

Stress Factors in Dental Students of Babol University

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Abstract

Objective: Dental profession is associated with a high level of stress experienced by clinicians in private practice as well as students and instructors in dental school environment. The purpose of this study was to detect the main stressors in dental students of School of dentistry, Babol University of Medical Sciences in 2011-2012.

Methods: In this descriptive, analytical study, data were collected via Dental Environment Stress (DES) questionnaire. Understudy subjects were all dental students in Babol University (n=199) selected by census sampling. Data were analyzed using chi-square and t-tests.

Results: Six factors were found to be the main stressors in dental students: 1. More than one exam in the same day (2.76 (0.596)); 2. Insufficient time interval between exams (2.74 (0.581)); 3. Insufficient exam time (2.62 (0.693)); 4. Instructors humiliating students or showing their dissatisfaction of the procedure done by the students in front of patients (2.61 (0.618)); 5. Too many credits offered per semester (2.35 (0.849)) and 6. Inappropriate behavior of the staff (2.33 (0.793)). Of all departments in Babol Dental School, departments of Prosthodontics, Radiology and Endodontics caused the highest level of stress and anxiety in students and had statistically significant differences in this regard with other departments.

Conclusion: The stressors had greater impacts on female students particularly the fourth year dental students. Attempts must be made to modify the curricula and exam schedules particularly in the most stressful departments to decrease the level of stress in dental students.

Key words: Census, Dental clinic, DES questionnaire, Dental students, Stress.

Please cite this article as:

Mehdizadeh M, Kheirkhah F, Vojdani Fakhr H, Noori Bayat SH. Stress Factors in Dental Students of Babol University. *J Dent Sch* 2014; 32(3): 151-158.

Received: 04.01.2014

Final Revision: 14.04.2014

Accepted: 29.04.2014

Introduction:

Dentistry is a stressful profession (1, 2) and consequently, dental schools are among the stressful educational environments (3-5). Dental students are exposed to clinical work stress inherent to dental profession as well as stressors related to the educational environment (6, 7). Clinicians are in close contact with patients and are ethically and professionally responsible for their wellbeing. This sense of responsibility brings lots of stress and tension for the healthcare team. Treatment of patients is not a routine process for clinicians and even the

smallest error may have catastrophic outcomes both legally and emotionally (8, 9). Sherina, *et al.* in 2004 reported that 41.9% of medical students experienced psychological stress that was significantly associated with depression (10). ParsaYekta, *et al.* in their study in 2005 on midwifery students found a significant association between stressors and signs and symptoms of psychological stress and tension (11). Significantly high levels of stress have been reported among dental students (12) and generally, dental students are more nervous and anxious compared to students in other fields of education (13, 14). Too much stress can lead to

cardiovascular and gastrointestinal problems, insomnia, headache, backache, chronic fatigue, xerostomia, lymphadenopathy and excessive sweating of the palm. Number of monocytes increases as the result of chronic, prolonged stress and lymphadenopathy may also occur. Moreover, chronic xerostomia may cause lymphadenopathy (15). Aside from the physical status, an inverse relationship has been reported between stress and academic performance of dental students. Students reporting a high level of stress also complain of the lack of self-esteem and self-confidence, poor educational management, and inability to correct clinical mistakes (16). The most adverse effect of prolonged stress is that it impairs efficient thinking and learning (17, 18). Aside from that, students may show unfavorable reactions in response to stress such as smoking, alcohol, drug or substance abuse or even suicide (19). Dental schools are potentially stressful environments and dental students usually experience high level of stress due to the large volume of study materials, insufficient time interval between exams, pressure of clinical work, instructor-student relationship (cold, business-like and discouraging behavior of instructors, discrimination between students, over-expectations, and occasional humiliation of students) and financial problems (20). Thus, it is necessary to detect stressors in dental schools, particularly in the clinical setting. The responsibility of patient treatment, problems of learning clinical skills, fear of failing and high volume and difficulty of study materials are the main stressors of dental students (21). The boredom due to stress may even lead to loss of interest in the field. Early detection and control of stressors play a significant role in mental health of students and the community leading to educational and occupational satisfaction and causing a sense of self-confidence and self-content (22, 23). There is a gap of information about the stressors and level of stress in dental

students. Moreover, environmental factors and educational curricula make the generalizability of results difficult. Thus, this study aimed to detect major stressors in dental students of School of Dentistry, Babol University of Medical Sciences and the influential factors in this regard.

Methods:

This descriptive, cross-sectional study was conducted on 199 first-sixth year dental students in Babol University, School of Dentistry in 2010. Sampling was census. Data were collected using modified DES questionnaire (24), which included demographic characteristics such as age, gender, educational year, marital status and place of residence (dormitory or with parents), having a semester GPA < 12 out of 20, physical health status, history of mental disorders and history of tobacco use. The questionnaire also contained 48 questions about the stressors related to education, psychological status, family issues and clinical practice. Also, the questionnaire contained several questions assessing the level of stress of students in different dental school departments (10 departments). To assess each stressor, a 0-3 point scale indicative of high (3), moderate (2), low (1) and no (0) stress was used.

The validity of the questionnaire was confirmed using formal and content validity based on the professional opinion of an English translator, psychiatrists, and dentists. The reliability of the questionnaire was determined using Cronbach's alpha ($\alpha=0.85$). Dental students were thoroughly informed about the objectives of the study and asked to fill out the questionnaires. A written informed consent was obtained and subjects were ensured about the confidentiality of information. The questionnaires were coded and thus, could be filled out anonymously. Since first and second year dental students had not passed the clinical courses, their questionnaires

did not contain the clinical questions. Data were analyzed using SPSS 20. Chi square test and t-test were used for data analysis. T-test was applied to compare perceived stress from the educational environment between male and female students. Chi square test was used to assess the role of factors related to mental health disorders such as age, sex, marital status, place of residence, occupational status, and educational semester.

Results:

A total of 199 dental students were evaluated; 59.8% ($n=113$) were females and 40.2% ($n=86$) were males. Table 1 summarizes the data

obtained from students. There were 35 (17.6%) third-year, 32 fourth year (16%), 36 (18%) fifth year and 29 (14.7%) sixth year dental students. The overall mean stress score was 2.058 (0.398). Level of stress in fourth year dental students was the highest followed by third, sixth, and fifth year dental students ($p<0.005$) (Diagram 1).

Table 2 summarizes the six factors causing the highest level of stress. Also, of all departments, Department of Prosthodontics, Radiology and Endodontics caused the highest level of stress in dental students with significant differences with other departments in this respect ($p=0.021$). The Periodontology Department was associated with the lowest level of stress in students ($p=0.005$) (Diagram 2).

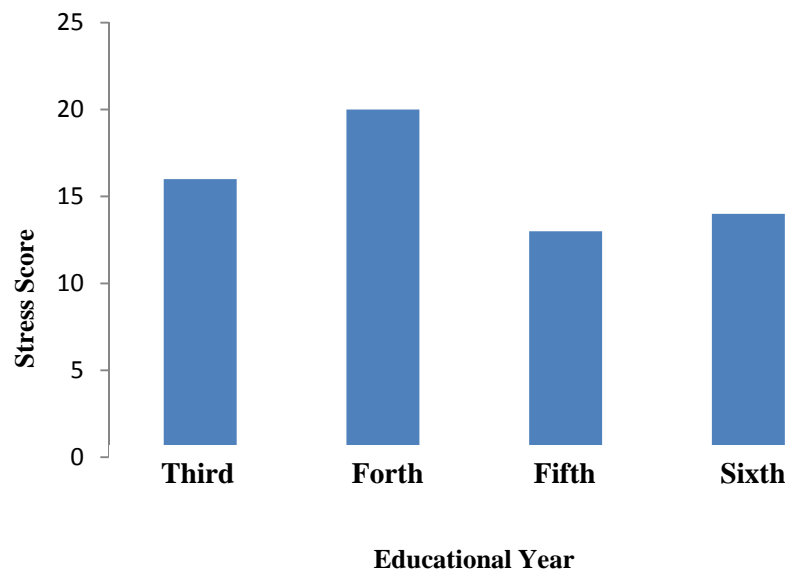


Diagram 1- Stress distribution based on the educational year

In comparison between males and females, level of stress was found to be significantly higher in females ($p<0.005$) except for the three departments of periodontology, pathology and pediatric dentistry (Table 1) and financial issues that were responsible for higher level of stress in males compared to females. Five factors causing the highest level of stress in females were

1. Fear of occurrence of medical emergencies

2. Selection of a topic for thesis,
3. Low instructor-student ratio,
4. Not being able to complete the requirement by the end of the course and
5. Fear of losing instruments (Table 1). “Humiliation of students by the instructors in front of patients” was the only question that no student replied to it with the “no stress” choice.

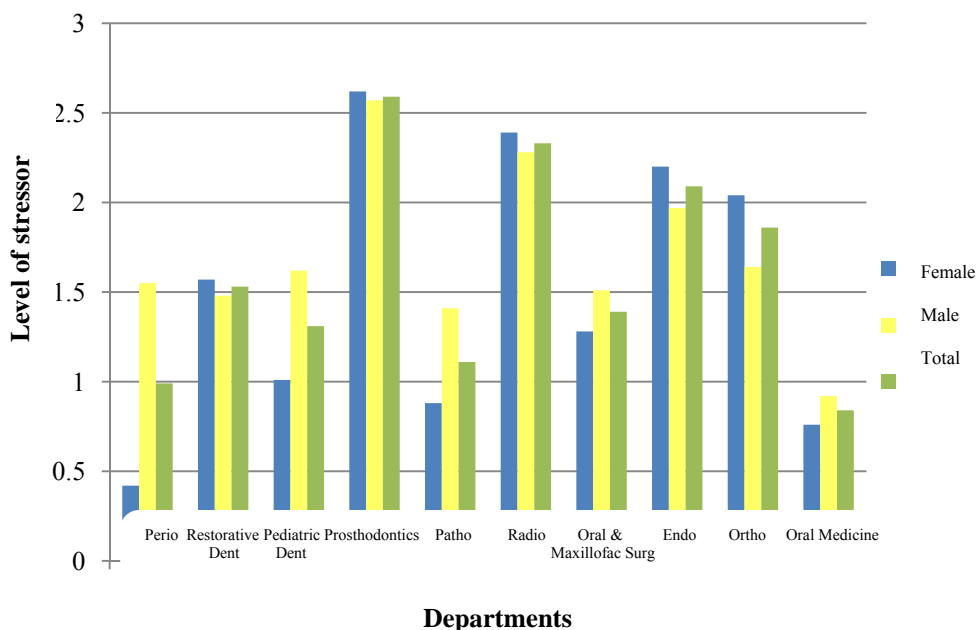


Diagram 2- Level of stressors in different departments for male and female dental students

Table 1- The mean score of stressin male and female dental students

Stressors	Gender (mean (SD))	
	Male	Female
Periodontology Department	1.55 (1.597)	0.42 (0.576)
Pathology Department	1.41 (1.075)	0.88 (0.895)
Pediatric Dentistry Department	1.62 (1.034)	1.01 (0.922)
Financial issues	2.16 (1.040)	1.52 (1.105)
Fear of occurrence of medical emergencies during the procedures	1.64 (0.948)	2.27 (0.780)
Selection of a topic for thesis	1.70 (0.961)	2.26 (0.780)
Low instructor/student ratio	1.93 (0.941)	2.48 (0.636)
Inability to complete the requirement by the end of the course	1.64 (0.929)	2.15 (0.916)
Fear of losing instruments	1.91 (1.002)	2.36 (0.759)

Discussion:

In this cross sectional study, the perspectives of dental students of Babol University of Medical Sciences, School of Dentistry regarding the stressors related to their dental school, place of residence, demographic factors, educational environment, and academic and clinical practice were evaluated using DES questionnaire. In general, the mean score for the overall level of stress in the dental field was 2.058 (0.596). Considering the 0-4 point scale of DES questionnaire, the obtained mean score indicates

a moderate level of stress in the understudy dental students.

Dalband and FarhadiNasab in 2007 used modified DES questionnaire (1-5 point scale) in School of Dentistry, Hamadan University and reported the mean total perceived stress of 2.6 (0.5) among dental students (24). This value was almost similar to our obtained value. Naidu, *et al.* in 2002 (25) and Morse, *et al.* in 2007 (26) stated that the overall mean level of stress experienced by dental students was moderate; which is in line with our result. Such similarity in results is probably attributed to the similar

dental curricula and educational system in the mentioned universities.

Badran, *et al.* in their study in 2009 on 307 dental students in two dental schools in Jordan reported that departments of Maxillofacial Surgery and Endodontics caused the highest level of stress (27). After the study, the authorities asked the mentioned two departments to make some changes in their educational system. It should be noted that their results in terms of high level of stress related to the Department of Endodontics was similar to our finding; indicating the high level of stress for dental students in this department regardless of the university. This may be due to the high level of difficulty of endodontic procedures because of the indirect vision, poor cooperation of patients, etc. Argyropolychronopoulou and Divaris in 2010 evaluated and compared the level of stress in 337 dental students from 7 dental schools and reported that they all complained of insufficient time for the procedures and insufficient time for rest (21). Their obtained results were separately communicated to the understudy universities and they were asked to make some changes in their curricula. The highest level of stress was reported in first year dental students due to not gaining adequate score. In a study by Morse and Dravo in Fiji School of Medicine in 2007 on 115 dental students, some stressors were recognized, those with the highest effect on the function of students were detected and attempts were made for their elimination (26). In their study, the highest level of stress was reported in third year dental students followed by those paying tuition. Kumar *et al.*, in their study in 2009 in Darshan dental college on four groups of dental students taking clinical and basic science courses reported that the main stressors were high workload and volume of study materials. They concluded that the success rate in both didactic and practical courses was higher in groups under lower level of stress (28). Polychronopoulou and

Divaris in their study in 2009 in a Greek dental school used a questionnaire with 30 questions. All students who took the clinical and basic science courses filled out the questionnaire. Stressors were detected and “test scores” and “not being able to complete the requirement” were reported to be the main stressors (22). Attempts were made to eliminate these stressors and stress management courses were held for dental students. In a study by Pau, *et al.* in 2004 in Queen Mary medical and dental schools, the relationship between emotional intelligence (EI) and perceived stress (PS) was investigated (29). EI was much lower than PS. Factors negatively affecting the students were detected and reported to be “insufficient time for rest (in the university)”, “high volume of study materials (theoretical courses)”, fear of a low quality work (preclinical courses)” and “inadequate number of patients in the wards (problems related to clinical courses)”. Instructors of the clinical and didactic courses were requested to make necessary changes in their curricula to decrease the level of stress in students. Garbee, *et al.* (1980) (4) stated that stress in dental students is somehow expected considering the high volume of study materials. Considering the results of relevant studies, items related to didactic courses such as exams and test scores caused the highest mean level of stress in dental students. Similar studies undertaken in other countries also reported that didactic courses were among the six main stressors for dental students and preclinical and clinical courses caused lower level of stress in dental students. This is because first and second year dental students (basic science education) have not yet entered the wards and are not exposed to the respective stressors in preclinical and clinical courses. The current study confirmed the results of the above-mentioned studies. Exams and instructor-student interactions when working on patients were among the main stressors in dental students. First and second year dental students, however,

have yet to be exposed to these stressors. Thus, the mean effect of preclinical and clinical stressors on the entire population of students was low. Also, according to the literature, high volume of didactic courses and the instructor-student relationship are among the main stressors in dental school environment; which is in line with our obtained results. Our results showed that female students experienced a higher total level of stress compared to males and the level of stress reported by female students due to all main stressors was higher than that reported by male students. This finding confirms the results of Heath, *et al.* (1999) in Manchester University in the United States (6). However, no difference was reported between male and female students in this regard by Yap, *et al.* (1996) and Sturdevant, *et al.* (1987); which is in contrast to the results of the current study (20, 30).

Conclusion:

Based on the obtained results, the educational environment of Babol University, School of Dentistry is a high-stress environment due to high volume of study materials, pressure of exams, poor instructor-student relationship, and

financial problems of students. The main stressors were found to be related to the executive and educational system, academic and clinical skills, patient care and issues related to equipment and staff in the departments. Thus, more attention must be paid to dental students particularly female students in terms of educational curricula, educational counseling and cultural and entertainment programs because the majority of stressors in the educational environment are controllable.

Suggestions

Considering the high number of stressors, evaluation of all of them in dental students was not possible in the current study. Future studies are required to assess the effect of physical health, history of psychiatric disorders, marital status and residential status of subjects on their level of stress.

Acknowledgement

The authors would like to thank Dr. Mohammad Ajdary for his cooperation in data collection.

Conflict of Interest: “None Declared”

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