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Evaluation of the Undergraduate Learning Environment at Dental Schools in Syria

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ABSTRACT

Objective: The learning environment plays a vital role in dental education. A positive learning environment could improve students' satisfaction, psychosocial well-being, and academic achievement. This study set out to measure the quality of the learning environment according to the Dundee Ready Educational Environment Measure (DREEM) at different dental schools in Syria.

Methods: The study included dental schools at Damascus University (DU), Tishreen University (TU), and University of Hama (HU). DU and TU are considered 2 of the largest universities in Syria. Students across all years of study were invited to complete an Arabic version of the DREEM questionnaire.

Results: In total, 1205 students completed the questionnaire: 650 were from DU, 309 from HU, and 243 from TU. Cronbach's alpha value of the DREEM instrument was 0.927. The total DREEM score for all universities was 108.8 ± 31.5 (n = 1205), which is 54.4% of the total score; DU scored the lowest on the DREEM scale (105.9 ± 28.5) followed by TU (111.1 ± 34.3) and HU (113.3 ± 34.4). There was a significant difference amongst the 3 universities (P = .001) with a small effect size (eta-squared = 0.01). At the subscale level, students' perception of learning (SPL) at DU and TU was perceived unfavourably, and the social self-perception of students (SSP) was negatively perceived across all universities. Clinical students scored significantly lower than their preclinical counterparts. No significant difference emerged between male and female students.

Conclusions: This study provides a baseline data on the learning environment at dental schools in Syria. Although the study suggests a more positive than negative perception of the learning environment, Syrian dental schools scored considerably lower than their Arab and international counterparts. Aspects related to SPL and SSP were the most serious areas requiring improvement, and future research should focus on designing proper interventions to address them.

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Introduction

The learning environment (LE) is a critical concept in health profession education. Institutions, educators, and health professionals all over the world realise how important it is to foster a positive LE. A favorable LE is a predictor of not only students' satisfaction but also their learning outcomes and academic achievement.[1,2] Moreover, studies reported a positive correlation between the LE and quality of patient care.[3] On the other hand, a less favorable LE has been associated with higher stress levels, depression, and burnout amongst medical trainees.[4,5] Studies in dental education are comparable with similar medical studies, further emphasising the importance of the LE in developing dental students' professional identity, improving their academic achievement, and maintaining their psychosocial well-being.[6-10]

Studies evaluating the LE use different quantitative and qualitative approaches such as focus groups, semi-structured interviews, and closed-ended questionnaires. One of the most popular validated questionnaires to measure the LE is the Dundee Ready Educational Environment Measure (DREEM).[11] The DREEM inventory is a generic instrument that has been used to assess students' perception of the LE across different health care—related fields including medicine, dentistry, pharmacy, and nursing.[11-15] The wide adoption of DREEM enables comparison of the educational environment across fields and nations.[16]

Several reports addressed the undesirable characteristics of the LE and curricula that govern dental education such as the overcrowdedness, the lack of flexibility, and the encouragement of factual learning.[17] The heavy workload that impedes students' learning and negatively affects student's well-being is another unwanted feature of the LE.[18] In resource-limited contexts such as those in developing countries, additional negative features become more predominant such as the lack of infrastructure, poorly equipped facilities, and the limited number of teaching staff.[19]

Dental education in Syria has not been changed for decades; it is traditional, relying on teacher-centred methods, factual learning, and basic paper-based examination.[20] These elements are factors of a negative LE. A previous study in 2020 attempted to evaluate the LE in a Syrian dental school; however, the sample size was limited to 59 students in one dental school and sample distribution across years of study was not reported, limiting the generalisability of the findings.[21] Therefore, it is this study's aim to conduct a large-scale national evaluation of the LE at public dental schools in Syria.

Materials and methods

Ethical approval was granted by the Syrian Virtual University, number 479/0 on April 19, 2022.

Study design

This is a cross-sectional investigation conducted to evaluate the LE at public dental schools in Syria using the prespecified qualitative indicators as defined by the DREEM inventory.

Participants and settings

There are 7 public universities in Syria that offer a DDS (doctor of dental surgery) degree; the largest universities by number of students are Damascus University (DU), Aleppo University, and Tishreen University (TU), respectively; they are also the first established universities in Syria. After the start of the Syrian conflict, classes were suspended in some major universities and students were transferred to other universities, mainly DU and TU because they were in relatively conflict-free zones. DU and TU came under tremendous pressure due to the overflow of students from other universities, and to alleviate pressure, the Ministry of Higher Education established 2 new universities in 2014: University of Hama (HU) and University of Tartous.[22]

The current study recruited participants from 3 public universities: DU, TU, and HU. These universities are located in Damascus Governorate (the capital, southwest Syria), Lattakia Governorate (northwest Syria), and Hama Governorate (western-central Syria), respectively. The reason behind selecting DU and TU was that they attracted the largest and most diverse body of students across Syria, whereas the inclusion of HU was sought to be important to provide a representative picture of the LE in both old and new public dental schools.

The target population of the study included all dental students from year 2 to year 5. Dental education in Syria comprises 5 years: 1 preparatory year, 2 preclinical years, and 2 clinical years. After the preparatory year, students apply to study either medicine, dentistry, or pharmacy. Because year 1 students are not considered dental students yet, they were excluded from the study.

Data collection

The validated DREEM questionnaire was used to collect data. Several studies reported the validity and reliability of the DREEM instrument.[16,23,24] This study used the Arabic version of the DREEM questionnaire, which was extracted from a previous study.[25] Both paper-based and online surveys were utilised to collect responses from the target population. Convenience and snowball sampling methods were used in the paper-based survey in addition to river sampling in the online survey. The used Arabic version of the DREEM questionnaire as well as the English version are provided in Supplementary Material II and the generated/analysed data set is available in Supplementary Material III. Data collection commenced on April 20, 2022, and ended on July 3, 2022.

The DREEM instrument includes 50 closed-ended statements. Students indicated their level of agreement with each of these statements on 5-point scale (0 = strongly disagree, 1 = disagree, 2 = unsure/inapplicable, 3 = agree, 4 = strongly agree). Each of the negatively phrased items—namely 4, 8, 9, 17, 25, 35, 39, 48, and 50—were coded in reverse so that a higher score indicates a more positive interpretation. The DREEM inventory can be interpreted as a whole at the subscale level and at the individual item level. There are 5 subscales: students' perception of learning (SPL), students' perception of teachers (SPT), students' academic self-perception (ASP), students' perception of atmosphere (SPA), and

students' social self-perception (SSP). A guide for interpreting the DREEM scale and subscales according to McAleer and Roff's recommendations[26] is provided in Supplementary Material I, Table 6.

Data analysis

Cronbach's alpha was used as a measure of internal consistency of the DREEM instrument. Data normality and equality of variance were assessed using the Shapiro−Wilk test and Levene test, respectively. Because the assumption of normality of data was violated, Mann−Whitney U test was conducted to compare the DREEM score according to stage and sex. A P value <.05 was considered significant when comparing 2 groups. One-way analysis of variance (ANOVA) was used to compare different universities according to their DREEM data; Games−Howell post hoc was used as the equality of variance assumption was violated. Eta-squared was used as a measure of effect size. When comparing 3 groups, a reduced P value of <.01 was adopted to account for risk of mass significance.[27] Microsoft Excel 2016 was used to process data, and statistical analysis was performed using IBM SPSS Statistics for Windows, version 26 (IBM Corp.). The online survey was administered using Google Forms.

Results

A total number of 1295 students completed the questionnaire. Ninety cases were omitted due to missing entries; therefore, the total number of valid cases was 1205. The sample sizes at DU, HU, and TU were 650, 309, and 243, respectively, and this constituted 21.3%, 22.4%, and 16.8% of the total population at each university, respectively. The sample total age mean was 21.4 ± 1.5 years with a total female percentage of 53.9% (n = 649). The distribution of respondents in different years of study was relatively similar for the same university. Detailed demographic information of the sample at each university is shown in Table 1. Cronbach's alpha value was 0.927 for the 50-item DREEM questionnaire with a total number of 1205 valid cases. Cronbach's alpha value for each subscale is available in Supplementary Material I, Table 7.

Table 2 shows the overall DREEM scale and subscales for each university. The total DREEM score of the 3 dental schools was 108.8 ± 31.5 (n = 1205), which is 54.4% of the total score. HU scored the highest (113.3 ± 34.4), followed by TU (111.1 ± 34.3) and DU (105.9 ± 28.5). There was a significant difference (P = .001) amongst the 3 universities in the overall DREEM score, with a small effect size (eta-squared = 0.011). On the SPL subscale, both DU (23.5 ± 7.8) and TU (24.7 ± 9.0) scored negatively (<25). On the SPT, ASP, and SPA subscales, all universities scored on the positive end with the exception of DU's SPA score (24.5 ± 9.0), whereas on the SSP subscale, all universities scored below the cutoff.[15] Subscales with mean scores of negative interpretation are set in bold in Table 2. Although there was a significant difference amongst the 3 universities in all subscales (P < .01) except for SPT, the effect size, eta-squared, was small. Post hoc tests showed significant differences between DU and HU in the overall DREEM (P = .002) and each of its subscales (P < .05) except for SSP (P = .329).

The overall DREEM score generally decreased across the years of study, as indicated in Table 3. One-way ANOVA showed a significant difference between students across different years of study at each university (P < .01). DU and TU year 2 students scored 111.3 ± 29.1 and 123.9 ± 30.3, respectively, in comparison to their year 5 counterparts, who scored 98.2 ± 29.3 and 106.2 ± 27.1, respectively. At HU, students across all years scored similarly on the DREEM scale, with the exception of year 4 students, who scored considerably lower than other students of different years of study (year 4 = 101.8 ± 35.6). There was no significant difference between male and female students across all universities (P > .05).

A comparison between preclinical and clinical students revealed significant differences in the DREEM scale and subscales. In the overall DREEM scale, clinical students scored significantly lower (103.6 ± 30.7, n = 620) than their preclinical counterparts (113.8 ± 31.4, n = 582) on the overall DREEM scale (P < .001). Detailed descriptive statistics of the DREEM score and each of its subscales at each university are provided in Table 4. Clinical students at DU scored the lowest (100.5 ± 27.5) in comparison to their counterparts at HU (108.2 ± 34.6) and TU (106.7 ± 33.3). According to post hoc analysis, there was a significant difference (P = .028) between clinical students at DU and HU,

Table 1 – Demographic information of the study sample from each university.

Year of study	DU		HU		TU		Total	
	Population size	Sample size	Population size	Sample size	Population size	Sample size	Population size	Sample size
2nd year	847	152	340	66	403	79	1590	297
3rd year	727	173	329	91	381	59	1437	323
4th year	719	170	347	87	296	49	1362	306
5th year	748	155	381	65	358	56	1487	276
Total	3041	650	1397	309	1438	243	5876	1205
Sex								
Female, %	-	60.9% (n = 396)	-	46.9% (n = 143)		45.3% (n = 110)		53.9% (n = 649)
Age, mean	-	21.4 ± 1.5	-	21.5 ± 1.4		21.1 ± 1.4		21.40 ± 1.5

Three students did not specify their year of study; 13 students did not specify their sex; 9 participants did not specify their age. Three students did not specify their university.
DU, Damascus University; HU, Hama University; TU, Tishreen University.

Table 2 – Descriptive statistics of the DREEM scale and subscales at each university with 1-way analysis of variance analysis (ANOVA) and post hoc Games-Howell showing the pairs that had a significant difference between them.

Domain	DU	HU	TU	Total	1-way ANOVA		
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	P value	Eta-squared	Post hoc
SPL (max. 48)	**23.5 ± 7.8**	25.6 ± 8.8	**24.7 ± 9.0**	24.3 ± 8.3	.001	.011	DU/HU
SPT (max. 44)	26.2 ± 7.6	27.7 ± 8.9	26.4 ± 8.3	26.6 ± 8.1	.029	.006	DU/HU
ASP (max. 32)	18.3 ± 5.8	19.5 ± 6.7	19.7 ± 6.9	18.9 ± 6.3	.003	.010	DU/HU, DU/TU
SPA (max. 48)	**24.5 ± 9.0**	26.7 ± 10.2	25.8 ± 10.4	25.3 ± 9.7	.002	.010	DU/HU
SSP (max. 28)	**13.2 ± 4.5**	13.5 ± 4.8	14.6 ± 5.0	13.5 ± 4.7	<.001	.013	DU/TU, HU/TU
DREEM (max. 200)	105.9 ± 28.5	113.3 ± 34.4	111.1 ± 34.3	108.8 ± 31.5	.001	.011	DU/HU

Eta-squared is an indicator of effect size. Bold type indicates a value of negative interpretation.
ASP, students' academic self-perception; DREEM, Dundee Ready Educational Environment Measure; DU, Damascus University; HU, Hama University; SPA, students' perception of the atmosphere; SPL, students' perception of learning; SPT, students' perception of teachers; SSP, students' social self-perception; TU, Tishreen University.

whereas no significant difference (P = .168) was detected between clinical students at DU and TU.

Table 5 shows all the negatively scored DREEM statements (<2.00). A total of 22 statements scored less than 2.00 at 1, 2 or all 3 studied universities. The negatively scored statements were mostly shared between universities. The lowest-scoring items were in the SSP subscale, namely number 3 (0.77 ± 1.1) and number 4 (1.26 ± 1.4). Across universities, only 3 statements had a mean score equal to or greater than 3.00, namely numbers 2, 15, and 31. TU had another 2 statements scoring greater than 3.0, which were numbers 19 and 45 (Supplementary Material I, Table 8). The rest of DREEM statements' mean score was between 2.00 and 3.00. Descriptive statistics of the 50 DREEM statements at each university with 1-way ANOVA are available in Supplementary Material I, Table 8; in the majority of statements, DU scored significantly lower than the other 2 universities.

Discussion

This study set out to conduct a national evaluation of the learning environment at dental schools in Syria at the undergraduate level. Therefore, large-scale surveys using the validated DREEM instrument were administered at 3 major public dental schools located in different regions in Syria. In total, 1205 dental students completed the questionnaire. Findings showed that the total DREEM score of DU, HU, and TU was 108.8, which implied a more positive than negative LE. Nevertheless, this score is on the lower end of the "more positive than negative" range, which is from 101 to 151. The DREEM score of HU was the highest (113.3) followed by TU (111.1) and DU (105.9). Senior-year dental students at DU scored 98.2 on the DREEM scale, which indicated that the LE had plenty of problems (Supplementary Material I, Table 6). At the subscale level, DU had 3 negative domains (SPL, SPA, and SSP), TU had 2 (SPL and SSP), and HU had 1 (SSP). There was no significant difference between male and female students. However, senior students scored significantly lower on the DREEM scale in comparison to students in their early education. Similarly, clinical students had significantly lower scores than their preclinical counterparts.

An interesting pattern in the data is that most significant differences amongst the dental schools were in items that scored below the cutoff (<2.00); this indicates that the positive aspects were similar amongst universities, unlike the negative ones. Surprisingly, DU—which is considered the best and the oldest in the country[28]—scored the lowest on the DREEM scale, with a significant difference with HU. At the subscale level, it can be noticed that the largest differences between DU and the other 2 universities were on SPL and SSP according to the effect size measurement. When analysing the differences at the item level (Supplementary Material I, Table 8), learning at DU was perceived as significantly less student-centred, contributed less to developing students' competence, had a less relaxed teaching atmosphere, and was less stimulating its their counterparts at TU and HU. It is out of the scope of our study to determine the specific reasons for the differences amongst the dental schools in terms of the LE, but one possible reason could be the significantly higher

Table 3 – Descriptive statistics of the DREEM overall mean score at each university according to the year of study and sex.

University	Preclinical		Clinical		Sex	
	Year 2	Year 3	Year 4	Year 5	Male	Female
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
DU	111.3 ± 29.1	111.5 ± 27.9	102.5 ± 25.6	**98.2 ± 29.3**	106.5 ± 30.0	105.5 ± 27.5
HU	118.3 ± 33.7	118.6 ± 33.7	101.8 ± 35.6	116.8 ± 31.6	111.3 ± 34.7	115.4 ± 34.2
TU	123.9 ± 30.3	102.5 ± 36.9	107.6 ± 39.5	106.2 ± 27.1	108.0 ± 34.6	115.1 ± 34.3
Total	116.2 ± 30.9	111.7 ± 31.7	103.1 ± 31.1	104.2 ± 30.3	108.3 ± 32.6	109.3 ± 30.6

Bold type indicates a value of negative interpretation.
DREEM, Dundee Ready Educational Environment Measure; DU, Damascus University; HU, Hama University; TU, Tishreen University.

Table 4 – Mann-Whitney U test showing the difference in the DREEM scale and subscales between preclinical and clinical students at each university.

| | Damascus University | | | Hama University | | | Tishreen University | | | Total | | |
	Preclinical (n = 325)	Clinical (n = 325)	P	Preclinical (n = 157)	Clinical (n = 152)	P	Preclinical (n = 138)	Clinical (n = 105)	P	Preclinical (n = 620)	Clinical (n = 582)	P
	Mean ± SD	Mean ± SD		Mean ± SD	Mean ± SD		Mean ± SD	Mean ± SD		Mean ± SD	Mean ± SD	
SPL (max. 48)	25.3 ± 7.7	**21.7 ± 7.5**	<.001	27.4 ± 8.3	**23.7 ± 8.9**	<.001	25.9 ± 9.1	**23.0 ± 8.6**	<.001	26.03 ± 8.2	**22.53 ± 8.1**	.010
SPT (max. 44)	27.3 ± 7.5	25.1 ± 7.6	<.001	28.6 ± 8.9	26.8 ± 8.8	<.001	26.9 ± 8.5	25.7 ± 8.0	.130	27.5 ± 8.1	25.7 ± 8.0	.300
ASP (max. 32)	18.3 ± 5.9	18.4 ± 5.8	.890	19.5 ± 6.6	19.6 ± 6.9	.890	19.4 ± 6.6	20.0 ± 7.2	.803	18.9 ± 6.2	19.0 ± 6.4	.464
SPA (max. 48)	26.7 ± 9.1	**22.3 ± 8.5**	<.001	28.5 ± 10.0	**24.9 ± 10.2**	<.001	27.6 ± 9.9	**23.4 ± 10.7**	.003	27.3 ± 9.5	**23.2 ± 9.4**	.001
SSP (max. 28)	**13.6 ± 4.6**	**12.7 ± 4.4**	.019	**13.9 ± 4.6**	**13.1 ± 5.0**	.019	**14.7 ± 5.1**	**14.4 ± 4.9**	.193	**13.9 ± 4.8**	**13.16 ± 4.7**	.896
DREEM (max. 200)	111.4 ± 28.4	**100.5 ± 27.5**	<.001	118.1 ± 33.6	108.2 ± 34.6	<.001	114.7 ± 34.8	106.7 ± 33.3	.017	113.8 ± 31.4	108.9 ± 31.5	.066

Bold cells indicate a value of negative interpretation.

ASP, students' academic self-perception; DREEM, Dundee Ready Educational Environment Measure; SPA, students' perception of the atmosphere; SPL, students' perception of learning; SPT, students' perception of teachers; SSP, students' social self-perception.

number of students at DU: more than double that of HU and TU (Table 1). Increasing the number of students can impact students' learning opportunities, making teachers resort to more teacher-centred approaches as the faculty capacity falls short. A recent study investigating stressors affecting dental students at DU showed that certain environmental stressors, namely lack of dental equipment and difficulty of finding clinical cases, were more powerful than academic stressors.[19] The previous study proposed that the environmental stressors emerged as a byproduct of the faulty admission policy at DU that still allows a huge number of students to enroll in the dental programme every year regardless of the limited capacity of the university to accommodate these numbers.[19] Overall, increasing student intake at DU could lead to negative competition, limited access to dental facilities, and deteriorating learning and psychosocial experience secondary to lower teaching standards, hence negative students' perception of their LE.[19,29]

Specialisation opportunities at DU dental school and working opportunities in Damascus are also very competitive considering the large number of graduating students in Damascus. Difficulty achieving career plans[30] might also explain the negative perception of the LE at DU in comparison with the other universities.

Clinical students reported more negative perception of the LE in comparison with their preclinical counterparts. A previous study at DU showed that the clinical students reported higher stress levels in comparison to their preclinical counterparts, and this was attributed to the additional stressors associated with the clinical stage such as patient treatment and clinical training.[19,31] This finding is consistent with previous studies.[32-34] Similarly, other studies did not report a significant difference between male and female students in terms of their perception of the LE.[34,35]

According to a systematic review published in 2018[15], out of 11 DREEM studies conducted at dental schools, only 1 study reported a score less than 115 and most dental schools across the world scored more than 120. Very few dental schools reported a subscale with a score of negative interpretation.[12,15,34-39] The DU DREEM score was the second lowest DREEM score reported after that of Taibah University in Saudi Arabia.[15,39] Syrian dental schools compared negatively to other Arab World and international counterparts. A detailed comparison between dental schools in Syria and other Arabic and international ones is provided in Supplementary Material I, Table 9. Another factor that needs to be taken into account when interpreting the Syrian dental DREEM score is the traditional curriculum. Dental schools with traditional curriculum have been reported to have lower DREEM scores[32, 34]; this also has been reported in medical education.[40] In comparison with medical schools and pharmacy schools in Syria, medical schools had lower DREEM scores than their dental counterparts at the same university.[41] The pharmacy school at DU reported even lower scores (DREEM = 89.8) than its medical and dental school counterparts.[42]

The state of war might have affected the LE at dental schools in Syria. The internal displacement of citizens to major conflict-free cities contributed to the overcrowding of major universities such as DU.[43] The immigration waves of

Table 5 – Descriptive statistics of each statement with a negative mean score (<2.0) categorised according to their subscale.

Domain	DU (n = 650)	HU (n = 309)	TU (n = 243)	Total (n = 1205)	1-way ANOVA	
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	P value	Post hoc
Students' perception of learning (SPL)						
1. I am encouraged to participate in class	1.90 ± 1.3	-	1.86 ± 1.3	1.96 ± 1.3	.008	DU/HU, TU/HU
13. The teaching is student-centred	1.60 ± 1.3	1.89 ± 1.4	1.85 ± 1.4	1.73 ± 1.3	.003	DU/HU, DU/TU
16. The teaching helps to develop my competence	1.59 ± 1.3	1.99 ± 1.4	1.84 ± 1.3	1.74 ± 1.3	<.001	DU/HU, DU/TU
22. The teaching helps to develop my confidence	1.78 ± 1.4	-	1.98 ± 1.4	1.91 ± 1.4	.002	DU/HU
24. The teaching time is utilised properly	1.80 ± 1.3	1.83 ± 1.4	-	1.86 ± 1.3	.046	DU/TU
25. The teaching overemphasises factual learning	1.68 ± 1.2	1.56 ± 1.3	1.53 ± 1.2	1.62 ± 1.2	.174	-
44. The teaching encourages me to be an active learner	1.74 ± 1.4	-	1.95 ± 1.5	1.85 ± 1.4	.014	DU/HU
48. The teaching is too teacher-centred	1.94 ± 1.2	1.94 ± 1.3	1.77 ± 1.3	1.91 ± 1.3	.200	-
Students' perception of teachers (SPT)						
9. The teachers are authoritarian	1.52 ± 1.3	1.85 ± 1.4	1.72 ± 1.4	1.65 ± 1.3	.002	DU/HU
Students' academic self-perception (ASP)						
5. Learning strategies which worked for me before continue to work even now	1.87 ± 1.4	-	1.85 ± 1.5	1.92 ± 1.4	.069	-
21. I feel I am being well prepared for my profession	1.66 ± 1.3	1.95 ± 1.4	-	1.84 ± 1.3	<.001	DU/HU, DU/TU
27. I am able to memorise all I need	1.97 ± 1.3	-	-	-	.034	-
Students' perception of the atmosphere (SPA)						
11. The atmosphere is relaxed during the clinical teaching	1.35 ± 1.2	1.86 ± 1.4	1.86 ± 1.3	1.58 ± 1.3	<.001	DU/HU, DU/TU
12. This school is well time-tabled	1.93 ± 1.4	1.65 ± 1.5	1.89 ± 1.4	1.85 ± 1.4	.018	DU/HU
17. Cheating is a problem in the school	1.80 ± 1.4	-	1.98 ± 1.5	-	<.001	DU/HU, TU/HU
23. The atmosphere is relaxed during lectures	1.80 ± 1.3	-	1.83 ± 1.3	1.88 ± 1.3	.004	DU/HU, TU/HU
42. The enjoyment outweighs the stress of the courses	1.53 ± 1.4	1.85 ± 1.6	1.71 ± 1.5	1.65 ± 1.5	.009	DU/HU
43. The atmosphere motivates me as a learner	1.54 ± 1.4	1.81 ± 1.4	1.65 ± 1.5	1.63 ± 1.4	.028	DU/HU
Students' social self-perception (SSP)						
3. There is a good support system for students who get stressed	0.60 ± 1.0	0.98 ± 1.2	0.97 ± 1.3	0.77 ± 1.1	<.001	DU/HU, DU/TU
4. I am too tired to enjoy the courses	1.23 ± 1.3	1.28 ± 1.4	1.28 ± 1.4	1.26 ± 1.4	.846	-
14. I am rarely bored on the courses	1.49 ± 1.4	1.76 ± 1.5	1.82 ± 1.5	1.62 ± 1.4	.002	DU/HU, DU/TU
46. My accommodation in the school is pleasant	1.32 ± 1.0	1.32 ± 1.3	1.41 ± 1.2	1.34 ± 1.1		-

ANOVA, analysis of variance; DU, Damascus University, HU, Hama University, TU, Tishreen University.

the young health care workforce including dentists along with the rising health demands of the population might be perpetuating factors that drive decision-makers to increase the students intake of dental and medical schools. Dentals schools had also been greatly affected by the crisis: Teaching staff members are in short supply and are underpaid, development and renovation projects are ceased, and dental clinics are in need of rehabilitation that is yet to occur.[29]

There are numerous important implications of the study findings. Dental schools in Syria should consider reforming the traditional teacher-centred curriculum, encouraging active student involvement in the learning process. A psychosocial support system for students is especially necessary in war-torn Syria, where psychological and social well-being are already compromised.[44] Decision-makers need to take into consideration that arbitrarily increasing dental student intake into the current failing educational system might not be the appropriate solution to respond to the health demands of the population, as one study shows.[45]

This study provides the first large-scale evaluation of the learning environment at dental schools in Syria. DREEM studies in dentistry are scarce in comparison to medicine; moreover, DREEM evaluations of dental schools within a fragile context such as the one in Syria have

never been conducted before, making this study unique. Although the findings of this study may be somewhat limited by nonprobability sampling, the large sample size and relatively balanced distribution of the sample in terms of sex and year of study support the generalisability of the study findings. The inclusion of dental schools in different regions in Syria and that of a newly established one (HU) is another strength of the study.

Conclusions

This study provided a baseline reading and a diagnostic analysis of the LE at dental schools in Syria. Teaching approaches and the social environment emerged as major shortcomings of the LE at dental schools in Syria. Future research should focus on designing and implementing appropriate interventions that could address the potential areas of deficiency in the LE as suggested in this study.

Conflict of interest

None disclosed.

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Supplementary materials

Supplementary material associated with this article can be found in the online version at doi:10.1016/j.identj.2022.12.001.

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