PERCEIVED STRESS IN DENTAL PRACTICE

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Abstract
Stress is a normal physiological response to events that make us feel threatened, or upset our balance in some way. In medicine, it is known that stress, as an emotional state, can be a trigger for many psychosomatic disorders.

Work stress and burnout are considered to be serious professional risks in dentistry. The dentist should be aware of these stressors and attempt to manage them in order to avoid becoming occupationally dissatisfied.

On the other hand, the other common characteristic of modern life is a growing burden of different chronic diseases. Periodontal disease is one of the two most important oral diseases contributing to the global burden of chronic disease.

The aim of this study was to assess the perceived stress in patients with periodontal pathologies, and to compare it with the stress in doctors-dentists and students of dentistry as future professionals.

Our study confirmed the presence of significant stress in all three groups of examinees (patients, doctors, and students). Surprisingly, the obtained PSQ scores are similar in the examined groups. In addition, no differences between perceived stress in males and females have been found.

There is a minimal positive correlation between age and obtained scores.

However, stress must be evaluated as a risk factor both for professionals or for chronic dental patients and some response measures must be undertaken.

Key words: stress, dentists, students, patients.

Introduction
Modern life is full of hassles, deadlines, frustrations and demands. For many people, stress is so common that it has become a way of life. Stress is a normal physiological response to events that make us feel threatened, or upset our balance in some way. In medicine, it is known that stress, as an emotional state, can be a trigger for many psychosomatic disorders. In the last decade of the 20th century, stress was a topic of high interest in medico-biological research.

The dentist as a specialist enjoys a high degree of professional independence. His foremost social responsibility is to treat patients suffering from toothache and to promote oral health prevention for all people, regardless of their social status. At the same time, the dentist is prestigious, respected and honest. Comparable to other professions, dentistry is under public pressure. However, work stress and burnout are considered to be serious professional risks in dentistry. The dentist should be aware of these stressors and attempt to manage them in order to avoid becoming occupationally dissatisfied. [1–12]

On the other hand, the other common characteristic of modern life is a growing burden from different chronic diseases. Periodontal disease is one of the two most important oral diseases contributing to the global burden of chronic disease. [13, 14]
Periodontal disease is a widespread pathology that affects about 40% of the population, especially those over 40 years. Periodontal disease is also known as the 'loose teeth disease'. The disease starts as an inflammation with bleeding from the gums and deepened periodontal pockets. Inflammation is not stopped; it spreads into the bone the teeth are attached to, leading to bone and dental retracts. Finally, the teeth become loose and fall out. Normally, this is a slowly progressive condition, but even after years of struggle it ends with toothlessness because of the disease. In addition to social determinants, periodontal health status is related to several proximal factors. Modifiable risk factors, such as tobacco use, excessive alcohol consumption, poor diet and nutrition, obesity, psychological stress and insufficient personal/oral hygiene, are important and these principal risk factors for periodontal disease are shared by other chronic diseases. [15–17]

Epidemiological findings say that chronic periodontitis affected about 750 million people or some 10.8% of the population in 2010. Like other conditions intimately related to access to hygiene and basic medical monitoring and care, periodontitis tends to be more common in economically disadvantaged populations or regions. Its occurrence decreases with a higher standard of living. In the Israeli population, individuals of Yemenite, North-African, South Asian, or Mediterranean origin a higher prevalence of periodontal disease than in individuals of European descent. Paradentosis is really dangerous. It may be inevitable and some people can have it when they grow older, around 30–40 years of age. There are cases when even children or adults who are still young have a case of periodontal disease (another name for paradentosis). Paradentosis may have really detrimental effects. It can also be dangerous as it affects not only the dental health, but the physical health too. Many epidemiological studies have indicated that periodontitis is an important risk factor for coronary heart disease. [18]

Patients suffering from periodontitis will experience bad breath and ultimately their teeth might become so damaged that there is no other choice than having them replaced by dentures. Periodontal disease is very likely to affect one’s personal life greatly; patient will be ashamed to meet people, and on the other hand, people are likely to stay away from them, due to the bad effects which come with the disease.

A study by Wu YM [19] where the periodontal status has been evaluated in childbearing age women in a region of China accentuated the need for urgent improvement of oral health.

The aim of this study was to assess the perceived stress in patients with periodontal pathologies, and to compare it with the stress in doctors dentists and students of dentistry as future professionals.

**Methodology and sample**

The sample comprises three groups of examinees: patients with periodontal disease (N = 40), doctors dentists (N = 48) and students in the last year of dentistry (N = 56).

The psychometric instrument we used is the Perceived Stress Questionnaire (PSQ). Consisting of 30 items, the PSQ was developed as an instrument for assessing stressful life events and circumstances that tend to trigger or exacerbate disease symptoms. [20, 21]

As is well known, a major theme in recent psychosomatic research has been the effect of stress on the course of disease, but there is no consensus as to how to measure it. Researchers have variously concentrated on external stressors in the form of life events, or chronic difficulties; in addition, they have evaluated subjective components such as anxiety, depression and psychiatric symptoms. Also, it is very important to not under-recognize the cumulative minor stressors or "hassles" of everyday life and the individual sense of control or coping.

The PSQ was developed and validated by a group of researchers involved in psychosomatic medicine (psychologists and doctors in internal medicine) for evaluating the relationship between stress and illness. As a result, a 30-items questionnaire has been developed. Factor analysis for PSQ yielded seven factors, of which those reflecting interpersonal conflict and tension were significantly associated with health outcome. Factor names were assigned appropriate to the contributing items: harassment, overload, irritability, lack of joy, fatigue, worries, and tension. In this context, PSQ is thought to be a valuable instrument in psychosomatic research.
Results and discussion

The sample of patients consisted of 18 males and 22 women with periodontal pathologies (total number N = 40). The mean age for males was 45.8 years (SD 16.2); youngest patient was 22 and the oldest one 71. The mean age of female patients was 42.3 years (SD 14.4); the youngest was 24 and the oldest 77.

The sample of doctors/dentists consisted of 40 females and 8 males (total number N = 48). The mean age for males was 41.8 years (SD 7.3). For females, the mean age was 40.6 years (SD 6.8); the youngest was 28 and the oldest 54.

The sample of students comprised a total number of N = 49 examinees. There were 37 females, with a mean age of 22.8 years (SD 1.9) and 19 males, mean age 22.9 years (SD 2.3). Table 1 summarizes age-related characteristics of the samples.

Table 1

<table>
<thead>
<tr>
<th>Sample</th>
<th>Mean age (years)</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients</td>
<td>males</td>
<td>45.8</td>
</tr>
<tr>
<td></td>
<td>females</td>
<td>42.3</td>
</tr>
<tr>
<td>Doctors</td>
<td>males</td>
<td>41.8</td>
</tr>
<tr>
<td></td>
<td>females</td>
<td>40.6</td>
</tr>
<tr>
<td>Students</td>
<td>males</td>
<td>22.9</td>
</tr>
<tr>
<td></td>
<td>females</td>
<td>22.8</td>
</tr>
<tr>
<td>N = 144</td>
<td></td>
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</tr>
</tbody>
</table>

PSQ scores obtained for all three groups of examinees is presented on Fig. 1.

![Figure 1 – Obtained PSQ for examined groups](image)

Statistics show that there is no significant difference between obtained PSQ scores for patients, doctors and students (p = 0.69). It means that a similar perceived stress is present in both patients with chronic disease and in professionals.

The original article concerning to PSQ [20] described that generally, for males the PSQ mean score was 0.40 and for females 0.43. The highest scores were obtained in hospitalized patients with some psychosomatic disorder (such as ulcerative colitis). Scores on the PSQ were associated with stressful life events. But since any pathogenic potential lies not in the stressor event but in the stress emerging from its interaction with the individual, the attempt to study stress-illness links by looking for preceding life events has built-in limits. On the other hand, some stress-related disease can be missed by investigating life events alone. However, PSQ is frankly subjective. It is intended to maximize sensitivity to ongoing stress and to make the PSQ more useful for prospective studies of organic disease, or in cross-sectional investigations whose dependent variable is beyond patient awareness. In our study, mean values in patients obtained for PSQ was 0.45 for males and 0.48 for females, which is comparable with the original findings [20, 21].

It is interesting that the obtained scores for PSQ for doctors is highest: for males PSQ mean value is 0.58; for females 0.51, which represent an important level of stress. Concerning students of dentistry, obtained scores for PSQ were 0.41 for females and 0.52 for males. Both results (for doctors and students) are higher for males than for females. It could be interpreted that females are more resistant to everyday stressors.

In addition, we calculated the variance of obtained scores from the three groups of examinees with factor ANOVA. We did not find any statistically significant difference.

![Figure 2 – Difference between PSQ scores in samples (p = 0.69)](image)
Concerning the gender, we obtained similar results. There is no significant difference in PSQ scores between men and women. (Fig. 3)

![Figure 3 – Obtained PSQ scores in females and males (p = 0.95)](image1)

Factor ANOVA calculated for gender variance shows a minimal statistical significance (p = 0.02) (Fig. 4)

![Figure 4 – ANOVA for age-related PSQ scores](image2)

It was interesting to calculate the correlation between age and obtained PSQ scores (Fig. 5). The minimal positive correlation (p = 0.011) was obtained. This means that with age a slow rise in perceived stress is confirmed.

![Figure 5 – Correlation between age and obtained PSQ scores](image3)

The obtained negative correlation between PSQ scores and three groups of examinees is shown in Fig. 6.

The development of periodontal inflammation is a complex process; therefore animal models have been developed to assist in its understanding. The main etiological factor of periodontal disease is bacterial plaque, but the pathogenesis of the disease is affected by environmental factors that modify or induce systemic progression, such as stress. In a study by Riviera C. et al. [16] the aim was to examine the effect of chronic restraint stress (RS) on the severity of experimental periodontal disease in rats. The results of the study showed that RS modulates periodontal inflammation and that the rat model described herein is suitable for investigating the association between stress and periodontal disease. Human studies suggest that negative life events and psychological factors may contribute to an increased susceptibility to periodontal disease. It has been reported that stress produces neuroendocrine changes and certain adverse effects on the immune system, which affect the inflammatory response on periodontal tissues.

The cortisol-awakening response (CAR) is a distinct facet of the circadian cortisol rhythm associated with various health conditions and risk factors. It has repeatedly been suggested that the CAR could be a result of the anticipated demands of the upcoming day (stress anticipation) and could support coping with daily life stress. Findings indicate that the CAR increase is associated with successful coping with same-day daily life stress. [17]

In addition to periodontosis, recurrent aphthous ulcers (RAU) are one of the most
common and poorly understood mucosal disorders. Most of the literature suggests that stress has a causal role in RAU and it is estimated that at least 1 in 5 individuals is afflicted with RAU. Review of the literature reveals that nutritional and stress factors may be of paramount importance in the occurrence and severity of RAU. In the study by Handa R. [23] it was shown that stress emerged as having a causal role on RAU, along with haematinic deficiencies and poor nutritional status in professional undergraduate college students.

In our study we did not show that perceived stress is such an important factor in patients with periodontal pathologies. It is surprising that the level of stress was higher in professionals than in patients.

Clinical and public health research data have shown that a number of individual, professional and community health measures may be valuable in preventing the major oral diseases. The fundamental gap in knowledge, however, is not confined to 'what to do' but rather 'how' to translate the scientific findings into effective and sustainable programmes for groups and populations. Community interventions and delivery of preventive oral care by oral health services may have positive outcomes for periodontal health but periodontal research needs to be further strengthened by the provision of sound evidence. It is somewhat remarkable that research on true population-directed actions in the prevention of periodontal disease is most unusual.

In the prevention of periodontal disease, use of probiotics is suggested. Probiotics are dietary supplements containing potentially beneficial bacteria or yeasts. Probiotics are live microorganisms thought to be beneficial to the host organism and, when administered in adequate amounts, confer a health benefit on the host. Lactic acid bacteria and bifidobacteria are the most common types of microbes used as probiotics. Probiotics strengthen the immune system to combat allergies, stress, exposure to toxic substances and other diseases. [22]

Concerning stress in dentists and students of dentistry some response measures are recommended. The occupational health literature has long been dominated by stress-related topics. A more contemporary perspective suggests using a positive approach in the form of a health model focussed on what is right with people, such as feelings of well-being and satisfaction. Higher self-rated emotional intelligence was significantly associated with less burnout (p < 0.001) and higher job satisfaction (p < 0.001). Higher patient satisfaction was correlated with less burnout (p < 0.01). Less burnout was found to be associated with higher job satisfaction (p < 0.001). [24–26]

While stress is pervasive in the world today, and particularly in the dental surgery, coping strategies can counteract it. In the paper by Mazzey [11] the personality features of the hardy dentist are discussed. The fact that stress and its effects depend largely on individual perception of stressors; five habits to develop for stress reduction could be: seeking information, taking direct action, inhibiting action, engaging intrapsychic efforts and calling on others.

Conclusion
Our study confirmed the presence of stress in all three groups of examinees (patients, doctors and students). The obtained PSQ scores are similar in the examined groups.

In addition, no differences between perceived stress in males and females have been found.

There is a minimal positive correlation between age and obtained scores.

However, stress must be evaluated as a risk factor either for professionals or for chronic dental patients and some response measures must be undertaken.

REFERENCES


Скорови. Постои минимална позитивна корелација помеѓу возраста и добиените скорови.

Како и да е, стресот треба да се евалуира како ризичен фактор било за професионалците или за хроничните стоматолошки пациенти, и мора да се преземат некои мерки за негово надминување.

Ключни зборови: стрес, стоматолози, студенти, пациенти.