





## Evaluation of stressors in various dentistry departments in Kerman University of Medical Sciences, Iran, in the academic year of 2015-2016: A cross-sectional study

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### Original Article

#### Abstract

**BACKGROUND AND AIM:** Dental students are exposed to various stressors which are related to treatment procedures and educational and administrative challenges in different clinical departments. Stress has negative effects on dental students' physical and mental health. No study to date has been conducted on stressors in different dental departments independently, so the aim of this study was to determine the most important stressors among dental students in various dentistry departments at Kerman University of Medical Sciences, Kerman, Iran.

**METHODS:** This descriptive-analytic cross-sectional study was carried out on 117 fifth and sixth-year dental students at School of Dentistry, Kerman University of Medical Sciences. In this respect, the most important stressors were separately investigated based on 11 clinical departments and 5 domains of school and administrative factors, work environment, patient treatment, clinical training, and workload using a researcher-made questionnaire. Data were analyzed with SPSS software using analysis of variance (ANOVA) and Friedman test.

**RESULTS:** The highest mean scores for stressors were in the departments of surgery, endodontics, and pediatric dentistry and in the domain of patient treatment. In all departments, there were significant differences in 5 domains ( $P < 0.05$ ). In all departments, except pathology, the lowest stressors' score was in domain of school and administrative factors; it was patient treatment in pathology department. The highest stressors' score was seen in surgery department and in patient treatment and workload domains.

**CONCLUSION:** Considering that the types of stressors in each department were different, much more attention must be paid to manage specific stressors.

**KEYWORDS:** Students; Health; Workload; Education

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**S**tress refers to the body response to any demands, changes, or perceived threats that can be positive or destructive.<sup>1</sup> One of the most common factors creating stressors is academic environment. In this respect, schools of dentistry are

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stressful and challenging environments that can have long-lasting effects on students' future if their stress is not well-controlled, which ultimately lead to forthcoming occupational stress.<sup>2</sup> One study in this line showed that dentists' stress was three times more than normal individuals.<sup>3</sup> Dental students need to learn many subjects in different fields in a limited time and failing to meet these expectations leads to their stress.<sup>4</sup>

Different factors have been mentioned in various studies as causes of stressors for dental students, but most investigations have reported student-teacher relationships, high number of students in a department, exams, and heavy workload as the most common stressors.<sup>5,6</sup>

Long-lasting stress has negative effects on the students' physical health such as chronic fatigue, lack of sleep, tachycardia, digestive problems, and headache and also on their mental and emotional health such as depression, obsessive-compulsive disorder (OCD), anxiety, sense of ineffectiveness, and fear.<sup>7,8</sup> Destructive psychological effects can lead to serious problems for students' lifestyle as well as their behaviors and academic performance.<sup>7</sup> The most damaging effect of long-term stress is disruption in effective performance of thinking and learning power;<sup>9</sup> therefore, it is very important to identify stressors among students in dental schools, reduce stress through appropriate planning and necessary interventions in structural and educational domains, and consequently, create a suitable working environment.<sup>2,10</sup>

In an investigation by Polychronopoulou and Divaris, workload, performance pressure, and self-efficacy beliefs were the key factors that induced stress among dental students from different countries.<sup>10</sup>

A systematic review indicated that clinical performance, exams, and professors were the main stressors of dental students.<sup>11</sup>

In a study conducted by Hamissi et al. in Qazvin, Iran, departments of endodontics, surgery, and pediatrics were introduced as the most stressful ones and the stressful factors were examinations, lack of information given,

attitude of the staff, and teaching method.<sup>2</sup>

Jowkar et al. examined the causes of stress among dental students in Shiraz, Iran, and reported that the main sources of stress were academic factors and clinical educations.<sup>12</sup>

No study to date has been conducted on stressors in different dental departments independently, so the aim of this study was to evaluate the amount and sources of stress among dental students in different educational departments at Kerman University of Medical Sciences, Kerman, Iran, in the academic year of 2015-2016.

## Methods

This descriptive-analytic cross-sectional study was conducted on 117 fifth and sixth-year students at School of Dentistry, Kerman University of Medical Sciences in the academic year of 2015-2016 (ethical code: IR.KMU.REC.1393.235). The selection of students was based on census and the list of students was collected from the educational affairs office. Data were collected using a researcher-made questionnaire examining stressors in different departments. The items in the demographic information section were associated with year of study, gender, age, marital status, and place of residence.

The researcher-made questionnaire also consisted of 33 items, of which, 25 items were about stressors in 11 departments of the School of Dentistry in 5 domains including school and administrative factors, work environment, patient treatment, clinical training, and work pressure which were designed based on previous studies,<sup>5,10,13</sup> 2 items were about students' self-awareness in scientific and practical fields, and 6 items were about the stressful factors which were unrelated to the departments and educational groups.

The students were asked to score the level of stress in each stressor item and mean scores were measured for each item and domain, based on a five-point Likert-type scale with 5 scores (from 0 = not at all to 4 = very much). In school and administrative factors, work environment, patient treatment, and clinical

training, each domain consisted of 5 questions (score range: 0-20) and workload domain consisted of 4 questions (score range: 0-16). To estimate the content validity index (CVI), 10 dental specialists from different departments commented on each question. The CVI of each question was in the range of 0.8 to 1, which confirmed the validity of the questionnaire. The reliability coefficient of the questionnaire was calculated based on Cronbach's alpha coefficient in each domain which was in the range between 89-95 percent. At the end, the students were asked about the three most stressful departments.

The goals of the study were explained precisely to the students before distributing the questionnaires and they were assured that their information would remain strictly confidential. The questionnaires were given to the students by a senior dental student in one meeting and were collected on the same day.

Initial data analysis was carried out based on descriptive statistics. In this regard, central and dispersion indices were used. The information obtained was analyzed with the SPSS statistical software (version 16, SPSS Inc., Chicago, IL, USA) using repeated measures analysis of variance (ANOVA) and Friedman test.  $P < 0.05$  was considered as significance level.

## Results

Out of 117 students, 101 students completed the questionnaires (response rate: 86%); of which, 45.5% were men and 54.5% were women. The mean age of the respondents was  $24.31 \pm 1.40$  years, 81.20% of the students were married and 80.25% of students were residing in Kerman Province.

According to answers to self-knowledge questions, the respondents considered causes of stress in 59.4% of the cases as insufficient knowledge and awareness. Also, in 53.5% of the cases, stress was regarded as lack of knowledge regarding a person's working ability (self-knowledge weakness).

In all departments, there were significant differences in 5 domains. In all departments,

except pathology, the lowest stressors' score was in school and administrative factors domain; it was patient treatment in pathology department. The highest stressors' score was seen in surgery department and in-patient treatment and workload domains (Table 1).

The most stressful departments were respectively surgery (50.5%), endodontics (17.8%), and oral diseases (10.9%). The total mean scores of the questionnaire in various domains (including school and administrative factors, work environment, patient treatment, clinical training, and workload) were listed in table 1. The most frequent types of stressors in each department were illustrated in table 2.

The relationship between major stressor and high stress level in different departments was mentioned below:

In the departments of orthodontics and oral diseases, there was a significant relationship between the stressor of failure in future work and stress level in students ( $P = 0.01$ ). In the department of prosthetics, factors including unavailability of professors to manage problems and to answer questions ( $P = 0.05$ ) and fear of failure in the field of prosthesis in future ( $P = 0.01$ ) were significantly correlated with students' stress levels.

In the department of periodontology, a significant relationship was similarly reported between problems in learning clinical steps and treatment protocols ( $P = 0.01$ ) and fear of failure in future work ( $P < 0.01$ ) and students' stress levels.

In the department of pediatrics, a significant relationship was observed between the factors of infliction with infectious diseases ( $P = 0.02$ ), lack of coordination between theoretical and practical lessons ( $P = 0.01$ ), conflict in teaching methods used by teachers ( $P = 0.04$ ), fear of failure in pediatrics in future work ( $P < 0.01$ ), dissatisfaction with type of clinical performance evaluation (type of practical final exam in departments and scoring methods) ( $P = 0.02$ ), and number of students in departments ( $P = 0.03$ ) and students' stress levels.

**Table 1.** The mean scores of stress in various domains of dentistry departments

Departments	Means of stress					P
	School and administrative factors (1)	Work environment (2)	Patient treatment (3)	Clinical training (4)	Workload (5)	
Orthodontics	1.01	1.27	1.38	1.65	1.50	P = 0.0001 2 & 3 > 1, 4 > 1 & 2 & 3, 5 > 1 & 2
Endodontics	1.35	1.68	2.28	1.68	1.75	P = 0.0001 3 > 1 & 2 & 4 & 5, 2 & 4 & 5 > 1
Pathology	0.64	0.85	0.59	0.75	0.86	P = 0.0001 2 > 1 & 3, 4 & 5 > 3
Prosthodontics	1.64	1.69	1.88	1.85	1.81	P = 0.0150 3 > 1 & 2, 4 > 1 & 2
Periodontics	0.88	1.19	1.47	1.25	1.26	P = 0.0001 3 > 1 & 2 & 4 & 5, 2 & 4 & 5 > 1
Operative dentistry	0.91	1.07	1.39	1.04	1.22	P = 0.0001 2 > 1, 3 > 1 & 2 & 4 & 5, 5 > 1 & 2 & 4
Community dentistry	0.57	0.67	0.77	0.67	0.80	P = 0.0020 5 > 1
Surgery	1.33	2.00	2.20	1.91	2.17	P = 0.0001 3 > 1 & 2 & 4, 2 & 4 > 1, 5 > 1 & 4
Radiology	0.78	0.89	0.88	0.83	1.02	P = 0.0001 5 > 1
Pediatrics	1.49	1.50	1.98	1.54	1.72	P = 0.0001 3 > 1 & 2 & 4 & 5, 5 > 1 & 2 & 4

In terms of answering items unrelated to the departments, the level of stress was mainly in the range from never to moderate (Table 3).

### Discussion

Many studies have reported high levels of stress and its subsequent psychological effects on students involved in health care professions. Moreover, further studies showed higher levels of stress and anxiety in dental students than other medical students.<sup>2,14</sup> The fact that the stress within the school environment for dental students increases over time can indicate the need for the intervention of dental schools to reduce avoidable stress in departments. On the other hand, informing students about possible stressors in the school environment helps them control their stress.<sup>5,7</sup>

The purpose of this study was to evaluate different stressors and the sources of stress of dental students in different departments of School of Dentistry at Kerman University of

Medical Sciences in academic year of 2015-2016. This was the first research on stressors in different departments at schools of dentistry in Iran.

In this study, students enrolled in the fifth and the sixth years were evaluated because they had practical experience in all departments of the given school. Moreover, the higher stress levels of dental students were reported as they had entered to clinical departments.<sup>5,7</sup> The results of this study showed that the mean scores of stressors in departments of surgery, endodontics, and pediatric dentistry were higher than the other departments and the most stressful domain in them was patient treatment.

According to the study by Shahbazi Mogadam et al. at the School of Dentistry of Islamic Azad University of Tehran, Iran, the departments of endodontics and pediatrics were the most stressful environments, respectively.<sup>8</sup>

**Table 2.** The most frequent types of stressors in each department

Departments	Stressor					
	First stressor	Mean score	Second stressor	Mean score	Third stressor	Mean score
Orthodontics	Concerns about patient's presence	2.31	Dissatisfaction with type of clinical performance evaluation	2.00	Inappropriate method of teaching and learning in the department	1.83
Prosthodontics	Concerns about patient's presence	2.75	Lack of facilities	2.54	Unavailability of professors to solve problems or answer questions	2.47
Periodontics	Concerns about patient's presence	1.82	Concerns about being infected with infectious diseases	1.78	Inappropriate method of teaching and learning in the department	1.45
Operative dentistry	Concerns regarding injury to patients	1.62	Concerns about being infected with infectious diseases	1.56	Number of students	1.45
Endodontics	Concerns regarding injury to patients	2.80	Concerns about patient's presence	2.71	Number of students	2.15
Surgery	Dissatisfaction with type of clinical performance evaluation	2.97	Type of rules and regulations related to absenteeism and disorder	2.82	Concerns regarding injury to patients	2.76
Community dentistry	Concerns about patient's presence	0.96	Lack of coordination between theoretical and practical lessons	0.88	Number of students	0.86
Oral disease	Type of rules and regulations related to absenteeism and disorder	2.67	Type of department strategy during the occurrence of iatrogenic problems	1.98	Impossibility of compensation to resolve problems created in a department	1.85
Radiology	Type of rules and regulations related to absenteeism and disorder	1.28	Lack of facilities	1.22	Number of students	1.20
Pathology	Dissatisfaction with professors' behavior or discrimination	1.03	Type of rules and regulations related to absenteeism and disorder	1.00	Anxiety for failure in future work	0.98
Pediatrics	Problems of communicating with patients	2.38	Concerns regarding injury to patients	2.22	Lack of facilities	2.08

In an investigation conducted by Hamissi et al. in Qazvin, departments of endodontics, surgery, and pediatrics were introduced as the most stressful ones.<sup>2</sup> In the study by Ayers et al., the most stressful treatment for dentists in New Zealand was pediatric treatment.<sup>15</sup>

It seems that the department of endodontics was one of the most stressful environments in most of dental schools. Since high stress was in conflict with teaching and learning and also root canal therapy was one of the main therapies of general dentists,

encounter with this issue was considerable and thus schools and professors in this field needed to use appropriate strategies to reduce students' stress levels.

A six-year study in the United States (US) illustrated the positive impact of relaxed teaching method on health status and clinical performance in students. This method involved removing students' fear of falling, encouraging active student-teacher interactions, reducing fear, and enhancing supportive teaching techniques. Longitudinal studies in this field can be also very helpful.<sup>16</sup>

**Table 3.** Answering to items unrelated to the departments

Question	Answer					
	Never (%)	Low (%)	Moderate (%)	High (%)	Very high (%)	No answer (%)
Anxiety due to failure in future work	9.9	20.8	30.7	22.8	8.9	6.9
Lack of rest and off-shift times	5.0	28.7	35.6	13.9	9.9	6.9
No time for studying lessons and homework	5.9	18.8	35.6	25.7	6.9	6.9
No interval between theoretical classes in the mornings or afternoons and the start time of work in a department or a laboratory	5.0	11.9	37.6	24.8	13.9	6.9
Negligence of private and personal life due to type of work and study	5.0	18.8	33.7	18.8	16.8	6.9
Simultaneous work-study	19.8	22.8	25.7	11.9	11.9	7.9

According to Dodge et al., students could feel less stress when clinical education and subsequent evaluation were not based on their requirements.<sup>17</sup>

In the present study, students had the highest levels of stress in domains of patient treatment and workload. In the study by Naidu et al., clinical work pressure and heavy workload were the most stressful factors.<sup>18</sup> In the study by Sedky, the most frequent stressors were academic environment and clinical training.<sup>5</sup> A systematic review showed that the main causes of stress were academic factors (such as examination, grades, and workload) and then clinical factors (such as dealing with different patients and difficulty of learning about clinical procedures).<sup>19</sup>

In the present study, the least amount of stress was related to school and administrative factors; while in the study by Sedky, personal domain and administrative issues led to the least amount of stress.<sup>5</sup>

The results of this study indicated that the main causes of stress in the different departments included concerns about patient's presence, concerns regarding injury to patients, type of rules and regulations related to absenteeism and disorder, number of students, concerns about being infected with infectious diseases, and lack of facilities.

In the study by Naidu et al., the most important stressors in dental students were school rules and regulations, completing clinical requirements, concerns about patient treatment, non-cooperating nurses in

departments, unavailability of professors, and lack of time in departments.<sup>18</sup>

In the study by Kazemizadeh and Bakhshi, completing clinical requirements, examinations and grades, lack or defect of equipment, lack of time to work on patients, as well as fear of failure in completing courses were the main causes of stress for students.<sup>20</sup> In a study on six European dental schools, the main causes of stress were mentioned as workload, performance pressure, and concern about self-efficacy.<sup>10</sup>

There have been so far many reports concerning significant evidence of stress in dental students.<sup>18,21</sup> In general, dental students are more anxious than other disciplines.<sup>22</sup> Students with high levels of stress suffer from lack of self-confidence, poor control over educational process, and failure to compensate their clinical weaknesses.<sup>6</sup> Generally, the high level of stress in dental students can reduce their academic performance.<sup>9</sup>

Since stressors, if not well controlled, will have long-term effects on future occupational stress, physical and mental health, and work performance in individuals, limiting tensions and providing favorable conditions for students should be targeted by schools of dentistry and the relevant professors.

### Conclusion

Considering that types of stressors in each department were different, much more attention must be paid to manage specific stressors.

### Conflict of Interests

Authors have no conflict of interest.

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