which only a few number of questions were of the problematic area. In contrast to the earlier studies [11, 12], this study was significantly opposite in terms of the total scores of this subscale.

Stress is unanimously accepted as a major contributing factor responsible for the poor performance of students in universities globally. This could be due to various reasons. Limited leisure time was the primary cause in studies done in Jordan [22] and Canada [23]. The current study identified two questions that stood out in the problematic zone, which are hard to rectify: "There is a good support system for registrars who get stressed" and "I am too tired to enjoy this course", for which the overall scores recorded were respectively 1.86 and 1.95 out of 2. In comparison, Malaysian dental students reported higher levels of stress [14]. This current study also identified key stressors affecting dental students' academic life, and highlights the importance of stress management programs and other measures to minimize the impact of stress on both the academic and personal lives of dentistry students.

There were several strengths to this study. This study was a cross-sectional study that allowed researchers to capture a snapshot of the target population regarding the perception of EE. Cross-sectional studies are a quick and inexpensive method for collecting useful information. This study is particularly useful for planning and designing appropriate measures taking into account weak areas in order to enhance the educational experience. On the other hand, there are several limitations that should be considered when utilizing the results of this study. First, our data was cross-sectional and, hence, can be interpreted only as an association rather than a cause-effect

relationship. In addition, qualitative data has not been collected to deal with specific problems or highlight the strengths of the dental college or various courses more deeply.

The current study results can serve as useful preliminary data for future comparative studies. Further qualitative investigation is recommended to be done on every single course to evaluate the changes and make necessary alterations in the program (*i.e.*, shifting to a yearly system from a semester-based one).

CONCLUSION

The students at Jazan University's College of Dentistry held positive perceptions regarding their studying program and EE. The faculty of this college, within just a couple of years, has achieved above-average outcomes in fostering a conducive learning environment for their students. The majority of students showed a positive perception in all domains tested by the DREEM inventory. Although the gender of undergraduate students apparently did not influence the DREEM scores, these did differ with regard to students' age, the type of graduated high school, different learning levels, university average grade point, and family monthly income of the dental education. The overall subscale for both genders in different domains out of the total scores was as follows; students' perception of learning (SPL) was 32.1/48, students' perception of teaching (SPT) was 29.1/44, while students' academic self-perception (SASP) was 21.7/32. The students' perception of the atmosphere accounted for 30.0/48 while students' social self-perception (SSSP) was graded as 17.5/28, which was considered more positive than negative. Further qualitative investigation is required to be done on every single course to evaluate the changes and make necessary alterations.

AUTHOR CONTRIBUTIONS

Conceptualization, M.A.M., and M.A.S.; acquisition and Investigation, N. M. A., and A. A. A.; Methodology, M.A.M., and M.A.S.; Statistics and tables management; M.A.M., and M.A.S.; Writing - original draft - review & editing, A.K. All authors have read and agreed to the final version of the manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Ethical approval was obtained from the ethical committee of the College of Dentistry at Jazan University, KSA, Jazan, Saudi Arabia with reference number (19212).

HUMAN AND ANIMAL RIGHTS

Not applicable.

CONSENT FOR PUBLICATION

Informed consent was taken from all participants.

AVAILABILITY OF DATA AND MATERIALS

The datasets generated during and/or analyzed during the current study are available from the corresponding author [M.M .A.M] on reasonable request.

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CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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