

Stress among dentists in Jeddah, Saudi Arabia

Hana M. Jamjoom, BDS, MSc

هدفت هذه الدراسة إلى تحديد عوامل الاجهاد بين أطباء الأسنان السعوديين العاملين في مدينة جدة في المملكة العربية السعودية، بالإضافة إلى تقييم مظاهر الاجهاد وتدييره. تم توزيع استبيان على أطباء الأسنان المقيمين في مدينة جدة في المملكة العربية السعودية. صنف الاستبيان عوامل الاجهاد إلى عوامل مهنية وذات علاقة بالمريض وعوامل تتعلق بالإجراءات السنوية وإدارة العيادة. كما جرى أيضاً تقييم أعراض وعلامات مظاهر الاجهاد. تضمنت عينات الدراسة ٨٠ طبيبة و ٧٥ طبيباً، حيث ٤٧٪ منهم بعمر أقل من ٣٠ سنة. أظهرت النتائج أن حوالي ٦٠.٦٪ كانوا من الممارسين العاميين و ٤٧.٧٪ خبرتهم أقل من خمس سنوات و ٣٢.٢٪ خبرتهم بحدود ١١ سنة. أعلى معدلات الاجهاد كانت مرتبطة بالعوامل المهنية والإجراءات السنوية. ومن بين أهم هذه العوامل البارزة كان فقدان الوقت نسبة إلى حجم العمل (٦٧.١٪) ونقص الرؤية وسهولة الوصول (٦٧.٧٪). اعتبر المزاج العصبي (٩٥٪) و التعب الهيكلي العضلي (٧٢٪) والغضب (٥٨٪) من أكثر مظاهر الاجهاد شيوعاً. ٨٠٪ من الأطباء كانوا يتدبرون هذه الأعراض بواسطة الصلاة وقراءة القرآن الكريم، أو قضاء الوقت بمفردهم ٧٥٪ أو مع العائلة ٧٠٪. يمكن الاستنتاج بأن من أهم أسباب الاجهاد عند أطباء الأسنان العاملين في مدينة جدة في المملكة العربية السعودية تعود إلى عوامل مهنية في طبيعتها وكانت تتظاهر على شكل المزاج العصبي ومشاكل هيكلية عضلية وتدييرها من خلال الصلاة وقضاء الوقت بمفردهم أو مع الأصدقاء.

OBJECTIVES: The objective of this study was to identify various stress factors affecting dentists and to evaluate their stress manifestations and stress management. **MATERIALS and METHODS:** A questionnaire was distributed among dentists residing in Jeddah, Saudi Arabia. The questionnaire classified stress factors into professional, patient-related, dental procedure-related, and office management factors. Sign and symptoms of stress manifestations and management were also evaluated. The sample included 80 females and 75 males, with 47% of them below the age of 30 years. **RESULTS:** Out of the total sample, the largest percentage (60.6%) were general practitioners, 47.7% had experience of less than 5 years and 32.2% had 11 years of experience. The highest mean scores of stress were related to professional factors and dental procedure-related factors. Among those, the main significant factors that caused stress in the surveyed sample were lack of time in relation to workload (76.1%), limited visibility and accessibility (67.7%). The most common manifestations of stress were nervousness (95%), musculoskeletal fatigue (72%) and anger (58%). Dentists predominantly managed their stress by praying and reading holy books (80%) and by spending time alone (75%) or with family and friends (70%). **CONCLUSIONS:** The most prevalent and significant causes of stress among dentists working in Jeddah, Saudi Arabia were professional in nature. Stress has been manifested by nervousness and musculoskeletal problem and was mainly managed by praying and spending time alone or with family and friends.

INTRODUCTION

Stress is currently endemic in the modern world and dentists are highly prone to stress.¹ In fact, dentistry has been considered one of the most stressful of all healthcare professions.¹ Dentists currently feel more than ever that they are subject to levels of stress that are unacceptably high. Possibly, the image of dentistry as being stressful is part of the dental culture and tends to override the personal experience.² Some studies indicate that dentists perceive their profession to be more stressful than others and that suicide, chemical

substances dependence, burn out and musculoskeletal problems may be among the manifestation of this perception.^{2,3}

Certain stress factors can pose a serious threat to physical and psychological well-being,⁴ with one of the possible consequences of chronic occupational stress being professional burnout.⁵ Professional burnout is considered to be one of the major determinants of psychological incapacitation resulting in a lower rate of productivity, in addition to greater absenteeism, healthcare costs and personnel turnover.⁶

Dentist in general practice experience more physical and mental illnesses than other healthcare workers.^{1,4,6} In addition, the highest overall stress levels among general practitioners were associated with those respondents who had greater

Associate Professor Conservative Department
Faculty of Dentistry, King Abdulaziz University
P.O. Box 51871, Jeddah 21553, Saudi Arabia
Email: hjamjoom@hotmail.com

job dissatisfaction, long working hours, dealing with uncooperative patients, and working under constant time pressure.⁷ The heavy workload, the repetitive nature of the work, and fear and anxieties concerning patients and payments may all contribute to why dentists are the most stressed of health professionals.⁸

Studies on stress factors among dentists in different parts of the world are inconsistent and scientific data from Saudi Arabia are limited. The purpose of this study was to investigate the various factors contributing to stress among dentists working in Jeddah, Saudi Arabia and to determine the various stress manifestations and managements.

MATERIALS AND METHODS

A random sampling was done of dentists living in Jeddah, Western Province, Saudi Arabia and working in different areas within the city. A questionnaire was distributed among dental graduate or specialized dentists working in public and private hospitals, private clinics and to all dentists who attended the Saudi Dental Association meetings. The questionnaire was distributed to every other person according to their seating position. The first person to start with was selected using a random number table.

Measures

The questionnaire included the following:

1. Demographic information which included age, gender, marital status, education, nationality and workplace.
2. Professional practice characteristics of the number of patients treated per day, working hours per day, years of experience, income level, hours of sleep per night, health problems, job description and satisfaction.
3. Work stress factors that were slightly modified from the work stress inventory for dentists (WSID)⁹ to suit the nature

of the society and reduce the number of options for greater specificity.

- a. Professional factors: time and schedule pressure, amount of work, qualified assistant, practice location and income.
 - b. Patient-related factors: patient cooperation, demands, behavior and attitude.
 - c. Dental procedure-related factors: difficulties in visibility, keeping up with new developments and technical perfectionism. Also work repetition, work interruption and dealing with patient discomfort and pain.
 - d. Office management-related factors: technical and pay-related factor, business competition, management of business and staff.
4. Health-related measures represented by minor ailments, symptoms and health-related behavior management of stress signs and symptoms.

Dentists had the choice of selecting more than one answer for some questions.

The questionnaires were collected from the respondents and given a serial number. Answers were coded and entered into a computer program (Statistical Package for Social Sciences; SPSS version 13) for analysis. Frequencies and percentage of positive responses for categorical variables, professional variables, factors contributing to stress, stress manifestation and stress management were calculated. Separate scores were made for stresses resulting from different factors (professional, patient, dental procedures and office management) by summing up answers to these factors. A general stress score was created by adding the scores resulting from the four previous factors. The differences in mean \pm standard deviation of the general stress score for the different variables were examined using a t-test for variables with two categories (Tables 1 and 2) and F test

Table 1. Demographic characteristics of the surveyed sample and their relationships to the general stress score.

Variable	Categories	Frequency n (%)	General stress score (mean±SD)	Test value (p)
Gender	Male	75 (48.4)	7.69±3.66	-3.30 (0.001)*
	Female	80 (51.6)	9.53±3.25	
Age	Below 30	71 (46.7)	9.86±3.49	8.09 (<0.0001)*
	30-39	49 (32.2)	7.69±3.16	
	40 and above	32 (21.1)	7.53±3.61	
Nationality	Saudi	91 (64.5)	8.96±3.44	0.67 (0.51)
	Non-Saudi	50 (35.5)	8.54±3.73	
Marital status	Single	55 (36.9)	9.62±3.50	2.72 (0.007)*
	Married	94 (63.1)	8.01±3.48	
Education	Bachelor	97(62.6)	9.43±3.48	8.35 (<0.0001)*
	Masters, Ph.D. or D.M.D.	43 (27.7)	6.88±2.95	
	Other	15 (9.7)	8.53±4.09	
Workplace	Government	60 (39)	8.72±3.66	1.85 (0.14)
	Private	28 (18.2)	8.50±3.51	
	Military hospital/ National Guard	18 (11.7)	7.00±2.83	
	University	48 (31.2)	9.29±3.64	

^aThe total number differs among items owing to a lack of response for some items.

* $P \leq 0.05$.

Table 2. Professional characteristics of the surveyed sample and general stress score.

Variable	Categories	Frequency n (%) ^a	General stress score (mean±SD)	Test value (p)
Average income level/ month (in Saudi riyals)	Below 10,000	51 (34.7)	8.86±3.40	0.67 (0.51)
	10,000–20,000	79 (53.7)	8.62±3.40	
	21,000 and above	17 (11.6)	7.71±2.66	
General practitioner	Yes	94 (60.6)	9.62±3.53	3.43 (0.001)*
	No	36 (23.2)	7.31±3.19	
Years of experience	1–5	71 (47.7)	9.46±3.59	5.61 (0.004)*
	6–10	30 (20.1)	8.60±3.51	
	11 and above	48 (32.2)	7.29±3.26	
Working hours/day	4–8 hours	76 (51.4)	8.99±3.29	1.13 (0.26)
	9–16 hours	72 (48.6)	8.32±3.87	
Patients treated/day	1–10	97 (63.8)	8.88±3.58	1.19 (0.31)
	11–20	44 (28.9)	7.91±3.51	
	21 and above	11 (7.2)	9.00±3.58	
Hours of sleep/night	4–6 hours	91(59.9)	8.41±3.53	-1.20 (0.23)
	7 and above	61 (40.1)	9.11±3.63	
Health problem	Yes	16 (10.7)	9.25±3.68	0.71 (0.48)
	No	134 (89.3)	8.58±3.57	
Job satisfaction	Yes	137 (90.1)	8.56±3.56	-0.86 (0.39)
	No	15 (9.9)	9.40±3.74	

^aThe total number differs among items owing to a lack of response for some items.

* $P \leq 0.05$.

for variables with three or more categories (Table 3), setting the *P* value at <0.05 .

RESULTS

Out of 450 questionnaires distributed, a total of 156 questionnaires were returned giving a response rate of 40%, variably answering the questions in the questionnaire. The respondents included 75 males and 80 females. Approximately half of the respondents were below 30 years of age, 32.2% were between the age of 30–39 years and 21.1% were 40 years of age and over. Nearly 63% of the participants had a bachelor degree only and 27.7% had a master, Ph.D or D.M.D. (Table 1). In addition, 60% of the respondents were general practitioners, 47.7% had experience of less than 5 years and 32.2% had 11 years of experience or more (Table 2). Over half of the surveyed dentists (53.7%) had an average income that ranged from 10,000–20,000 Saudi riyals per month, with 51.4% of the sample worked 4–8 hours a day (Table 2). About 64% of the participating dentists treated 1–10 patients a day whereas only 7.2% treated more than 20 patients a day (Table 2). Majority of the surveyed dentists (90.1%) were satisfied with their job and did not want to change their profession (Table 2).

Gender, age, marital status, working as a general practitioner, years of experience and the level of dental education were significantly related to the general stress

Table 3. Most prevalent factors of stress among the dentists surveyed.

Stress factors	Mean±SD	F test (p)
Professional	2.46±1.26	48.47 (<0.0001)*
Patient	2.10±1.07	
Dental procedures	2.32±1.28	
Office management	1.77±1.12	
All factors	8.64±3.57	

*Statistically significant at *P* ≤ 0.05.

Table 4: Factors contributing to stress among participating dentists.

Stress Factors	Frequency	Percent
Professional practice factors		
Time versus number of patients	118	76.1
Amount of work (too much, too little)	82	52.9
Underqualified assistants	71	45.8
Low income	53	34.2
Practice location	29	18.7
Professional isolation	28	18.1
Patient factors		
Uncooperative patients	99	63.9
Unsatisfied patients	86	55.5
Anxious patients	82	52.9
Demanding patients	58	37.4
Dental procedure factors		
Limited visibility and accessibility	105	67.7
Interruptions during work	73	47.1
Inflicting discomfort and pain	51	32.9
Repetition of work or boredom	48	31
Constant drive for technical perfection	38	24.5
Keeping up with new developments	25	16.1
Having to perform beyond clinical abilities	21	13.5
Office management factors		
Management of auxiliary staff	67	43.2
Financial pressure	66	42.5
Business management demands	64	41.3
Responsibility for equipment and material	44	28.4
Increasing competition	32	20.6

score, indicating the correlation of these characteristics to stress factors (Tables 1 and 2).

The highest mean scores were recorded for professional factors and those related to dental procedures. The most prevalent and significant cause of stress among the surveyed dentists were related to office professional practice (Table 3).

Among the professional factors surveyed, the time available for dealing with the number of patients needing treatment was the most reported factor that caused stress (76.1 %) in Table 4. In addition, the amount of work was a highly rated stress factor reported by 52.9% of the dentist, followed by stressful working environment created by under-qualified dental assistants (45.8%) as shown in Table 4.

In terms of the contribution of patient-related factors to stress among the surveyed sample, 63.9%, 55.5% and 52.9% were recorded for uncooperative, unsatisfied and anxious patients respectively (Table 4). As for stress related to dental procedures, 67.7% of the respondents attributed stress to limited visibility and accessibility, and 47.1% to interruptions during work. Stress from management of auxiliary staff (43.2%), management of the dental clinic arose from financial pressure (42.5%) and other business management demands (41.3%) shown in (Table 4).

Dentists responded to stress by symptoms of nervousness (95%), musculoskeletal fatigue and exhaustion (72%), anger and frustration (58%), and tiredness and headache (48%) shown in Figure 1. The methods of dealing with stress reported by the respondents were praying and reading the Quran (80%), spending time alone (75%) and spending time with family and friends (70%) shown in Figure 2.

DISCUSSION

Dentistry is a stressful occupation with multiple sources of stress factors that may result in different responses. For many years, studies have suggested that dentistry generates more stress than any other health profession, primarily because of the nature and working conditions in the dental surgery.⁹⁻¹¹

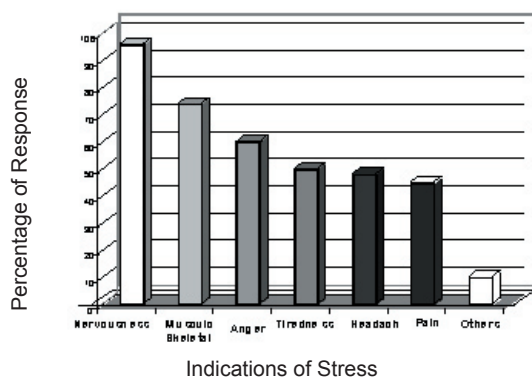


Fig. 1. Manifestations of stress among dentists working in Jeddah, Saudi Arabia.

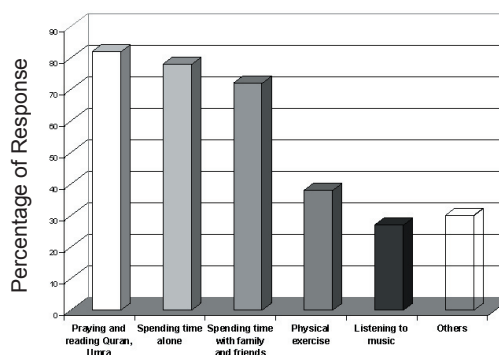


Fig. 2. Methods of dealing with stress among dentists working in Jeddah, Saudi Arabia.

This study found that the heavy workload, the repetitive nature of the work, fear and anxieties concerning treatment outcome and payment were all stress factors among general practitioners (GP) as well as other dentists. This agrees with other studies, reporting that occupational stress results when dentists find themselves overloaded with work. The overload can be either quantitative in nature (i.e., too much work to do) or qualitative (i.e., work is too difficult).^{8, 12, 13} Usually a GP dentist tries to treat a large number of patients in a limited time. A dentist may react with disappointment, frustration and/or anger when deficient treatment is identified, resulting in stressful experiences for both the dentist and patient.⁷

The highest source of stress in this study was time pressure expressed as insufficient time available for each patient. Reducing the amount of time allocated to each patient can prevent the dentist from obtaining and completing the treatment effectively and safely, resulting in additional problems and stressors. This disagrees with the study of Cecchini,¹⁴ who investigated 20 potential dentist stressors and reported that dentists ranked time pressure as the third-highest source of stress. Another study reported that out of 25 potential stressors mentioned by GP dentists who were assessed, running behind schedule and constant time pressures ranked third and fourth, respectively.¹⁵

Gender, education and years of experience were significantly related to the general stress score, indicating the correlation of these variables to stress. This is in agreement with another study indicating that stress was prevalent among females than males and that stress increases for dental practitioners with lower levels of education and fewer years of experience.¹⁶ This specifies the need for implementing continuing educational programs and educational workshops to improve the quality of work and professional satisfaction that can reduce the dentists stress.

The interaction between the dentist and patients offers a valuable framework for understanding the diversity of stress that dentist's experience. The high percentage of stress reported by dentists in this study was related to dealing with uncooperative, unsatisfied and anxious patients. Dentists differ widely regarding what they perceive to be stressful in dealing with patients, while a dentist may take greater satisfaction in dealing with patients, others may perceive interacting with the patients to be more of a burden compared to performing a quality preparation or construction of a

prosthesis. Therefore, patient interaction might induce a great deal of stress for some health care provider.

In terms of office management, the highest rated stress factor was managing the office and auxiliary staff. This may lead to a poor working environment that may result in poor communication among members of the dental team, unaired staff grievances and deteriorating relationships, all of which can affect the standard of patient care.¹⁷ Usually dentists working with single dental nurse routinely build up a working relation that helps to reduce occupational stress by pre-empting the dentist needs during treatment. Also good receptionist helps organize the dentist operating schedule efficiently and can also help to reduce professional stress by arranging an appropriate schedule for treatment.

Over 90% of the dentists surveyed reported nervousness as the number one manifestation of stress, followed by musculoskeletal fatigue and exhaustion, anger, frustration, headache and pain. These responses can interact with one other and contribute to a number of diseases in the future. However, these signs of stress may be manifested in ways other than physical illness. This manifestation could be work-related behavior in terms of poor job performance, absenteeism, or poor patient management and communication.^{6,18} Most dentists reported no current health problem, which could be related to the age distribution of the study sample where half of the dentists aged 30 years or less.

Musculoskeletal problems have been identified as consequences of stress encountered in dental practice in various other studies^{7,19-21} with reports of 60% prevalence of symptoms of various types of musculoskeletal pain during one year among dentists and general practitioners in the United Kingdom.^{7, 21} This is also noted in this study. Several studies have noted a higher incidence of pain and

discomfort in the neck, shoulder and lower back among dentists compared to other occupational groups. It is also reported that musculoskeletal disorders were the most frequent cause of premature retirement.^{19, 22, 23}

There is no single method for managing stress with each person having his or her own way of coping with stress. For dentists included in this study, 80% used religious regimes as an effective way to reduce stress. Jeddah in particular, is close to the holy cities of Makkah and Madinah, which is considered a privilege and is reflected in higher religious practices. Spending time alone and spending time with family and friends were also popular stress reducing behaviors while taking physical exercise was not highly practiced among the dentists in this study compared to other studies.^{24,25} The variation in the method of dealing with stress depends on an individual's personal preference and cultural influences, in addition to a clear understanding of the sources of stress and the options available. Identifying stressful factors is the first step toward coping with the insidious nature of stress, followed by the adoption of preventive measures can then be efficiently established.

Dentists see themselves and their problems differently today,²⁶ and studies are urgently needed on the effects on stress levels of infection control and disease transmission, occupational safety and health administration regulations, amalgam safety, decreased professional autonomy, media high esthetic demands and other issues.

CONCLUSIONS

From this study it can be concluded that dentistry is perceived to be a stressful occupation among dentists working in Jeddah, Saudi Arabia. The sources of stress are multiple and arose from lack of time in relation to workload, work overload, difficult uncooperative

patients, dental procedures, limited visibility and accessibility, management of staff, and financial pressure. The major manifestations of stress are nervousness followed by musculoskeletal problems, anger, tiredness and headache. Management of stress among dentists working in Jeddah city varies from praying and reading holy books to spending time alone, or with family and friends.

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