

Evaluation of stress among undergraduate dental students in Al-Qadisiyah University-Iraq

Ocena poziomu stresu wśród studentów stomatologii w Uniwersytecie Al-Qadisiyah w Iraku

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Abstract

Aim of the study. To explore the self-reported source of stress among dental students and to identify the role of gender, marital status, and study level on the perceived stressors. **Materials and methods.** A modified self-reported questionnaire was completed by undergraduate dental students registered at Al-Qadisiyah University, College of Dentistry. The questionnaire consisting of 41 close-ended questions was divided into seven domains. Stress was assessed in a response to four items. The collected data were analyzed for frequencies, means, and comparisons between the study participants in relation to the gender, marital status, and study levels. Nonparametric tests were used with confidence interval 95% (α error = 0.05). **Results.** A total of 185 dental students with mean age of 19.86 ± 1.40 years completed the questionnaire. There was a prevalence of females (1.4:1) and single students rather than married ones. The "workload" domain was the highest stressor domain while the "social stressors" domain was the lowest. Among the stressor questions, the most stressor factor was "examinations and quizzes" while the least stressor was "difficulty of class work". Comparison between the participants revealed more concern in females, married, and pre-doctoral students in most of the stress-provoking factors. **Conclusion.** Considerable levels of stress were observed among dental students. The study also identified stressors affecting the students' academic life. It is important to include stress management programs in the curriculum of the dental college.

Streszczenie

Cel pracy. Zbadanie zgłaszanych przez studentów stomatologii źródeł stresu oraz ustalenie roli płci, stanu cywilnego i etapu edukacji w postrzeganiu elementów stresujących. **Materiał i metody.** Zmodyfikowany kwestionariusz był samodzielnie wypełniony przez studentów 4-letnich studiów stomatologicznych Uniwersytetu Al-Qadisiyah. Kwestionariusz składający się z 41 pytań podzielono na siedem dziedzin. Stres badano w odpowiedzi na cztery pytania. Dane analizowano pod kątem częstości występowania, średnich i porównań pomiędzy uczestnikami badania względem płci, stanu cywilnego i etapu edukacji. Testy nieparametryczne wykorzystano z przedziałem ufności 95% (α błąd = 0.05). **Wyniki.** Łącznie 185 studentów (średnia wieku 19.86 ± 1.40 lat) wypełniło kwestionariusz. Liczebnie przeważały kobiety (1.4:1) i studenci stanu wolnego. Dział "obciążenie pracą" otrzymał najwyższe noty, podczas gdy "czynniki społeczne" najniższe. Wśród pytań, najbardziej stresującym czynnikiem okazały się "egzaminacje i testy", podczas gdy najniższe noty otrzymała "trudność pracy na zajęciach". Porównanie wśród uczestników ujawniło wyższy niepokój zamężnych kobiet i studentów ostatniego, czwartego roku dla większości czynników stresogennych. **Wniosek.** Zaobserwowano znaczny poziom stresu wśród studentów stomatologii. Badanie ujawniło również czynniki stresujące oddziałujące na życie akademickie studentów. Należy włączyć kursy postępowania ze stresem do programów nauczania w szkołach stomatologicznych.

KEYWORDS:

dental students, stress sources, dental education, Iraqi students

HASŁA INDEKSOWE:

studenci stomatologii, źródła stresu, kształcenie stomatologiczne, studenci z Iraku

Introduction

The term “stress” describes external demands (physical or mental) on an individual’s physical and psychological wellbeing.¹ Feelings of stress in humans result from interactions between persons and their environment that are perceived as straining or exceeding their capabilities and threatening their well-being.² Personal and environmental events that cause stress are known as stressors. The diagnostic and statistical manual of mental disorder defines a psychosocial stressor as “any life event or life change that may be associated temporally (and perhaps causally) with the onset, occurrence or exacerbation of a mental disorder.”³

University entry for students is a transitional period, as they are exposed to a multitude of changes in their personal, social and academic environment. Conditions and events inherent to university life induce experiences of stress, which may lead to difficulty in adjusting to this new environment.⁴ Dental schools are known to be highly demanding and stressful learning environments.⁵⁻⁶ Sources of environmental stress among dental students have been identified and quantified by means of the Dental Environment Stress (DES) questionnaire.⁷⁻⁸ Stressors identified include the learning environment, fear of failure, heavy workload, difficulty in dealing with patients, performing non-reversible procedures in a confined space, difficulty in dealing with transitions in curricula and difficult relationships with academic staff.⁹

Findings from different studies have indicated that stress in dental students is quite high.¹⁰ Previous studies have predominantly focused on examination of stress in dental students at a certain point of time. Results of these investigations have shown that psychological stress was the highest in final-year students and the lowest in first year students.¹¹⁻¹² This would seem to imply that as students progressed through dental school, their level of stress increased, but due to the cross-sectional nature of these investigations, this assumption could not be verified.¹³ Moreover, higher level of stress among final-year dental students may reflect negatively on their oral hygiene and self-care practice.¹⁴

The dental course in Iraqi universities is five years in duration, consisting of ten academic semesters, the first three years are preclinical in content and in the fourth and fifth years are clinical years and students are expected to examine and offer treatment to patients under supervision as part of their clinical training. However, the dental school at University of Al-Qadisiyah is one of the novel Institutes in southwestern Iraq, operating since 2013, and it has provided education at only four stages till now.

It is crucial to have a better understanding of students’ perceived stress factors, which would in turn contribute to building a positive and effective learning environment.¹⁵ Hence, the objective of the present study was to determine the stress levels and perceived sources and factors affecting stress among dental students in Al-Qadisiyah University.

Materials and methods

This study was conducted at the Faculty of Dentistry – Al-Qadisiyah University among undergraduate dental students from 1st to 4th level for the academic year 2015/2016. An approval letter was obtained from the ethical committee prior to commencement of the study. The nature and aims of the study were explained to the dental students and a consent form was obtained. A representative sample was recruited from each study level (45 students from 1st, 3rd, and 4th levels and 50 from 2nd level). The questionnaire used in this study is a self-administered questionnaire adapted from a previous study conducted among Saudi dental students.¹⁶ This modified version contained 41 close-ended questions with a four-point Likert scale for answer and categorized in seven domains to assess different types of stressors. The students were asked to answer the questions as “not related” when the question is not related to the current status of the student e.g.: first-level student answering a question related to treatment of the patients, “no stress”, “moderate stress”, and “severe stress”. The collected data were entered to MS. Excel 2013 and analysed using SPSS v.22. For descriptive analysis the means and standard deviations were calculated. Distribution of gender, marital status, and study levels among participants were also

tabulated. Comparison between the means among the study variables will be presented for the stress domains and for top ten stress questions. P-value was considered statistically significant when $P < 0.05$, while the level of $P < 0.001$ was considered highly significant.

Results

The study comprised 185 dental students with a mean age of 19.86 ± 1.40 years ranged from 17 to 23 years. Distribution of the study participants by gender, marital status, and study level is presented in Table 1, indicating that females were more than males with female to male ratio was 1.4:1 and single students were much more than married ones (96.8% and 3.2% respectively). As illustrated in Table 2, the “workload” domain is the most stressor among domains with a mean of 2.06 ± 0.51 indicating moderate stress among participants followed by the domain “performance pressure” with a mean of 1.83 ± 0.54 . The least stressor domain was “social stressors” with a mean of 0.79 ± 0.57 indicating less concern among participants. For comparison between genders (Table 3), the results of the study revealed significant differences between males and females regarding “workload” and “performance pressure” domains with more concern in females than in males. With regard to the marital status, the significant difference was found only for the domain “social stressors” with more concern in married than in single participants. Comparison between different study levels revealed highly significant differences ($P < 0.001$) between study levels with the domains “faculty and administrations”, “patient treatment”, “clinical treatment”, and “social stressors” while, a significant difference ($P < 0.05$) was found with the domain “performance pressure”. It was noted that the amount of stress increased with the increase in study level. No significant differences were found regarding “self-efficacy beliefs” and “workload” domains ($P > 0.05$).

The top ten provoking-stress questions are presented in Table 4. The most stressor factor was “examinations and quizzes” followed by “lack of time for relaxation” while, the least stressor was “difficulty of class work”. Analysis of differences

Table 1. Characteristics of all participants

		Frequency	Percent
Gender	Male	77	41.6
	Female	108	58.4
Marital status	Single	179	96.8
	Married	6	3.2
Study level	First level	45	24.3
	Second level	50	27.1
	Third level	45	24.3
	Forth level	45	24.3

Table 2. Means of questionnaire domains

Domain	Mean \pm SD
Workload	2.06 ± 0.51
Performance pressure	1.83 ± 0.54
Self-efficacy beliefs	1.75 ± 0.56
Faculty and administration	1.63 ± 0.46
Clinical training	1.32 ± 0.81
Patient treatment	1.31 ± 1.02
Social stressors	0.79 ± 0.57

between males and females (Table 5) revealed significant differences ($P < 0.05$) in the response of four questions out of the ten, with more concern in females than in males. Responses to only two questions were found to be significantly different when related to the marital status (Table 5) with more concern in single participants than in the married ones. As shown in Table 6, responses to the question related to the number of instructors were found to be significantly different among the study levels. No significant differences were found between responses of the study levels to the other questions ($P > 0.05$).

Table 3. Comparison between responses by domains according to gender, marital status, and study level

	Self-efficacy beliefs		Faculty and administration		Workload		Patient treatment		Clinical training		Performance pressure		Social stressors		
	Mean±SD	Sig.	Mean±SD	Sig.	Mean±SD	Sig.	Mean±SD	Sig.	Mean±SD	Sig.	Mean±SD	Sig.	Mean±SD	Sig.	
Gender	Male	1.67±0.52	1.61±0.48	1.96±0.51	1.40±0.97	1.34±0.72	1.72±0.57	0.85±0.61	0.084	0.464	0.015	0.302	0.929	0.031	0.419
	Female	1.81±0.59	1.64±0.46	2.14±0.49	1.24±1.05	1.31±0.87	1.90±0.50	0.75±0.53							
Marital status	Single	1.76±0.56	1.64±0.46	2.06±0.50	1.31±1.02	1.33±0.81	1.83±0.54	0.77±0.56	0.504	0.063	0.386	0.875	0.379	0.471	0.014
	Married	1.63±0.53	1.30±0.32	2.22±0.59	1.29±1.05	1.00±0.79	1.67±0.47	1.40±0.61							
Study level	1 st	1.78±0.54	1.41±0.40	2.03±0.49	0.74±0.82	0.96±0.79	1.73±0.53	0.63±0.44							
	2 nd	1.74±0.62	1.44±0.43	2.08±0.55	0.72±0.87	0.90±0.76	1.69±0.45	0.56±0.40	0.805	<0.001	0.977	<0.001	<0.001	0.008	<0.001
	3 rd	1.80±0.54	1.77±0.45	2.07±0.45	1.61±1.01	1.66±0.73	1.90±0.61	1.07±0.65							
	4 th	1.69±0.55	1.91±0.35	2.07±0.54	2.22±0.36	1.82±0.46	2.00±0.51	0.93±0.60							

Table 4. Top ten stressors questions

Question	Mean±SD
Examinations and quizzes	2.34±0.70
Lack of time for relaxation	2.29±0.79
Overloaded feeling due to huge syllabus	2.26±0.68
Lack of time to do assigned school work	2.24±0.74
Fear of failing a course or the year	2.21±0.90
Competition for grades	2.02±0.78
Inadequate number of instructors	2.01±0.89
Insecurity concerning professional future	1.98±0.86
Availability of qualified laboratory technicians	1.95±0.86
Difficulty of class work	1.95±0.73

Discussion

College of Dentistry, University of Al-Qadisiyah is located at Al-Diwaniya province in southwestern Iraq. This city is somewhat small and characterized by its closed conservative society, as well as the lack of recreational places. To the best of our knowledge, this investigation is the first to explore stress-provoking factors among Al-Qadisiyah dental school students. The formal education encompassing a five-year study program, and tuition with clinical work are free for the students.

Based on the responses to the questionnaire in our study, it was observed that the workload followed by performance pressure were the most stressful factors among all the students. This observation coincides with most studies conducted for determining the perceived source of stress among dental students.^{2,13,15,17-18} Moreover, it has been reported that medical students experience

Table 5. Comparison between responses by top ten stressors according to gender and marital status

Question	Gender		Sig.	Marital status		
	Male	Female		Single	Married	Sig.
	Mean±SD	Mean±SD		Mean±SD	Mean±SD	
Examinations and quizzes	2.13±0.71	2.48±0.66	0.001	2.33±0.71	2.50±0.55	0.646
Lack of time for relaxation	2.13±0.83	2.41±0.74	0.018	2.29±0.79	2.33±0.82	0.919
Overloaded feeling due to huge syllabus	2.08±0.68	2.40±0.66	0.001	2.27±0.68	2.17±0.75	0.711
Lack of time to do assigned school work	2.13±0.82	2.32±0.67	0.134	2.23±0.74	2.50±0.84	0.317
Fear of failing a course or the year	2.08±0.93	2.31±0.87	0.081	2.22±0.90	2.00±0.89	0.476
Competition for grades	1.90±0.74	2.10±0.80	0.043	2.03±0.78	1.67±0.52	0.203
Inadequate number of instructors	2.10±0.77	1.94±0.97	0.381	2.04±0.87	0.83±0.98	0.006
Insecurity concerning professional future	2.13±0.80	1.88±0.89	0.065	1.99±0.86	1.67±0.82	0.308
Availability of qualified laboratory technicians	2.06±0.75	1.87±0.92	0.243	1.98±0.84	1.17±0.98	0.040
Difficulty of class work	1.91±0.73	1.97±0.73	0.483	1.96±0.73	1.67±0.52	0.264

Table 6. Comparison between responses by top ten stressors according to study level

Question	Study level				Sig.
	1 st	2 nd	3 rd	4 th	
	Mean±SD	Mean±SD	Mean±SD	Mean±SD	
Examinations and quizzes	2.24±0.71	2.38±0.70	2.40±0.69	2.31±0.73	0.691
Lack of time for relaxation	2.33±0.85	2.36±0.78	2.24±0.80	2.22±0.74	0.625
Overloaded feeling due to huge syllabus	2.29±0.73	2.30±0.76	2.16±0.60	2.31±0.63	0.508
Lack of time to do assigned school work	2.31±0.70	2.32±0.74	2.22±0.77	2.11±0.75	0.466
Fear of failing a course or the year	2.33±0.77	2.22±0.91	2.22±0.90	2.07±1.01	0.748
Competition for grades	2.04±0.74	1.88±0.85	2.13±0.66	2.02±0.84	0.522
Inadequate number of instructors	1.80±0.97	1.74±1.03	2.24±0.71	2.27±0.69	0.011
Insecurity concerning professional future	2.11±0.83	1.98±0.92	1.98±0.81	1.87±0.89	0.588
Availability of qualified laboratory technicians	1.80±0.94	1.90±0.91	2.02±0.87	2.09±0.67	0.543
Difficulty of class work	1.98±0.72	1.92±0.78	2.02±0.62	1.87±0.79	0.842

less stress than do their dental peers, which might be attributed to the additional psychomotor skills needed in dentistry.¹⁹ The results of our study revealed a significant difference between males and females regarding “workload” and “performance pressure” domains with more concern in females than in males. Similar results have been reported by other researchers.^{16,18,20} High stress levels in females may be related to their psychological makeup and greater expressivity of thoughts and feelings.¹⁶ However, these results are in contrast to the findings reported by *Tangade et al.*²¹ where they found that males perceived more stress than female students, and attributed that to the fact that man’s income in India is considered the primary source of earning in the family, and he has to take financial care of his parents, wife and children. Because of such responsibilities and long tenure of dental profession, men could be under

considerable stress. On the other hand, the present study showed that social stressors come as the least reason of stress with slightly more concern in males than in females. This may be due to the conservative nature of our social sample and lack of entertainment places which are more needed by males than females. Similar result was observed in the studies conducted by *Tangade et al.*²¹ and *Harikiran et al.*²² However, when compared with marital status it showed a significant difference, this is consistent with previous study outcomes.^{23,24} This is related to the fact that married subjects have more responsibility than singles and perhaps with the presence of children this might make the situation worse.

Regarding the study levels the amount of stress increased with the increase in study level, specifically speaking in the transition into clinical training, where highly significant differences (P

<0.001) between study levels with the domains “faculty and administrations”, “patient treatment”, “clinical treatment”, and “social stressors” were observed; however, less significant difference ($P < 0.05$) was found with the domain “performance pressure”. This is consistent with findings of other studies.^{2,5,10,13} This can be explained by the reasons related to both the faculty and students. Seemingly, the limited number of teaching staff provoked the feeling of fear in dealing with the patients, in addition to insufficient time that was available to complete the requirement. However, these are in contrast to the findings reported by *Westerman et al.*²⁵ where the nonclinical years were more stressful. Furthermore, no significant differences were found in our study between study levels with “self-efficacy beliefs” and “workload” domains ($P > 0.05$). Contrarily, *Polychronopoulou* and *Divaris*²⁶ reported that the primary sources of stress in the Greek dental school are assigned workload and self-efficacy beliefs, and attributed it to the fact that dental students may be overloaded by the high academic demands of their year of study.

“Examinations and quizzes” followed by “lack of time for relaxation” topped stressor factors recorded in our study. This may be due to huge amount of material given by the lecturers, and perhaps the difficulty of exams, which may be due to the nature of the questions, as well as competition for grades, lack of the time and means of comfort for students. This abrupt increase in stress was also reported by other authors²⁷⁻²⁹ but was not reported as the key concern by *Westerman et al.*²⁵ Moreover, it was observed that stress due to less time for relaxation was consistently high from the first to the third years of education with a slight dip in the second year, and this may be due to the fact that in both the first and third years, the students are exposed to a new dimension in education.²⁰

Regarding the relation between stressor factors and gender, the present study showed significant differences ($P < 0.05$) of gender in response to examinations and quizzes, lack of time for relaxation, overloaded feeling due to huge syllabus, and competition for grades with

more concern in females than in males, which is consistent with previous investigations.^{16,30} These findings may help in improving strategy to enable students to overcome the academic life-related stressors.³¹ However, *Sofola et al.*³² reported that stress levels were not different between genders. Noteworthy differences were observed when inadequate number of instructors and availability of qualified laboratory technicians’ items were analyzed across marital status with more concern in single participants than in the married ones. The study involved mainly unmarried students (96.8%) and hence it may not clearly reflect the stress-related factors of students in marital status (3.2%), and this certainly does not reflect the real results. However, examination of stress scores by marital status showed that married subjects perceived more stress than single subjects did.^{16,23,24}

Our finding demonstrated that the students among all the years of study unanimously agreed that inadequate number of instructors was the main exciting stressor. This can be related to the fact that there is a shortage in the number of trainers’ team in both clinics and preclinical labs. This is in line with the findings of previous studies.^{7,13,21,31} However, *Elani et al.*¹⁷ concluded that sources of stress in these undergraduate dental students varied depending on their year in the program and time during the year. Likewise, it is worth mentioning that *Polychronopoulou* and *Divaris*²⁶ observed differences by year of study indicating that entering and preclinical students are mostly concerned with factors closely related to workload, as well as examinations and grades, whereas clinical year students were more stressed about patient treatment and insecurity concerning their professional future.

Conclusion

Dental students are subjected to numerous work-related and academic stressors. Identifying possible causes of stress enables the faculty and administration to alleviate students’ stress by means of modifying the teaching curriculum and environment. The authors suggest that psychology lessons should be introduced and included in the curriculum of the colleges of dentistry.

DENTAL ENVIRONMENTAL STRESS QUESTIONNAIRE

Please choose the appropriate answer related to your status.

Gender: Male Female **Age:** **Marital Status:** Single Married

Class: First Second Third Fourth Fifth

1- Amount of assigned class work

Not apply No Stress Moderate Stress Severe Stress

2- Amount of cheating in dental school

Not apply No Stress Moderate Stress Severe Stress

3- Availability of qualified laboratory technicians

Not apply No Stress Moderate Stress Severe Stress

4- Being treated as immature and irresponsible by faculty

Not apply No Stress Moderate Stress Severe Stress

5- Clinical requirements

Not apply No Stress Moderate Stress Severe Stress

6- Competition for grades

Not apply No Stress Moderate Stress Severe Stress

7- Difficulty in learning clinical procedures

Not apply No Stress Moderate Stress Severe Stress

8- Difficulty in learning precision manual skills required in preclinical work

Not apply No Stress Moderate Stress Severe Stress

9- Difficulty of class work

Not apply No Stress Moderate Stress Severe Stress

10- Examinations and quizzes

Not apply No Stress Moderate Stress Severe Stress

11- Fear of being unable to catch up if behind

Not apply No Stress Moderate Stress Severe Stress

12- Fear of dealing with patients who do not disclose the existence of a contagious disease

Not apply No Stress Moderate Stress Severe Stress

13- Fear of failing a course or the year

Not apply No Stress Moderate Stress Severe Stress

14- Fear of not being able to join a post graduate dental education program

Not apply No Stress Moderate Stress Severe Stress

15- Financial responsibilities

Not apply No Stress Moderate Stress Severe Stress

16- Forced postponement of marriage or engagement

Not apply No Stress Moderate Stress Severe Stress

17- Getting study material

Not apply No Stress Moderate Stress Severe Stress

18- Inadequate number of instructors in relation to student

Not apply No Stress Moderate Stress Severe Stress

19- Inconsistency of feedback on work between different instructors

Not apply No Stress Moderate Stress Severe Stress

20- Insecurity concerning lack of employment positions

Not apply No Stress Moderate Stress Severe Stress

21- Insecurity concerning professional future

Not apply No Stress Moderate Stress Severe Stress

22- Lack of confidence in own decision making

Not apply No Stress Moderate Stress Severe Stress

23- Lack of confidence to be a successful dental student

Not apply No Stress Moderate Stress Severe Stress

24- Lack of confidence to be a successful dentist

Not apply No Stress Moderate Stress Severe Stress

25- Lack of cooperation by patients in their home care

Not apply No Stress Moderate Stress Severe Stress

26- Lack of home atmosphere in living quarters

Not apply No Stress Moderate Stress Severe Stress

27- Lack of input into the decision-making process of school

Not apply No Stress Moderate Stress Severe Stress

28- Lack of time for relaxation

Not apply No Stress Moderate Stress Severe Stress

29- Lack of time to do assigned school work

Not apply No Stress Moderate Stress Severe Stress

30- Language barrier

Not apply No Stress Moderate Stress Severe Stress

31- Late ending day

Not apply No Stress Moderate Stress Severe Stress

32- Marital adjustment problems

Not apply No Stress Moderate Stress Severe Stress

33- Necessity to postpone having children

Not apply No Stress Moderate Stress Severe Stress

34- Overloaded feeling due to huge syllabus

Not apply No Stress Moderate Stress Severe Stress

35- Patients being late or not showing for their appointments

Not apply No Stress Moderate Stress Severe Stress

36- Receiving criticism about work

Not apply No Stress Moderate Stress Severe Stress

37- Responsibility of getting suitable patients

Not apply No Stress Moderate Stress Severe Stress

38- Shortage of allocated clinical time

Not apply No Stress Moderate Stress Severe Stress

39- Shortage of allocated laboratory time

Not apply No Stress Moderate Stress Severe Stress

40- Transition from pre-clinic to clinic work

Not apply No Stress Moderate Stress Severe Stress

41- Working on patients with dirty mouths

Not apply No Stress Moderate Stress Severe Stress

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