Comparisons Between Preclinical and Clinical Dental Students’ Perceptions of the Educational Climate at the College of Dentistry, Jazan University

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Purpose: The aim of this study was to compare the preclinical and clinical undergraduate dental students’ perceptions of their educational climate (EC). In addition it will be compared with other local and international studies.

Materials and Methods: Students enrolled in their third and fourth years (preclinical phase) and students in their fifth and sixth years (clinical phase) of the Bachelor of Dental Science at the University of Jazan, Saudi Arabia, were invited to complete a WhatsApp media survey, which included demographics and the Dundee Ready Education Environment Measure (DREEM). This scale measured students’ overall perceptions of the EC in five domains: learning, teaching, academic self-perception, atmosphere, and social self-perception. Data were analyzed with Student’s t-tests and ANOVA to compare between and within groups.

Results: A total of 272 participants, 140 (51.5%) preclinical and 132 (48.5%) clinical students, took part in the study. Students were generally positive about their learning climate, with overall DREEM scores of 125.19 and 126.21 (preclinical) to 124.10 (clinical) out of a possible score of 200 phases. Student’s perceptions of teaching (26.18±3.24/72.72%) and atmosphere (28.08±5.29/63.82%) were the highest and lowest scores, respectively, and both scores were positive.

Conclusion: No differences between the preclinical and clinical phases of the curriculum point to the structure of learning, teaching, academic, social self-perception in health professional degrees. Further research should investigate the weak points in the social and atmospheric climate.

Keywords: educational climate, teaching, DREEM, student perception, education programs

Background

Educational climate (EC) is a broad concept. Here, education encompasses teaching and learning, whereas the environment encompasses everything that surrounds these factors. EC can be described as anything involved with educational institutions. 1 In 1998, the World Federation of Medical Education highlighted EC as a target area for the evaluation of health and dental education programs. 2

In 1997 Roff et al developed the Dundee Ready Education Environment Measure (DREEM). It is a multidimensional and multicultural instrument that can measure the five separate fundamentals of EC, namely, students’ perceptions of
learning (SPL), students’ perceptions of teachers (SPT), students’ perceptions of atmosphere (SPA), students’ academic self-perception (SASP), and students’ social self-perception (SSSP). DREEM can be used to highlight the weaknesses and strengths of an educational institution, compare the performance and success of dental schools, and contrast the different levels of study and gender among students. In addition, this tool can be used to help amend the curriculum, compare present and past programs, and evaluate the effectiveness of college curriculums. Furthermore, DREEM can help health and dental schools to distinguish their priorities while comparing their performance and productivities against their peers. The results of this comparison can be educationally insightful.

The College of Dentistry in Jazan University was established in 2006. It is one of three governmental dental schools in the southern part of the KSA. The Bachelor of Dental Science (BDS) program consists of six years, which are divided into the following: two years of premedical/dental preparatory and basic medical subjects and four additional years consisting of two years for preclinical subjects, and two years related to the clinical subjects. The total credit hours for the BDS program is 197, divided into three parts, 59 credit for the first two years, and the remaining credit hours are divided into 72 credit hours for the preclinical phase, and the residual 66 credit hours are for the clinical phase subjects. Most of those subjects consist of theory lectures, seminars, practical, clinical simulation, and clinical subjects. In addition, all dental students must complete a full year in an internship program, in which the graduated dentist will practice the different dental specialties as a general practitioner.

The use of DREEM is important in providing a consistent method for global comparisons among dental schools, thereby leading to the standardization of ECs. DREEM has been successfully used in studies of health science institutes throughout the world. It carried out studies of the EC in dental colleges in Saudi Arabia, Europe, Asia, Africa, North America, and the Caribbean. Previous dental local and worldwide studies are presented in (Table 1).

A major drawback has always been insufficient knowledge of students’ perceptions about their academic learning and instruction in the BDS program as well as the overall educational atmosphere of the institution. The objectives of the current study were to build a reference point of information of the student’s perceptions of their educational climate by using DREEM inventory in the College of Dentistry, Jazan University. Another goal was to identify whether there were any differences between preclinical and clinical phases in students’ perceptions in EC. In addition, this study sought to understand the association between variables, such as age, secondary school type, gender, total cumulative grade point average (CGPA), and family monthly income of the students. Finally, we aimed to assess the strengths and weaknesses of the institution’s EC and compare our results with local and international studies.

Materials and Methods
Study Design and Participants
All dental students at the College of Dentistry, Jazan University from the third to sixth (final) year in the BDS programs were the target of the study population and participated in this cross-sectional descriptive study. The DREEM questionnaires were distributed via WhatsApp to the study subjects who had been enrolled at the end of the 2019–2020 academic year. Consent forms were signed by all students at the beginning of the questionnaire. Ethical approval was gained from the Ethical Committee of the College of Dentistry, Jazan University (CODIU, 19,211). This study is in accordance with the guidelines of the World Medical Association Declaration of Helsinki.

Inclusion Criteria and Participant Collection
The inclusion criteria for this study included participants over 18 years of age, in the third year or above in the BDS program, and present at the time of the study. The participants were asked to evaluate the EC. The DREEM questionnaires were distributed to all participating students via WhatsApp through group leaders of both the male and female students.

Instruments and Outcome Measures
The validated Arabic version of the DREEM questionnaire was used as recommended by Al-Namankany et al. and Al-Nasser et al. The Arabic translation of the 50-item DREEM questionnaire was used to measure students’ perceptions of the educational climate in this study. The DREEM contains 50 questions relating to a range of topics directly relevant to EC. The inventory was delivered through student’s WhatsApp media. Students were asked to read each statement carefully and to respond using a
Table 1: Summary of Dental Student's Perception Using DREEM Inventory for EC at Different Local and Worldwide Studies

| Researchers/Publication Year | College, University City, Country | Students Levels and Response Rate | Sample Size, Male and Female | DREEM Total Score/200 and Subscale and Domains | Overall Score, Subscales and Weak Items, Gender Significances |
|------------------------------|----------------------------------|---------------------------------|-----------------------------|-----------------------------------------------|---------------------------------------------------|
| Current study Aldowsari et al, 2020 | Dental College, Jazan University, SA DC, JU | 3rd to 6th year RR: 91% | 272 | M 57.4% F 42.6% Preclinical 51.5% Clinical 48.5% | 125.19±15.11 Preclinical; 126.21±16.02 (mean) Clinical; 124.1±14.04 (SPL) 31.88±4.99 (31.36±4.69) 30.82±2.42 (SPT) 26.26±3.44 (26.18±3.24) 26.09±3.03 (SASP) 21.98±3.07 (21.92±3.52) 21.86±3.05 (SPA) 28.26±5.4 (28.08±5.29) 27.89±5.18 (SSP) 17.83±3.08 (17.64±3.03) 17.45±2.97 | More positive than negative Nonsignificant differences when preclinical and clinical phases Nonsignificant differences between gender Items scored ≤2 were teaching overemphasizes factual learning, too teacher-centered. Teachers ridicule students, are authoritarian, get angry in teaching sessions. Students irritate teachers, teaching is problem in this course, experience disappointing, and good support for students who get stressed. |
| Al-Salah et al, 2018 | Dental College, King Saud University, SA DC, KSU | All students and intern RR: 60.73% | 302 | M 44% F 56% | 108.42 (18.92) 2nd year: 118.36±15.8 (mean) Interns: 105 ±21.3 (SPL) 27.88±4.96 (25.30) 23.91±5.62 (SPT) 26.06±4.81 (24.42) 22.28±4.90 (SASP) 20.06±3.92 (19.80) 18.43±2.85 (SPA) 29.87±4.52 (25.16) 24.21±6.86 (SSP) 16.47±4.54 (14.47) 13.02±0.54 | More positive than negative NS among four subscales. SAP was significant Nonsignificant differences in CGPA and marital status Items scored ≤2 were teaching overemphasizes factual learning, too teacher-centered. Teachers ridicule students, authoritarian, get angry in teaching sessions. Able to memorize everything I need. Atmosphere is relaxing during clinical teaching. Cheating is a problem on this course, atmosphere motivates me as a learner, good support for students who get stressed, and I am too tired to enjoy course. |
| Hilawany et al, 2016 | Dental College, King Saud University, SA DC, KSU | All students RR: 52% | 613 | M 49.3% F 50.7% | DECLEB 64.1±100 Dental Clinical Learning Environment Inventory 4th-5th year: 3rd year clinical experience | More positive than negative Significant difference in commutation grade point average among participants |
| Al-Samadani et al, 2016 | Dental College, University of Taibah, SA DC, TU | 3rd-5th year RR: 91% | 110 | M 53% F 47% 3rd year 98 (49%) and 4th year 84 (42%) | 90 (45%) Study level gender (SPL) 19.38 (7.43) 19.38 (7.43) (SPT) 19.39 (6.77) 19.39 (6.77) (SASP) 17.15 (5.60) 17.15 (5.60) (SPA) 18.35 (7.93) 18.35 (7.93) (SSP) 13.8 (3.85) 13.8 (3.85) | Plenty of problems Low SP, nonsignificant differences among gender in DREEM items. Females much more dissatisfied compared to males, and 4th year was most problematic Females were more stressed Most items in the five subscales scored ≤2 |

(Continued)
| Researchers/Publication Year | College, University City, Country | Students Levels and Response Rate | Sample Size, Male and Female | DREEM Total Score/200 and Subscale and Domains | Overall Score, Subscales and Weak Items, Gender Significances |
|------------------------------|-----------------------------------|----------------------------------|-------------------------------|------------------------------------------------|---------------------------------------------------------------|
| Farooqi et al., 2015<sup>13</sup> | College of Dentistry, Dammam University, SA DC, DU | Different level RR: 72% | 55 M: 45.5% F: 54.5% | Expected (114.7) and (100.5) actual | More positive than negative |
|                               |                                    |                                  |                              | Expected actual DREEM (SPL) 28.16 25.95 | Non-significant differences between males and females |
|                               |                                    |                                  |                              | (SPF) 25.05 23.89 | Non-significant differences between expected and actual in all subscales |
|                               |                                    |                                  |                              | (SASP) 19.71 16.09 | Items scored ≤ 2 were teaching overemphasize factual learning, too |
|                               |                                    |                                  |                              | (SPA) 26.26 24.64 | teacher-centered, teachers ridicule students, authoritarian, get angry |
|                               |                                    |                                  |                              | (SSSP) 15.29 14.94 | in teaching sessions. I feel able to ask questions, I want Cheating is |
|                               |                                    |                                  |                              |                                                     | problem on this course. I find experience disappointing. I am too |
|                               |                                    |                                  |                              |                                                     | tired to enjoy course. |
| Ahmed et al., 2015<sup>14</sup> | Dental College, Taibah University, Al-Madinah Al-Munawara, SA DC, TU | 1st-6th year RR: 97% for 2009 RR: 100% for 2014 | 64 34 (2009) and 30 (2014) | 90.4 92.3 (2009) and 88.4 (2014) | Plenty of problems |
|                               |                                    |                                  |                              | Academic year (2009) (2014) | SPs were relatively low from beginning throughout study |
|                               |                                    |                                  |                              | (SPL) 21.62±5.82 19.43±6.27 | Non-significant changes in mean domain, total scores, some improvement, |
|                               |                                    |                                  |                              | (SPF) 21.26±5.55 20.03±5.28 | most lower over study period. |
|                               |                                    |                                  |                              | (SASP) 17.04±5.59 16.87±5.48 | Less than I good support for students who get stressed, and ≤ 2 were |
|                               |                                    |                                  |                              | (SPA) 21.53±6.9 21.30±5.84 | I encouraged to participate in the class, teaching is often stimulating, |
|                               |                                    |                                  |                              | (SSSP) 10.15±2.40 9.77±3.00 | helps to develop my confidence, encourages me to be an active learner; too |
|                               |                                    |                                  |                              |                                                     | teacher-centered. Teachers well prepared for their class. I am able to |
|                               |                                    |                                  |                              |                                                     | memorize all I need, college is well timetabled, enjoyment outweighs |
|                               |                                    |                                  |                              |                                                     | stress of studying dentistry, atmosphere motivates me as learner, too |
|                               |                                    |                                  |                              |                                                     | tired to enjoy this course, really bored on this course. |
| Al-Ansari et al., 2015<sup>15</sup> | Dental College, Dammam University, SA DC, DU | All students Years 2–6 year RR: 81.7% | 162 84.6% M 15.4% F | 97.2<sup>6</sup> | Plenty of problems |
|                               |                                    |                                  |                              | Assessed predictability of DS’ grades as indicator of academic performance through | Improved SPL higher number high achievers, whereas higher perception of |
|                               |                                    |                                  |                              | their perceptions of EE | problems in SPA and SSSP higher number of low achievers and failing |
|                               |                                    |                                  |                              | (SPL) 23.7±48 | students. Non-significant difference between genders, and CGPA |
|                               |                                    |                                  |                              | (SPF) 22.1±44 | No relation between DREEM domains and past academic performances as |
|                               |                                    |                                  |                              | (SASP) 14.8±32 | measured by GPA |
|                               |                                    |                                  |                              | (SPA) 22.8±48 | Less than 1<sup>st</sup> enjoyment outweighs the stress of the course and 42 items |
|                               |                                    |                                  |                              | (SSSP) 4.3±28 | scored less ≤ 2. |
| Mahrour et al., 2013<sup>16</sup> | Dental College, Taibah University, Al-Madinah Al-Munawara, SA DC, TU | 1st and 2nd years RR: 97% | 34 male students | 101.4 1st 112.8±19.6 (101.4±26.3) 2nd (89.1±23.5) | At margin of positive EE |
|                               |                                    |                                  |                              | First year (mean) second year | SPL, SPF, SSSP, SSPW were SH among 1<sup>st</sup> compared to 2<sup>nd</sup> year students. |
|                               |                                    |                                  |                              | (SPL) 23.71 (21.62) 19.53 | Less than 1<sup>st</sup>, good support system for students who get stressed. Scores |
|                               |                                    |                                  |                              | (SPF) 28.40 (24.45) 20.58 | ≤ 2 were daily studying loads causes them heavy course, examination and |
|                               |                                    |                                  |                              | (SASP) 21.00 (17.74) 14.47 | assessment style is very difficult, improving effectiveness of role of |
|                               |                                    |                                  |                              | (SPA) 25.15 (23.49) 21.83 | academic advisors to students to prepare them for clinical phase. |
| Study                  | Institution                      | Year(s) | Sample Size | Gender Distribution (%) | Subscales | Mean Score ± Standard Deviation | Significance |
|-----------------------|----------------------------------|---------|-------------|--------------------------|-----------|---------------------------------|-------------|
| Al-Shamrani, 2002     | Dental College, King Saud University, SA DC, KSU | 4th, 5th years | Dental students and Interns   | M 43.6% 4th 62.5% 5th and 47.1% interns F 56.4% 4th, 38% 5th and 52.9% intern | Importance of unified pre-health program in response to learning outcomes | Two thirds of interns and students said that program is important and necessary |
|                       |                                  |         |             |                          |           |                                  | Nonsignificant difference between interns and students                    |
|                       |                                  |         |             |                          |           |                                  | Significant difference between males and females                         |
| Dental studies conducted worldwide |                      |         |             |                          |           |                                  |                         |
| Alraweei et al., 2020 | Private Dental College, Turkey   | 3rd-5th year |             | M 53.8% F 46.2% | 100.6±19.81 M 100.9±22.18; F100.1±16.77 (SP) 22.7±5.85 23.4±5.25 (SPT) 22.7±4.67 22.6±4.46 (SASP) 17.73±4.43 17.20±3.67 (SPA) 22.14±5.1 21.91±5.59 (SSSP) 14.79±3.72 15.10±3.39 | At border of positive direction. Nonsignificant difference in gender, age, monthly family income, housing type SASS significant graduated school type SPT and SPA significant in 0000. Items scores ≤2 two were teaching is registrar-centered, overemphasizes factual learning, too teacher-centered. Teachers ridicule their registrars, authoritarian. I can memorize important facts, course is well timetabled, enjoyment outweighs stress of studying medicine. Good support for registrars who get stressed and I am too tired to enjoy this course. |
| Strastulat et al., 2019 | Faculty of Dental Medicine, Romanian Eastern University, Romania | 6th year | Romanian=111 (M 51 and F 60), International=148 English (M 19 and F 24) and French (M 46 and F 59) | 117.82 Romanian=111 (M 51 and F 60): 111.82±18.78 Romanian=128.91±17.26 (SP) 29.61±6.17 32.52±6.17 (SPT) 25.43±4.73 27.97±4.48 (SASP) 18.37±3.80 18.93±3.82 (SPA) 27.39±5.17 29.97±5.11 (SSSP) 17.02±3.76 19.51±2.51 English=169 (M 91 and F 78): 156.47±15.16 (SP) 29.63±5.35 26.52±6.49 (SPT) 25.16±3.55 22.85±3.95 (SASP) 17.81±3.02 18.00±4.01 (SPA) 27.19±3.79 24.75±4.34 (SSSP) 17.12±3.39 14.34±3.13 | More positive than negative Lower score in SPA and SSSP Significant difference between subscales in different nationality. International students were negative 5Ps in EC. Needing social support for satisfying EC. |
| Batra et al., 2018     | Dental Medicine School, Zagreb, Surendera, Croatia Dental College & Research Institute, Sri Ganganagar, India, and People's Dental College, Nepal | All students |             | M 43.6% F 56.8% | 949 188: Croatia (M 18.1%; F81.9%); 373: India (M 43.2%; F 56.8%); 288: Nepal (M 27.4%; F 72.6%) | Dental Student Learning Environment Survey (DSLES) Flexibility, “Student-to-Student Interactions, Emotional Climate, Supportiveness, Meaningful Experience, Organization & Breadth of Interest.” | “Flexibility” was identified as area of weakness in all three educational systems. Students in Croatia rated their school only with grades excellent and good, while their colleagues in India and Nepal were more critical. Highest mean scales were “Student-to-student interactions” in India and Nepal, and “Emotional Climate” in Croatia. |
Table 1 (Continued).

| Researchers/College, University City, Country | Students Levels and Response Rate | Sample Size, Male and Female | DREEM Total Score/200 and Subscale and Domains | Overall Score, Subscales and Weak Items, Gender Significances |
|----------------------------------------------|----------------------------------|-----------------------------|-----------------------------------------------|----------------------------------------------------------|
| Tomas et al., 2013
Nine Public Schools of Dentistry, Spain      | All students RR: 80%             | 1391                        | I24.0 One (12.3 i two 130.6 three 140.0       | More positive than negative,                              |
|                                              |                                  |                             | SPL 28.0 29.7 32.7                           | Items scored ≤2 were teaching is too teacher-centered, teachers are authoritarian, good timetable, course is well time tabled, teaching will over emphasize factual learning, Enjoyment outweighs stress of studying medicine. Good support system for registrars who get stressed, I am too tired to enjoy this course. |
|                                              |                                  |                             | SPT 26.8 28.5 30.1                           |                                                          |
|                                              |                                  |                             | SASP 20.8 21.6 24.5                          |                                                          |
|                                              |                                  |                             | SPA 29.7 31.9 33.5                           |                                                          |
|                                              |                                  |                             | SSSP 17.7 18.7 19.0                          |                                                          |
| Kossioni et al., 2012
Athens University, Dental School, Athens, Greece | 2nd–final year RR: 69.2% 2nd RR: 89% 3rd RR: 66.9% 4th RR: 52.8% 5th RR: 63.8% | 323 | I11.6 Preclinical 2nd–3rd 116.4% clinical 4th–5th 106.2  SPL 27.0 24.6  SPT 25.0 23.0  SASP 18.5 18.0  SPA 28.0 25.0  SSSP 17.9 15.6 | More positive than negative, Clinical phase SH than preclinical Non significant difference between genders. Most SP for EC are positive for preclinical years except SASP. SD were revealed only for SPL sub scale between 3rd and 4th year students. Items scores ≤2 were teaching will over emphasize factual learning. Teacher-centered, good providing feedback from students, provide constructive criticism here. Able to memorize what I need. Enjoyment outweighs the stress of studying medicine. Cheating is problem in this course, good timetable. Good support system for registrars who get stressed, I am too tired to enjoy this course, and rarely bored on this course. |
|                                              |                                  |                             |                                                          |                                                          |
| Ostapczuk et al., 2011
Medical College, Heinrich-Heine, Düsseldorf University Moor enstr, Düsseldorf, GERMANY | All students RR: 66% for all and 74% for F | 205 | I122.9 ±15.52 SPL 28.58±6.67 SPT 27.14±3.71 SASP 19.94±3.80 SPA 28.84±5.09 SSSP 18.45±2.98 | More positive than negative Small and early clinically oriented classes, traditional curricula can generate positive EC. SPA more negatively among clinical phase, but SASP among clinical phase more positively than preclinical. Items scored ≤2 were teaching over emphasize factual learning. Teachers authoritarian, well timetabled, good support for students who get stressed, and am too tired to enjoy this course |
|                                              |                                  |                             |                                                          |                                                          |
| Vakil and Singh, 2019
Government Dental College of Jammu, Nepal | All students RR: 100 | 224 | I127.70±200 (SPL) 30.22±48 (SPT) 27.18±44 (SASP) 21.34±32 (SPA) 32.05±48 (SSSP) 16.91±28 | More positive than negative Implementation of PBL sessions and integrated teaching are endorsed to create better EC. Items scored ≤2 were teaching over emphasized factual learning, teachers ridicule them and good support system for stressed students. |
| Authors            | College, Country          | Students | Age        | Gender | BPS Score | SPS Score | SPL Score | SPL Score | SPS Score | SPL Score | SPS Score | SPL Score | SPS Score | SPL Score | SPS Score |
|--------------------|---------------------------|----------|------------|--------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Zafar et al., 2017 | Lahore Medical and Dental | All      | 533        | M 39%  | 120.27±20.56 | M 121.50±20.56 | M 120.27±20.56 | 120.27±20.56 | M 121.50±20.56 | M 120.27±20.56 | M 121.50±20.56 | M 120.27±20.56 | M 121.50±20.56 | M 120.27±20.56 | M 121.50±20.56 |
| Motghare et al., 2019 | Private Chhattisgarh Dental College, AYUSH University, India | One-year follow-up | 84 | M 34.5% | 147.8 (Beginning) and 24.6 (After year) | 147.8 (Beginning) and 24.6 (After year) | 147.8 (Beginning) and 24.6 (After year) | 147.8 (Beginning) and 24.6 (After year) | 147.8 (Beginning) and 24.6 (After year) | 147.8 (Beginning) and 24.6 (After year) | 147.8 (Beginning) and 24.6 (After year) | 147.8 (Beginning) and 24.6 (After year) | 147.8 (Beginning) and 24.6 (After year) | 147.8 (Beginning) and 24.6 (After year) | 147.8 (Beginning) and 24.6 (After year) |
| Methre et al., 2016 | Dr D. Y. Patil Medical college, Pimpri, Pune, India | All students | 160 | M 38% | 133.9±15.96 (BDS) and 119.35±23.18 (BPT) | 133.9±15.96 (BDS) and 119.35±23.18 (BPT) | 133.9±15.96 (BDS) and 119.35±23.18 (BPT) | 133.9±15.96 (BDS) and 119.35±23.18 (BPT) | 133.9±15.96 (BDS) and 119.35±23.18 (BPT) | 133.9±15.96 (BDS) and 119.35±23.18 (BPT) | 133.9±15.96 (BDS) and 119.35±23.18 (BPT) | 133.9±15.96 (BDS) and 119.35±23.18 (BPT) | 133.9±15.96 (BDS) and 119.35±23.18 (BPT) | 133.9±15.96 (BDS) and 119.35±23.18 (BPT) |
| Janeswar et al., 2016 | Private Dental School, Bhubaneswar City, India | 3rd and 5th | 171 | M 38% | 119.65±19.68 | 119.65±19.68 | 119.65±19.68 | 119.65±19.68 | 119.65±19.68 | 119.65±19.68 | 119.65±19.68 | 119.65±19.68 | 119.65±19.68 | 119.65±19.68 | 119.65±19.68 | 119.65±19.68 |
| Chandran and Ranjan, 2015 | Tagore Dental College, Tamil Nadu, India | All students | 257 | M 19.8% | 124 | 124 | 124 | 124 | 124 | 124 | 124 | 124 | 124 | 124 | 124 |

(Continued)
### Table I (Continued).

| Researchers/Publication Year | College, University City, Country | Students Levels and Response Rate | Sample Size, Male and Female | DREEM Total Score/200 and Subscale and Domains | Overall Score, Subscales and Weak Items, Gender Signficances |
|------------------------------|-----------------------------------|----------------------------------|-----------------------------|-----------------------------------------------|-------------------------------------------------------------|
| Thomas et al, 2009<sup>36</sup> | Manipal College of Dental Sciences, Manipal, INDIA | 1st and final year RR: 100% | 126 M 50% F 50% | 109<sup>1</sup> 
1st year (122) final year (96) 
SPL 31 (2.73±0.38) 24 (2.10±0.56) 
SPT 27 (2.66±0.41) 22 (2.28±0.56) 
SPS 19 (2.74±0.50) 15 (2.10±0.60) 
SPA 31 (3.92±0.47) 23 (2.1±0.61) 
SSP 1 4 (2.69±0.39) 12 (2.1±0.64) | More positive than negative, 
HSD between 1st and final year in most subscales and items 
Items scores ≤2 were teaching overemphasizes factual learning, too centered, course organizer authoritarian. 
Cheating is a problem in this course, enjoyment outweighs stress of studying medicine, good support system for registrars who get stressed, rarely bored on this course. |
| Babar et al, 2015<sup>37</sup> | Dental Private Colleges and public Universities, Malaysia | All students 1st to 5th year | 529 M 23.6% F 76.4% 68.6% Malays 28.5% Chinese 2.9% others | Dental Environment Stress (MSL) 
Fear of failing exams (MSL=5.57); 
Completion clinical work (MSL=5.30); 
Final examination results and grades (MSL=5.27) were found as top stressors among dental students | Female students had higher stress scores than males with respect to personal issues, academic performance, EC and learning of clinical skills. 
Students from public had higher stress scores than from private universities |
| Idon et al, 2015<sup>38</sup> | Faculty of Dentistry, Maiduguri University, Nigeria | All Students RR 95% and 100% F | 134 M 66.4% F 33.6% | 138.2 
2nd 145.6 and 5th 127.7 
SPL 34.4 
SPT 30.8 
SAS 23.5 
SPA 32.1 
SSP 17.5 | More positive than negative, 
Preclinical is lesser than clinical in SP 
Problem areas; ≤2 were school timetabling, teaching overemphasis on factual learning, boredom and stress, are rarely bored on this course. |
| Stormon et al, 2018<sup>39</sup> | Dental Science (Honours) Program, Queensland University, Australia | 1–4th Year RR: 90% | 192 Males 43.2% Females 56.8% | 127.2 
Preclinical 130.5±17.9 (mean) Clinical 121.0 
21.0 
(SPL) 32.1±5.4 (31.2±5.7) 29.3±5.8 
(SPT) 29.7±4.6 (28.6±5.5) 26.4±5.6 
(GAS) 20.2±4.0 (19.6±4.2) 18.5±4.4 
(GPA) 31.8±6.4 (31.0±6.6) 29.4±6.1 
(SSP) 17.3±3.1 (17.3±3.0) 17.5±2.8 | More positive in their EC 
Preclinical more positive than clinical students in all domains of EC. 
Males reported SH in learning perception. 
SSP was at the margin of EC among preclinical students. |
| Study | Institution | Participants | N | M/F Ratio | Description |
|-------|-------------|--------------|---|-----------|-------------|
| Tisi-Lanchares et al., 2017²⁴ | Dental Career, Arturo Prat University in Iquique, Chile | All levels | 103 | | Differences in grades between basic and preclinical phases. More positive than negative. Significant difference between basic and preclinical with clinical phases. |
| Kang and Foster, 2015⁵³ | Faculty of Dentistry, University of Otago, New Zealand | All students from 1st to final year | 66 | M 50% F 50% | Differences in grades between 1st and 2nd year and between expected and actual. More positive than negative. Significant difference between genders. Significant differences at SPL and SASP. |

**Abbreviations:** M, males; F, females; RR, response rate; SH, slightly higher; SP, student's perceptions; LE, learning environment; PBL, problem-based learning; AP, academic performance; DECLEI, Dental Clinical Learning Environment Inventory; SA, Saudi Arabia; DS, dental students; MSL, mean stress level; BDS, Bachelor of Dental Surgery; BPT, Bachelor of Physiotherapy; CGPA, cumulative grade point average.
Table 2 Guide for the Interpretation of the Total DREEM and the Five DREEM Subscales and 50 Items.3,4,38,39

| DREEM, Subscales and Items | Score      | Interpretation                        |
|---------------------------|------------|--------------------------------------|
| Guide to interpret total overall DREEM scores |            |                                      |
| DREEM                     | 0–50       | Very poor                            |
|                           | 51–100     | Plenty of problems                   |
|                           | 101–150    | More positive than negative          |
|                           | 151–200    | Excellent                            |
| Guide to interpret DREEM subscale scores |            |                                      |
| SPL/12                    | 0–12       | Very poor                            |
|                           | 13–24      | Teaching is viewed negatively        |
|                           | 25–36      | More positive perception             |
|                           | 37–48      | Teaching is highly thorough          |
| SPT/11                    | 0–11       | Abysmal                              |
|                           | 12–22      | In need of some retraining           |
|                           | 23–33      | Moving in the right direction        |
|                           | 34–44      | Model course organizers              |
| SASP/8                    | 0–8        | Feeling of total failure             |
|                           | 9–16       | Many negative aspects                |
|                           | 17–24      | Feeling more on the positive side    |
|                           | 25–32      | Confident                            |
| SPA/12                    | 0–12       | A terrible environment               |
|                           | 13–24      | There are many issues that need changing|
|                           | 25–36      | A more positive attitude             |
|                           | 37–48      | A good feeling overall               |
| SSSP/7                    | 0–7        | Miserable                            |
|                           | 8–14       | Not a nice place                     |
|                           | 15–21      | Not too bad                          |
|                           | 22–28      | Very good socially                   |
| Guide to interpret DREEM-item |          |                                      |
| Indvual items score       | ≤2         | Problem areas                        |
|                           | Between 2 and 3 | Aspect of climate that could be enhanced |
|                           | ≥3         | Real positive point                  |

Abbreviations: SPL, students’ perceptions of learning; SPT, students’ perceptions of course organizers; SASP, students’ academic self-perceptions; SPA, students’ perceptions of atmosphere; SSSP, students’ social self-perception.
Notes: *Scored <1. **Estimated from bar chart. = Converted from percentage.

The total or overall DREEM score (Table 2) consisted of five subscales (Table 2) and items (Table 2), which provides an approximate guide for interpreting the subscales below the appendix.

**Data Statistical Evaluations**

The completed questionnaires were collated form the WhatsApp social program via the phone for both preclinical and clinical students. The answers to each question were entered using codes 0 to 4. The responses of the nine negative items were reverse coded to analyze the results appropriately.3,4,33 We used the IBM Statistical Package for also the Social Sciences (SPSS) Statistics version 22
(IBM Corporation, Armonk, NY, USA) program for statistical analysis. The parameters were assessed via the Shapiro–Wilks test, and the results showed that the parameters conformed to the normal distribution. During the evaluation of the study data, the comparisons of quantitative data, descriptive statistical methods (mean, standard deviation), and categorical variables were presented in frequencies and percentages. One-way ANOVA was used in the intergroup comparisons of parameters, and the Tukey’s HDS test was used to determine the differences among the group parameters (CGPA and monthly income). Student’s t-test was used in the intergroup comparisons of parameters (gender, age, type of school, level of education). The Fisher–Freeman–Halton test and the chi-squared test were used to compare the qualitative data, and the statistical significance was evaluated at the level of $p<0.05$.

**Results**

Out of 300 questionnaires that were disseminated by WhatsApp, only 272 completed questionnaires were collected from the students with a total response rate of 91%. The highest response rate was among the clinical phase students at 94%. Demographic data are presented in (Figure 1). There were 140 (51.5%) preclinical respondents and 132 (48.5%) clinical phase students. The age of participants ranged from 19 to 25 years. The average age was 22.4±1.4, with 46.3% between 19 and 22 years of age, and 53.7% between 23 and 25 years of age. Based on the type of high school, 97.4% and 2.6% of the students graduated from government and private high schools, respectively. As for gender, 156 (57.4%) were male, and 116 (42.6%) were female. The response rates based on CGPA were 18 (6.6%); 139 (51.1%); 86 (31.6%), and 29 (10.7%) for pass, good, very good and excellent, respectively. Based on monthly family income, 3.7% were below SAR 3000; 30.5% were from SAR 3000 to 10,000; 43.8% were from SAR 10,000 to 15,000; and 22.1% of the participants were over SAR 15,000.

The total mean and SD of the DREEM items was 125.19±15.11, although it was slightly higher among

![Figure 1 Demographic profiles of respondents (n=272).](image-url)

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**Figure 1** Demographic profiles of respondents (n=272).
Table 3 Mean Scores of the Total DREEM, Preclinical and Clinical Phases and Its Subscales

| Variables | Min–Max | Mean ±SD Overall DREEM | Mean ±SD Preclinical | Mean ±SD Clinical | Percentage of maximum score |
|-----------|---------|------------------------|----------------------|-------------------|----------------------------|
| Total DREEM | 84–169 | 125.19±15.1 | 126.21±16.02 | 124.1±14.04 | 74.08% |
| SPL | 18–44 | 31.36±4.69 | 31.88±4.99 | 30.82±4.29 | 71.27% |
| SPT | 17–36 | 26.18±3.24 | 26.26±3.44 | 26.09±3.03 | 72.72% |
| SASP | 11–32 | 21.92±3.52 | 21.98±3.77 | 21.86±3.25 | 65.80% |
| SPA | 9–44 | 28.08±5.29 | 28.26±5.4 | 27.89±5.18 | 63.82% |
| SSSP | 9–25 | 17.64±3.03 | 17.83±3.08 | 17.45±2.97 | 70.56% |

Table 4 Dental Students’ Mean Item DREEM Scores (n=272)

| DREEM Subscale | Question No. | Items | Mean ±SD | Median |
|----------------|--------------|-------|----------|--------|
| SPL | 25 | The teaching overemphasizes factual learning | 1.86±0.76 | 2 |
| | 47 | The teaching is too teacher-centered | 1.72±1.01 | 2 |
| | 48 | Long-term learning is emphasized over short-term learning | 3.06±0.94 | 3 |
| | 2 | The teachers are knowledgeable | 3.17±0.57 | 3 |
| | 8 | The teachers ridicule their registrars | 1.5±0.98 | 1 |
| | 9 | The teachers are authoritarian | 1.93±0.9 | 2 |
| | 39 | The teachers get angry during teaching sessions | 1.53±0.91 | 2 |
| | 50 | The registrars irritate the course organizers | 1.51±1.03 | 1 |
| SASP | 5 | I am confident about passing this year | 3.04±0.72 | 3 |
| SPA | 17 | Cheating is a problem in this course | 1.55±1.0 | 2 |
| | 35 | I find the experience disappointing | 1.35±0.92 | 1 |
| | 3 | There is a good support system for registrars who get stressed | 1.87±0.98 | 2 |
| | 15 | I have good friends in this course/school | 3.10±0.94 | 3 |
| | 46 | I have a pleasant accommodation | 3.04±0.94 | 3 |

Notes: aNegative statements are scored in reverse. bItems scored <2.

preclinical 126, 21±16, 02 than the clinical phase 124,1 ±14,0. The mean and SD of subscales based on the original values of the overall DREEM, preclinical and clinical subscales ranged between 63.82% and 74.08% (Table 3).

Table 4 shows the mean and SD of the DREEM items and subscales for items scoring the highest and <2. The highest recorded value was 3.17±0.57 for question number two regarding SPT (“The teachers are knowledgeable”). The minimum registered value was 1.35±0.92 for question number 35 in the SPA subscale (“I find the experience disappointing”). Other item scores ranged between two and three.

The results of Student’s t-test showed that the overall mean of DREEM items and subscales SPL, SPT, SASP, SPA, and SSSP had no statistically significant differences in terms of gender, age groups (19–22 and 23–25), type of high school (government or private) and educational level (preclinical or clinical phase), and the p-values were >0.05 (Table 5). Moreover, no statistically significant difference was observed between the total mean of DREEM items and subscale scores of SPL, SPT, SPA, and SSSP in relation to the UGPA (p>0.05). A significant difference was observed between the UGPA of SASP scores (p=0.021; p<0.05). Post hoc comparisons were conducted to determine the origin of significance. The SASP mean scores of “pass” were statistically significantly lower than those of “very good” and excellent (p1:0.048; p2:0.016; p<0.05) (Table 5). Regarding the family’s monthly income level, the results of the ANOVA test showed that the total mean score of DREEM items was significant at (p=0.032; p<0.05). Post hoc comparisons were conducted to determine the origin of significance. The overall DREEM score of families with monthly income of over SAR 15,000 was significantly higher than families with incomes of SAR 10,000–15,000 (p=0.024; p<0.05). There was no significant difference between other income levels in terms of overall DREEM scores (p>0.05) (Table 5). A significant difference was observed between the family’s monthly income
Table 5 Mean Score of DREEM Based on the Demographic and Education Characteristics of Dental Students (n=272)

|                          | Total DREEM | SPL | SPT | SASP | SPA | SSSP |
|--------------------------|-------------|-----|-----|------|-----|------|
|                          | Mean ±SD    | Mean ±SD | Mean ±SD | Mean ±SD | Mean ±SD | Mean ±SD |
| Educational level        |             |       |     |      |     |      |
| Preclinical phase        | 126.21±16.02| 31.88±4.99| 26.26±3.44| 21.98±3.77| 28.26±5.4 | 17.83±3.08|
| Clinical phase           | 124.1±14.04 | 30.82±4.29| 26.09±3.03| 21.86±3.25| 27.89±5.18| 17.45±2.97|
| Age                      |             |       |     |      |     |      |
| 19–22                    | 125.4±15.34 | 31.77±4.79| 26.04±3.23| 21.82±3.82| 28.08±5.4 | 17.7±2.98 |
| 23–25                    | 125±14.94   | 31.01±4.59| 26.3±3.25 | 22.01±3.26| 28.08±5.21| 17.6±3.08 |
| Type of school           |             |       |     |      |     |      |
| Government               | 125.08±15.05| 31.37±4.67| 26.14±3.26| 21.88±3.54| 28.08±5.23| 17.6±3.08 |
| Private                  | 129.4±17.48 | 31±5.6 | 27.71±2.14| 23.57±2.23| 28.14±7.65| 19±3.92  |
| Gender                   |             |       |     |      |     |      |
| Male                     | 125.12±15.19| 31.17±4.62| 26.24±3.4 | 22.04±3.46| 27.97±5.22| 17.69±2.67|
| Female                   | 125.28±15.03| 31.62±4.79| 26.1±3.03 | 21.75±3.61| 28.23±5.39| 17.58±3.46|
| UGPA                     |             |       |     |      |     |      |
| Pass                     | 122.33±23.42| 31.11±7.06| 26.44±3.91| 19.89±5  | 28.22±7.72| 16.67±3.07|
| Good                     | 123.75±15.12| 30.78±4.59| 25.96±3.17| 21.76±3.41| 27.59±5.27| 17.65±3.04|
| Very Good                | 127.55±13.3 | 32.08±4.27| 26.43±3.24| 22.23±3.07| 28.99±4.65| 17.81±3.08|
| Excellent                | 126.86±13.2 | 32.21±4.4 | 26.31±3.21| 23±3.85 | 27.66±5.29| 17.69±2.83|
| Monthly family income    |             |       |     |      |     |      |
| Up to 3000               | 128.3±12.62 | 32.48±4.85| 25.93±3.03| 23.4±1.58| 28.6±3.86 | 18.4±2.32 |
| Between 3 and 10,000    | 124.28±15.81| 31.23±4.51| 25.83±3.44| 21.3±3.65| 28.4±1.58 | 17.51±2.9 |
| Between 10 and 15,000   | 123.18±14.05| 30.82±4.75| 26.04±3 | 21.58±3.22| 27.1±5.16 | 17.64±3.06|
| Over 15,000              | 129.92±15.71| 32.53±4.67| 26.98±3.37| 23.2±3.81| 29.4±5.62 | 17.72±3.27|

Notes: aStudent's t-test. bOne-way ANOVA test. *p<0.05.
Table 6 Association Between Preclinical and Clinical Phase Students and Educational Characteristics (DOMINE) with the Mean Overall Score of DREEM and Subscale of Dental Students (n=272)

| Level of Score Based on Domain | Educational Level n (%) | Preclinical Phase | Clinical Phase | Overall | p-value |
|-------------------------------|-------------------------|------------------|---------------|---------|---------|
| **Total DREEM**               |                         |                  |               |         |         |
| Many problems                 |                         | 6 (4.3%)         | 7 (5.3%)      | 13 (4.8%) | 0.045*  |
| More positive than negative   |                         | 123 (87.9%)      | 120 (90.9%)   | 243 (89.3%) |         |
| Excellent                     |                         | 11 (7.9%)        | 5 (3.8%)      | 16 (5.9%) |         |
| **SPL**                       |                         |                  |               |         |         |
| Teaching is viewed negatively |                         | 14 (10%)         | 9 (6.8%)      | 23 (8.5%) | 0.018*  |
| More positive perception      |                         | 109 (77.9%)      | 114 (86.4%)   | 223 (82%) |         |
| Teaching highly through of    |                         | 17 (12.1%)       | 9 (6.8%)      | 26 (9.6%) |         |
| **SPT**                       |                         |                  |               |         |         |
| In need of some retraining    |                         | 20 (14.3%)       | 13 (9.8%)     | 33 (12.1%) | 0.0072^b|
| Moving in the right direction |                         | 116 (82.9%)      | 119 (90.2%)   | 235 (86.4%) |         |
| Model course organizers       |                         | 4 (2.9%)         | 0 (0%)        | 4 (1.5%)  |         |
| **SASP**                      |                         |                  |               |         |         |
| Many negative aspects         |                         | 11 (7.9%)        | 6 (4.5%)      | 17 (6.3%) | 0.0468^a|
| Feeling more in positive side |                         | 98 (70%)         | 99 (75%)      | 197 (72.4%) |         |
| Confident                     |                         | 31 (22.1%)       | 27 (20.5%)    | 58 (21.3%) |         |
| **SPA**                       |                         |                  |               |         |         |
| A terrible environment        |                         | 1 (0.7%)         | 1 (0.8%)      | 2 (0.7%)  | 0.0865^b|
| There are many issues that need changing | | | 26 (19.7%) | 50 (18.4%) |         |
| A more positive attitude      |                         | 106 (75.7%)      | 99 (75%)      | 205 (75.4%) |         |
| A good feeling overall        |                         | 9 (6.4%)         | 6 (4.5%)      | 15 (5.5%) |         |
| **SSSP**                      |                         |                  |               |         |         |
| Not a nice place              |                         | 23 (16.4%)       | 22 (16.7%)    | 45 (16.5%) | 0.0800^a|
| Not too bad                   |                         | 102 (72.9%)      | 99 (75%)      | 201 (73.9%) |         |
| Very good socially            |                         | 15 (10.7%)       | 11 (8.3%)     | 26 (9.6%)  |         |

Notes: ^Chi-squared test, ^Fisher–Freeman–Halton test.

level in terms of SASP scores (p<0.004; p<0.05). The average SASP score of students whose family’s monthly income was above SAR 15,000 was significantly higher than the students whose family’s monthly income was between SAR 3000 and 10,000, and SAR 10,000 and 15,000 (p1:0.007; p:0.017; p<0.05). There was no significant difference between other income levels in terms of SASP scores (p>0.05) (Table 5). According to the family’s monthly income level, the SPA score was significant at (p0.032; p<0.05). Post hoc comparisons were conducted to determine the origin of significance. The SPA score of families with monthly income of over SAR 15,000 was significantly higher than families with income of SAR 10,000–15,000 (p:0.022; p<0.05). There was no significant difference between other income levels in SPA scores (p<0.05) (Table 5), nor any statistically significant difference were detected between SPL, SPT and SSSP scores according to the family’s monthly income level (p>0.05) (Table 5).

No statistically significant differences were observed between the preclinical and clinical phase (Table 6) and between genders in terms of total DREEM score and all the subscale scores of the SPL, SPT, SASP, SPA, and SSSP distributions with (p>0.05).

Discussion
The DREEM is a multidimensional and multicultural tool that can measure the five separate basics of EC namely,
learning, teachers, atmosphere, academic, and social self-perception. DREEM has been used to highlight the weaknesses and strengths of an EC in several countries, and it has been translated and copied to many languages, such as Arabic,9,12–16 Turkish,18 Romanian,19 Spanish,21 Greek,22 Dutch,23 and Urdu.24–30 The current study measured the perceptions of the learning climate among a sample of Saudi dental students from the University of Jazan. Overall, students across preclinical and clinical phases of the BDS program were more positive than negative about the domains of their EC as measured by the DREEM (Table 3). The mean value of DREEM for all dental students (125.19±15.11) was higher than their counterparts in other local dental colleges in Saudi Arabia,9,12–16 in the college of medicine and medical science at Umm Al-Qura University, Saudi Arabia,39 and in other colleges in Turkey, Greece, and India.18,22,36 However, it was equal to other countries using the same instrument’s rating scale in Romania, Spain, Germany, Nepal, Pakistan, India, and Australia.19,21,23–25,28,29

The mean DREEM values for preclinical and clinical phases were 126.21±16.02 and 124.1±14.0 (Table 3), which are lesser values than those recorded among similar phases in studies conducted by Al-Saleh et al.9 in King Saud University (KSU) Riyadh. It was, however, near to the scores obtained among preclinical dental students by Kossioni et al.22 in Greece, Chandran and Ranjan29 in India, Stormon et al.30 in Australia, and by Tisi Lanchares et al.34 in Chile. Higher DREEM scores were registered in preclinical and clinical dental students in Spain by Tomas et al.21 130.6 and 140.0, and New Zealand 143±15.4 and 134±16.5. All the previous studies conducted among dental students, which have used the DREEM scales, found students’ perceptions of the EC were more positive than negative, except for some studies in SA.12,14,15 Those scores were less than 100 and indicated a considerable number of problems.

All students were recruited in this study, except first and second year students and the response rate was 91%, which was significantly higher than some of the earlier studies conducted in SA, KSU-Riyadh which recorded response rates of 60.73% and 52%,9,11 Dammam University reported 72% and 81.7%,13,15 but equal or slightly lower than studies conducted at Taibah University Al Madinah, and Al Munawara with 91%, 97–100% and 97%.12,14,16 A high response rate was also recorded in dental schools worldwide (Turkey 96.69%,18 Spain 80%,21 Nepal 100%;24 Pakistan 70%;25 India 96%,26 87%28 and 83.7%,29 Nigeria 95%;26 Australia 90%,33 Chile 91.1%,34 and New Zealand 82–94%).35

Figure 1 and Table 5 show that there were no significant differences between the two phases of the dentistry curriculum, ie, the preclinical phase (years 3 and 4) and the clinical phases (years 5 and 6). The DREEM values for the preclinical students’ scores were higher (more positive) in the domains of the learning and atmospheric climate. This parallels with the research findings reported among dental professions previously in Greece, Germany, India, Australia, and Chile.22,23,30,33,34 This is an important finding because of the association between students’ perceptions of their learning climate and their well-being as they transition to the clinical years of the program.

Changes in perceptions between the preclinical and clinical phases are not surprising as learning, teaching, atmosphere, and social climate in dentistry shift from mostly lecturing and tutoring modalities in preclinical years (years 3 and 4) to the addition of clinical teachers in a clinical patient-based setting in later clinical years (years 5 and 6) of the BDS program. These are very different learning environments with different requirements and expectations for students compared with other nonclinical degrees. Clinical-based requirements, working hours, and examinations are more in the clinical years and may influence the student’s perceptions of their EC as well as their stress levels. Previous literature has found that both academic and clinical requirements and workload were a significant source of stress for students.31 The addition of clinical-based learning, which mainly depends on more patient contact, responsibility, and requirements may introduce stressors for dental students and could result in a more negative perception of the climate.33

The relation of different demographic parameters of our participants regarding the total DREEM scores, EC subscales, and specific items and are presented in Figure 1 and Table 5. No significant differences existed in terms of secondary school type, different age groups, CGPA, and family monthly income. This finding is consistent with those of previous studies.13,18 However, significant differences (p=0.021) were observed between CGPA students in SASP between the different levels of family monthly incomes in the overall total DREEM and SASP and SPA scores. A similar finding was detected by Jnaneswar et al.,28 in relation to the SPT subscale. Al-Ansarie et al.,15 stated that improved SPL increased the number of high achievers, whereas increased perception of problems in SPA
and SSPP, resulted in a greater number of low achievers and failing students.

Regarding gender, no significant differences affecting the EC of students’ self-perceptions in this college. Similar findings were obtained among dental students in SA, and worldwide in Turkey, Greece, and Pakistan. However, gender differences were found in other dental studies using DREEM scales and carried-out in India, Australia, and New Zealand. The scores recorded for the DREEM subscales were 31.36±4.69; 26.18±3.24; 21.92±3.52; 28.08±5.29; and 17.64±3.03 for SPL, SPT, SASP, SPA, and SSPP, respectively. Those values were slightly higher than the values recorded in studies carried out in SA, and equal or parallel with the values recorded by Al-Saleh et al., in Riyadh, SA and outside SA in the European countries of Romania, Spain, Greece, Germany, and Pakistan, in India, and in Chile. The DREEM subscales scores of the current study were lesser than that values documented in Nepal, India, Nigeria, Australia, and in New Zealand. In the preclinical phase, the student perception for their DREEM subscales values were 31.88±4.99; 26.26±3.44; 21.98±3.77; 20.62±5.40; 17.83±3.08 for SPL, SPT, SASP, SPA, and SSPP, respectively. Table 5. Those values are equal or in the same range of values recorded in Greece, India, Australia, Chile, and lesser than values in Nigeria. Values of SPL/30.82±4.29; SPT/26.09±3.03; SASP/21.86±3.25; SPA/27.89±5.18; and SSPP/17.45±2.97 of the DREEM subscales for the clinical phase students were close to or the same as in studies conducted in Spain, India, and Chile, but higher than in Greece, and in Pakistan. The interpretation of the abovementioned values or scores for DREEM subscales are in the more positive perception. Those values were moving in the right direction; feeling on the positive side; a more positive attitude; and not too bad for SPL, SPT, SASP, and SSPP, respectively.

Among the 50 DREEM questions, only a few items received scores under two, and the lowest scored questions was related to SPA Table 4, in which the student’s experiences were disappointing. One possible reason for this is that our students are studying separately; it may also be related to the social habits of the country. Other items were related to the SPT. This is not surprising since most of the teachers are not Arabic speakers. The teaching methodology is completely in English and most of our students (97.4%) graduated from governmental high schools. The important point is in that most of the previous local, and international studies concluded that preclinical and clinical dental students face stress during their studies. This is in total agreement with the results of this study, since the score of the question in relation to the support of stressed students was 1.87 to 0.98, which is considered problematic. Studies published in SA by Ahmed et al., and Mahrous et al., recorded a score of <1 for the same question. In addition, a single study in SA by Al-Ansari et al., recorded less than <1 in a question related to the same issue, which was “Enjoyment outweighs the stress of the courses in the college”.

In the current cross-sectional questionnaire-based study, we compared the EC between preclinical and clinical dental students. The DREEM scale and its subscales did not contain questions directly related to the dental educational program and climate, such as items including such clinical requirements as “filing of carious teeth, removable and fixed prostheses, extraction of badly broken down teeth, root canal treatments, and a community program of services, and preventive programs of oral hygiene.” The lack of these items was considered a limitation in this study and in the design of DREEM items and subscales.

Conclusion

The following conclusions can be drawn from this cross-sectional study:

The overall, preclinical and clinical students DREEM scores for dental students perceived the EC to be positive and without any significant differences between gender and phases of study.

Our scored values were equal or higher than those of local and international dental studies.

No association between variables such as age, secondary school type, gender, total CGPA, and family monthly income of the students was determined for SPs.

Future studies should focus on Items that revealed negative aspects, such as the experiences with the registrar, irritation with course organizers and the level of students’ stress. It was indicated by participants that teachers ridiculed the registrars, they were authoritarian, and became angry during teaching sessions.

A change in attitude and style is necessary to make the EC congenial for the students and to mold them into competent authorities. Furthermore, improved support
systems for staff and preclinical/clinical students would help to overcome most of the deficiencies in the institution.

Disclosure
The authors report no conflicts of interest in this work.

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