Stress among dentists in Yemen

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Abstract: Objective: The objective of this study was to assess the stress level among Yemeni dentists and to evaluate their stress manifestations and stress management.

Materials and methods: Nearly 368 dentists were given a self-administered questionnaire and 119 returned the filled questionnaire form. A questionnaire was composed of four sections including, demographic information, professional practice characteristics, work stress factors and response of dentist to stress as well as methods to deal with stress. 56 females and 63 males were incorporated, 83.2% of them were general dental practitioners. The descriptive data were analyzed and Chi-square, t-test and F tests were used for statistical significance (P < 0.05).

Results: The response rate was 32.3%. Of the whole, 71.4% of them were aged less than 30 years, 73.1% have experience less than 5 years. Among stressors, those related to dental procedure have highest mean scores (SD) of stress 2.93 (1.46). The most prevalent factors that contribute to stress were uncooperative patients (72.3%), amount of work (too much, too little) (60.5%) and constant drive for technical perfection (54.6%). Stress was reflected in dentists by many signs among them are musculoskeletal fatigue in 63% and nervousness in 57.1%. Praying and reading the Quran was reported by over two thirds (70.6%) of the participants to manage stress.

Conclusions: Dentistry is a stressful profession in Yemen. Lack of experience, low income, uncooperative patients, and dental procedure-related factors were the main significant factors that caused stress. Political instability in the country and the lack of laws governing the dental profession in addition to conservative nature of the community may be considered as sources of stress.

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1. Introduction

Because of the nature and working conditions within the dental surgery, dentists are highly prone to stress. Excessive communication and handling of individuals can result in a disorder known as Burnout. Burnout, consequently, is defined as a disorder of emotional exhaustion and cynicism that occurs frequently
among those who do ‘people-work’ of some kind. Stress is characterized by three key aspects: emotional exhaustion, depersonalization, and reduced personal accomplishment.

Stress can never be totally eliminated from dental practice. However, it must be minimized as much as possible in order to avoid many stress-related physical and emotional problems that it causes. The highly technical and intensive nature of work, handling uncooperative patients, 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. The origins of this stress may also lie in the process of dental education.

Additionally, a study has shown that the highest overall stress levels among general practitioners were associated with those respondents who had greater job dissatisfaction, long working hours, and working under constant time pressure. Isolation from other dentists also is common.

Many of the psychological signs of stress manifest themselves as physiological responses. The physical disorder reported most frequently by dentists is lower back pain. Other physical manifestations include headaches and intestinal or abdominal problems. Among the psychological disorders associated with stress are anxiety and depression. While in most cases these disorders are not so severe that they require intervention, they may interfere with the dentist’s professional performance and quality of life.

Several studies have been conducted to assess stress among dentists and dental students all around the world. In Yemen such scientific data are insufficient. This study was designed to evaluate stress level among dentists in Yemen and to evaluate their stress manifestations and stress management.

2. Materials and methods

This study was approved by the Research Ethics Committee, Faculty of Dentistry, Sana’a University, Yemen. A total of 368 participants were randomly selected from a list of 1376 registered professionals in the Yemeni Dental Association delivered the questionnaire hand-by-hand. A pre-paid return post-mail envelope was included with each questionnaire and all responses kept anonymous. A reminder was sent to each dentist 15 days later. Among them 119 responded. The time period of the study was between January 2014 and April 2014.

2.1. Questionnaire design

The questionnaire was written in Arabic and English and was composed of four sections:

1. Demographic information
   - Gender and age, marital status, education, and place of work

2. Professional practice features
   - Working hours/day, income level, job satisfaction, number of patients treated/day and years of experience

3. Work stress factors
   - Professional practice factors, patient factors, dental procedure factors and office management factors

4. Responses to stress and methods used to deal with it

The previous questionnaire has been used and tested in a pilot study on 30 dentists in Sana’ City in October 2013 and modified in the light of experience derived from the pilot study. These dentists completed the questionnaire two times. Between the two measurements there was a period of three to four days.

Work stress factors were slightly modified from the work stress inventory for dentists (WSID) to suit the nature of the society and reduce the number of options for greater specificity.

2.2. Statistical analysis

The statistical package for the social sciences 13.0, IBM Corporation, New York, NY, was used for statistical analysis and the level of significance was set at \( P < 0.05 \).

The following statistical analyses were performed:

1. Classification of data and calculation of frequencies for non-parametric variables.
2. Calculation of the general stress score by summing up answers to stress induced factors.
3. Calculation of statistical parameters such as mean, standard deviation (SD) for stress induced factors and analysis of differences between categorical variables by student \( t \)-tests with two categories or \( F \) test for variables with three or more categories.
4. Chi-square test (for determining differences between work stress factors).

3. Results

Out of 368 participants included in the survey only 119 responded, of whom 56 were female and 63 were male giving a response rate of 32.3%.

Table 1 represents the relationships between the general stress score and demographic characteristics of the study sample. More than two thirds of the sample (71.4%) were below 30 years of age, whereas 28.6% were aged 30 years and above. Of them, only 16.8% were specialists while the majority (83.2%) were general dental practitioners. Over two thirds of the surveyed dentists (68.1%) practice dentistry in private clinics, while the other third work either in government or universities.

Table 2 shows the interaction between the general stress score and respondents’ professional characteristics. The majority of the sample (73.1%) were with clinical experience less than 5 years, and 75.6% of them spent 4-8 h per day in work.

Between one and ten patients being treated per day was reported by 73.9% of the contributing dentists, with 26.1% of the sample complaining of health problems and about 31.9% expressing job dissatisfaction. Of all examined demographic and professional characteristics, the general stress score was significantly correlated to working hours/day (Table 2).

Among factors contributing to stress in Yemeni dentists, those related to dental procedures have the highest mean general stress scores ± S.D (2.93 ± 1.46). Of those dental procedures factors, constant drive for technical perfection was established by 54.6%, whereas 48.7% of study sample reported...
that repetition of work and keeping up with new development (45.4%) were the main causes of stress (Tables 3 and 4).

Three out of each five Yemeni dentists (60.5%) informed that the amount of work (too much, too little) was highly correlated to stress, while about half of them (52.1%) indicated that under-qualified dental assistants generate a stressful working environment and of all the investigated stress factors, uncooperative patients were rated by 72.3% of participants as shown in Table 4.

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

<table>
<thead>
<tr>
<th>Variable</th>
<th>Categories</th>
<th>Frequency n (%)</th>
<th>General stress score (mean ± SD)</th>
<th>Test value (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Below 30 years</td>
<td>85 (71.4)</td>
<td>10.61 ± 3.19</td>
<td>0.975 (0.380)</td>
</tr>
<tr>
<td></td>
<td>31–39 years</td>
<td>29 (24.4)</td>
<td>9.83 ± 3.50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>40 and above</td>
<td>5 (4.2)</td>
<td>9.20 ± 1.79</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>63 (52.9)</td>
<td>10.51 ± 3.44</td>
<td>0.524 (0.601)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>56 (47.1)</td>
<td>10.20 ± 3.00</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td>Single</td>
<td>62 (52.1)</td>
<td>10.68 ± 3.20</td>
<td>1.115 (0.267)</td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>57 (47.9)</td>
<td>10.02 ± 3.25</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>Bachelor</td>
<td>99 (83.2)</td>
<td>10.28 ± 3.27</td>
<td>−0.589 (0.557)</td>
</tr>
<tr>
<td></td>
<td>Masters, PhD, others</td>
<td>20 (16.8)</td>
<td>10.75 ± 3.06</td>
<td></td>
</tr>
<tr>
<td>Workplace</td>
<td>Government</td>
<td>15 (12.6)</td>
<td>10.40 ± 3.52</td>
<td>0.072 (0.931)</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>81 (68.1)</td>
<td>10.42 ± 3.36</td>
<td></td>
</tr>
<tr>
<td></td>
<td>University</td>
<td>23 (19.3)</td>
<td>10.13 ± 2.62</td>
<td></td>
</tr>
</tbody>
</table>

*P ≤ 0.05.

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

<table>
<thead>
<tr>
<th>Variable</th>
<th>Categories</th>
<th>Frequency n (%)</th>
<th>General stress score (mean ± SD)</th>
<th>Test value (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years of experience</td>
<td>1–5</td>
<td>87 (73.1)</td>
<td>10.64 ± 3.13</td>
<td>1.452 (0.238)</td>
</tr>
<tr>
<td></td>
<td>6–10</td>
<td>19 (16.0)</td>
<td>9.89 ± 3.84</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11 and above</td>
<td>13 (10.9)</td>
<td>9.15 ± 2.76</td>
<td></td>
</tr>
<tr>
<td>Working hours/day</td>
<td>4–8</td>
<td>90 (75.6)</td>
<td>10.92 ± 3.11</td>
<td>3.494 (0.001*)</td>
</tr>
<tr>
<td></td>
<td>9–16</td>
<td>29 (24.4)</td>
<td>8.62 ± 3.00</td>
<td></td>
</tr>
<tr>
<td>Patients treated/day</td>
<td>1–10</td>
<td>88 (73.9)</td>
<td>10.64 ± 3.11</td>
<td>2.452 (0.091)</td>
</tr>
<tr>
<td></td>
<td>11–20</td>
<td>26 (21.9)</td>
<td>9.19 ± 3.49</td>
<td></td>
</tr>
<tr>
<td></td>
<td>21 and above</td>
<td>5 (4.2)</td>
<td>11.60 ± 2.88</td>
<td>−0.820 (0.414)</td>
</tr>
<tr>
<td>Health problems</td>
<td>Yes</td>
<td>31 (26.1)</td>
<td>10.29 ± 3.04</td>
<td>−0.142 (0.887)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>88 (73.9)</td>
<td>10.39 ± 3.31</td>
<td>−0.624 (0.534)</td>
</tr>
</tbody>
</table>

*P ≤ 0.05.

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

<table>
<thead>
<tr>
<th>Stress factors</th>
<th>Mean ± SD</th>
<th>F test (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional practice</td>
<td>2.82 ± 1.15</td>
<td></td>
</tr>
<tr>
<td>Patient</td>
<td>2.26 ± 1.02</td>
<td>40.823</td>
</tr>
<tr>
<td>Dental procedure</td>
<td>2.93 ± 1.46</td>
<td>(0.000*)</td>
</tr>
<tr>
<td>Office management</td>
<td>2.35 ± 1.19</td>
<td></td>
</tr>
<tr>
<td>All factors</td>
<td>10.36 ± 3.23</td>
<td></td>
</tr>
</tbody>
</table>

*P ≤ 0.05.

Fig. 1 demonstrates the signs of stress mentioned by the participant dentists. Musculoskeletal fatigue was reported by 63% of the sample, followed by nervousness 57.1%, tiredness and headache 54.6%, anger and frustration 50.4% and pain 20.2%.

Fig. 2 depicts the methods of dealing with stress. The majority of the sample (70.6%) praying and reading the holy book, while others spending time with family and friends (63.9%) or spending time alone (38.7%).

4. Discussion

People working in direct contact with the community are facing a real problem, of those are dentists, who consider their occupation more stressful than others.14

Although the topic was interesting as mentioned by many, the response rate was relatively low (32.3%), it could be due to the nature of Yemeni society as a conservative society which made participation limited and not great. This study is considered to be the first study to evaluate stress among dentists in Yemen, where the number of dentists is few especially the specialists comparing with other countries.
4.1. Demographic characteristics of the surveyed sample

In the present study, there was no significant difference in the general stress score between young and older dentists, but those below 30 years had slightly higher emotional exhaustion than older dentists, this could be attributed to less practical experience, since most of the surveyed dentists in this study were young and had lack of experience, this agrees with the study of Bourassa and Baylard.\(^1\)

Multiple factors can predispose and provoke stress in the early years of practice, of them are fear of making mistakes, heavy and/or under workload, previous thoughts that patients can be too demanding and concerns about payment in general.\(^{16,17}\)

Regarding gender, there was no significant difference in the general stress score between female and male. The insignificant difference could be attributed to the fact that they were living and working in the same environment and facing the same sources and amount of stressors. A majority of the studies in this regard have reported that females perceived more stress than males,\(^{18–27}\) while other studies showed that overall males perceived more stress than female.\(^{19,28}\)

Surprisingly, concerning the level of dental education, there was no significant difference in the general stress score between those that had a bachelor degree and those that had masters or PhD degree. Stress is highly likely to occur in dentists of all grades and specialties. Higher patient expectations and higher targets for provision of dental care will put increased demands upon dentists.\(^{29}\)

The striking thing in this study that specialist who got Master or Ph.D. certificates suffer the same amount of psychological pressure suffered by general dental practitioner who had a bachelor’s degrees and perhaps this may be due to the political
instability in the country and to the lack of laws governing the dental profession.

4.2. Professional characteristics of the surveyed sample

Low income may explain the statistically significant difference between those reporting less working hours/day and those working more hours/day. This may be due to the fact that, in Yemen man’s income is considered the primary source of earning in the family, and he has to take care of his parents, wife and kids. Because of such responsibilities and long tenure of dental profession, men could be under considerable stress.

There is no statistically significant difference between variables of other professional characteristics of the surveyed sample; it may be attributed to the same nature of the working conditions and environment for all variables.

4.3. Factors contributing to stress

Difficulties with time controlling and remaining on schedule appeared in several studies.\textsuperscript{30–33}

Since most of the surveyed dentists in this study were young and had lack of experience, so the most significant causes of stress among them were related dental procedures, constant drive for technical perfection, repetition of work or boredom, followed by keeping up with new development, also the highest mean scores were recorded for professional factors among which are, the amount of work, followed by stressful working environment created by under-qualified dental assistants.

According to Sloan and Cooper\textsuperscript{34}, dentistry’s heavy workload, the repetitive nature of the work, the fears and anxieties of patients and concerns about payment, may all contribute to dentists being the most stressed of health professionals. By comparison, work underload\textsuperscript{35} is observed in occupations which are repetitive, boring and lacking in stimulation. So, stress also occurs when we find our work insufficiently challenging.

4.4. Dentists reactions to stress

In the present study, musculoskeletal fatigue was the most prevalent response to stress reported by dentists. The same finding was reported by several previous studies.\textsuperscript{36–38}

Studies have suggested that dentistry generates more stress than any other profession, primarily because of the nature and working conditions of the dental treatment.\textsuperscript{15,29,39} Studies on dentistry and alcoholism, divorce, cardiovascular disease, drug abuse, and elevated rates of suicide suggest that the typical life of a general dental practitioner is a stressful one.\textsuperscript{40–42}

4.5. Stress management

Elimination of stress from dental practice is un-avoidable. However, recognition and understanding causes of stress is the first step to be taken for prevention of many adverse effects of stress.

Management of stress throughout dental education has been highlighted by many studies.\textsuperscript{33,43,44} Continual education programs on stress management should be made available to all dentists and must be incorporated for dental students at dental schools.

Traditional motivations and character’s individual favorite contribute in the ways used to manage.\textsuperscript{45,46} It is important to note that Yemeni community is a religious society, so they preferred to deal with stress by praying, reading the Quran, and sharing problems with family and friends.

5. Recommendations and limitations

To the knowledge of the authors, the present study is considered to be the first study to evaluate stress among dentists in Yemen, where the number of dentists is few especially the specialists comparing with other countries. However, we recommended enlarging the sample size in future studies and to evaluate the stress level in dental students.

Also the nature of the community in dealing with women should be taken into account as some women in Yemen cannot work or are not allowed to treat men without permission from their family or husband, so women’s freedom to practice their dentistry work and habit of chewing khat should be considered as stress factors among Yemeni population in further studies.

6. Conclusion

From this study it can be concluded that:

1. Yemeni dentists perceive their profession to be stressful. Stress causes come from the work environment (low income, uncooperative and demanding patients, amount of work and dental procedures and from financial and practice management issues).

2. Musculoskeletal fatigue and nervousness were the most prevalent responses to stress reported by dentists in Yemen.

3. The religious and conservative nature of Yemen community may be affecting the measures taken by dentists to deal with stress.

Conflict of interest

The authors have no conflict of interest to declare.

References


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