

## ON PSYCHOSOMATIC PROBLEMS IN DENTISTRY

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### ABSTRACT

In their daily practice dentists frequently have patients showing signs of stress-related oral manifestations in different forms. Stress-related aetiology of oral changes are still not investigated enough, and present a subgroup of psychosomatic diseases which had been recognized in medicine a long time ago. Recognition of such psychological or emotional disturbance needs deep evaluation “per exclusionem”, and is beneficial for both the patient and clinician. Psychological management should be taken into consideration when treating patients with these psychosomatic disorders. Therapeutic approach comprises different forms of psychotherapy and medication as well.

**Keywords:** psychosomatics, stress, dentistry, management

### INTRODUCTION

There are many patients in clinical dentistry who have medically unexplained symptoms. These symptoms are frequently called “Oral Psychosomatic Disorders”. In this context, it becomes important to have some knowledge of a specific field, named as psychosomatics in dentistry.

Psychosomatics is being defined as physical illness, or other condition caused or aggravated by a mental factor, such as internal conflict or stress. In this medical field, symptoms are mainly related to the interaction of mind and body. Frequently, there are misunderstandings about their meaning. Many doctors or general public believe that psychosomatics means some neurotic, imaginative or hysterical symptoms. In the beginning of this text, we must clarify that psychosomatics means a real disorder

provoked by inverse causality model in the etio-pathogenesis, where emotional factors (or stress) are included in the chain of consequences [1]. Shortly, the chain of supposed steps in psychosomatic disorder is such as the following:

<p>Stressor (social, psychological, and physiological factors) → emotional reaction → autonomic nervous system activation → functional symptoms → organic lesion.</p>
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A medical discipline which comprises the treatment of diseases and other conditions that affect the oral cavity, i.e. teeth and gums, especially the repair and extraction of teeth and the insertion of artificial ones is named dentistry.

Psychosomatics in dentistry consequently comprises oral symptoms for which the treating dentists and other medical staff have not found dental or medical explanation. These symptoms are supposed to be the result of emotional or psychological factors, which provoke physiological and functional changes in the oral cavity.

Many dental patients complain of oral symptoms after dental treatment, such as chronic pain or occlusal discomfort, burning mouth syndrome, atypical odontalgia, phantom bite syndrome, oral cenesthopathy, or halitophobia (fear of having bad breath) the cause of which remains undetermined. In contemporary medicine, the understanding of mind-body interactions helps in the clarifying pathophysiology of these symptoms and to the development of some new therapeutic approaches.

In Japan, these problems are named as “medically unexplained oral symptoms” (MUOS) and it was supposed to have an incidence of 5-10% among all dental patients [2].

The aim of this article is to give an overview of more frequent psychosomatic problems in dental practice based on literature cited in PubMed and Google Scholar. Additionally, we will discuss about our own results obtained in the research of stress related conditions in dentistry. Our opinion is that this field is still unknown or misdiagnosed in the general public, and especially in dental practitioners in our country.

## METHODOLOGY

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This research comprises analysis of the articles with this topic published on PubMed and Google Scholar data base. We must specifically highlight that this particular topic is not investigated enough. Using the key words “psychosomatics” and “dentistry”, only few papers are available (less than 80). Additionally, we will discuss our own results of studies related to stress and coping systems in the dental practice, especially in children.

## RESULTS AND DISCUSSION

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In the following we will talk about some more frequently diagnosed conditions in the field of psychosomatics in dentistry. The term psychosomatics is usually used for medically unex-

plained oral symptoms (MUOS). The question about real psychosomatics in dentistry is still open for discussion.

In 1980 Mc. Carthy P.L and Shklar G. [3] have classified the oral psychosomatic disorders into five groups:

### I. Pain related disorders

#### 1. Myofascial pain dysfunction syndrome (MPDS),

##### 2. Atypical facial pain,

##### 3. Atypical odontogenic pain,

##### 4. Phantom pain;

### II. Disorders related to altered oral sensation

#### 1. Burning mouth syndrome,

#### 2. Idiopathic xerostomia,

#### 3. Idiopathic dysgeusia,

#### 4. Glossodynia,

#### 5. Glossopyrosis;

### III. Disorders induced by neurotic habits

#### 1. Dental and periodontal diseases caused by bruxism,

#### 2. Biting of oral mucosa (self-mutilation);

### IV. Autoimmune disorders

#### 1. Oral lichen planus,

#### 2. Recurrent aphthous stomatitis,

#### 3. Psoriasis,

#### 4. Mucous membrane pemphigoid,

#### 5. Erythema multiforme;

### V. Miscellaneous disorders

#### 1. Recurrent herpes labialis,

#### 2. Necrotising ulcerative gingivostomatitis,

#### 3. Chronic periodontal diseases,

#### 4. Cancerphobia.

The most important tool for diagnostic purposes is collecting the patient's detailed history and careful evaluation of all relevant psychosocial, medical, as well as dental anamnestic data in the context of a biopsychosocial model of orofacial disorders.

Phobia or anxiety related to dental intervention is not really psychosomatic disorder, but it is an important reason for indicating some psychological interventions. In our research it has been suggested that some individuals who are fearful or anxious about dental treatment have a constitutional vulnerability to anxiety disorders, as ev-

identified by the presence of multiple fears, generalized anxiety or panic disorders. Concerning the children population, maternal anxiety is considered to be a major factor affecting the behaviour of young children expecting dental intervention. We evaluated 50 children (31 girls and 19 boys), selected by chance in the University Dental Hospital, Skopje. The mean age for girls was 11.4 ( $\pm 2.4$ ) years, and for boys 10.7 ( $\pm 2.6$ ) years. Two psychometric tests are used: General Anxiety Scale and Eysenck Personality Questionnaire.

The study confirms the presence of high anxiety level (evaluated with General Anxiety Scale-GASC) among all children undergoing dental intervention. It was confirmed that there were differences in the anxiety scores between girls and boys, girls having higher scores for anxiety.

Personality characteristics (evaluated with Eysenck Personality Questionnaire-EPQ) showed low psychopathological traits, moderate extraversion and neuroticism, but accentuated insincerity (evaluated with L scale). L scales are lower with increasing age, but P scores are rising with age, which could be related to puberty. We have not found the correlation between personality traits (obtained scores for EPQ) and anxiety, except for the neuroticism which is positively correlated with the level of anxiety.

In the management of dental anxiety, some response measures (psychological support, bio-feedback, and relaxation techniques) are recommended [4].

The ability to adapt to stress and adversity is a central facet of human development. Coping can be defined as a set of cognitive and affective actions that arise in response to a particular disorder. In our research, coping systems used by children to overcome the anxiety and stress are productive and it can be the reason for relatively smaller anxiety and stress scores obtained in the evaluated group. Psychometric instruments applied in the research were Sarason's anxiety questionnaire, Stress-test for children, as well as the A-Cope questionnaire. The main patterns of coping in our sample are: developing self-reliance and optimism; engaging in a demanding activity and avoiding problems [5, 6].

Bruxism is a condition in which patients grind, gnash or clench their teeth. It can be an awake manifestation or more frequently appearing in the night, during sleep. The tooth grinding, is a particularly important activity in the practice, because it provokes breakage of dental res-

torations, additional tooth damage, induction of temporal headache and temporomandibular disorders. Sleep bruxism is considered a sleep-related movement disorder. It is supposed that people who clench or grind their teeth (brux) during sleep have some other sleep disorders, such as snoring and pauses in breathing (sleep apnoea). If the bruxism is mild, it does not require a treatment. In some people, bruxism can be frequent and severe enough to lead to jaw disorders, headaches, damaged teeth and other problems. However, persons are rarely conscious about the problem and ask for help only if some complications arise.

It is assumed that awake bruxism may be related to negative emotions, such as anxiety, stress, anger, frustration or tension. It can also be the result of ineffective coping strategy or a habit during deep concentration. For this reason, it corresponds to psychosomatic entities.

Recently, it was found that disturbances in central neurotransmitter system may be involved in the aetiology of the bruxism. It is hypothesized that the direct and indirect pathways of the basal ganglion, a group of five subcortical nuclei that are involved in the coordination of movements is disturbed in bruxer. The direct output pathway goes from the striatum to the thalamus from where afferent signals project to the cerebral cortex. The indirect pathway, on the other hand, passes by several other nuclei before reaching the thalamus. The imbalance between these two pathways occurs with the disturbances in the dopamine mediated transmission of action potential [7].

Some risk factors are supposed to provoke bruxism such as: stress, frustration, anger or anxiety. Dentist practitioners believed that this condition is more frequent in children and diminished in adulthood. However, many adult patients need some teeth corrections just because bruxism. Furthermore, some personality characteristics like aggressive tendencies, high competitiveness or hyperactivity could also be the risk. As mentioned in some publications, bruxism could be also a side effect of psychotropic medication, especially antidepressants, or be related to smoking, alcohol or caffeine use. Bruxism could be associated with mental disorders, Parkinson's, dementia, gastroesophageal reflux, sleep apnoea or with ADHD [8-11].

Chronic oral pain is maybe the most frequent complain in dentistry. Patients describe this condition like some feeling of burning in the mouth or feeling of odontalgia [12]. It is very well

known that the pain is the more provocative symptom in all medical fields. Such pain pushes the patient to go to doctor/dentist and to find relief and relaxation. From the pathological standpoint it is also well known that orofacial pain is provoked by some dysfunction of the trigeminal system. The trigeminal nerve is responsible for sensation in the area of the face, scalp and mouth. More important is that this nerve has a big input in sensory cortex (more than 40%). Specifically, the sensory region of trigeminal nerve is complex, and covers the cranium, ears, sinuses, nose, pharynx, jaw joint, teeth, jaws, salivary glands, oral mucosa and skin over these regions.

The WHO statistics showed that about 35% of all registered pain in general population belongs to oral cavity pain. In this report it was shown that the prevalence and severity of dental pain are related with lower social class, later birth order, failure at school and attendance at the dentist only when in trouble, where the major predictor of the prevalence and severity of pain was the pattern of dental attendance [13].

However, trigeminal pain is very intensive, with short duration and usually has some organic cause.

Symptoms described as burning feelings or odontalgia are not caused by trigeminal nerve irritation. Many studies have been performed on the relationship between oral pain and psychological factors, but the nature of the relationship still remains unclear. Brainstem is a structure mediating numerous important psycho-emotional processes such as pain, arousal, attention, mood (i.e. depression) and anxiety, as well as defensive and reproductive behaviours. The lack of explication about pathophysiological mechanisms of these pain conditions is the reason for misdiagnoses and poor management [14, 15, 16].

Phantom bite syndrome (PBS) is characterized by a persistent, uncomfortable sensation of occlusion without any evidence of occlusal discrepancy. The other name of this condition is known as occlusal dysesthesia or discomfort. This state can be combined with headache, dizziness, shoulder stiffness, low back pain and fatigue. All of the mentioned symptoms do not have any organic reason, and many doctors believe that there are psychiatric disorders [17, 18, 19].

Bad breath (halitophobia) is frequently the reason for seeking dental intervention. Oral malodor in this case is imperceptible for other people, so it means that patients have some form of delu-

sional or psychosomatic disorder. This condition is referred in Japan as “jikoshu-kyofu” [20]. In some studies, it was reported that for the majority of dental patients who were preoccupied with bad breath the microbiological finding in their oral cavity was negative [21].

Halitophobia differs from the other oral psychosomatic disorders in two major respects. The first is that the main aspect of the patient's suffering is phobia of social relations (antropophobia), rather than abnormal oral sensations. Second, most halitophobic patients are adolescents. Future treatment of these patients will require a new clinical approach that is validated for effectiveness.

Disturbances in oral sensation usually refer to complaining of abnormal sensations (excessive mucus secretion, slimy sensation or feeling a foreign body in the mouth) without any pathological findings in oral cavity. However recent studies suggested asymmetrical pattern of the cerebral blood flow. The condition is also named as oral cenesthopathy [22, 23]. In the DSM-5 it is classified as somatoform disorder. It is estimated that the prevalence is 0.2-1.9% in Japan. In the psychosomatic dentistry clinic in a Japanese dental hospital, around 28% outpatients in 3 years were diagnosed as oral cenesthopathy [24].

We will not discuss about autoimmune related disorders in the oral cavity (oral lichen planus, recurrent aphthous stomatitis, psoriasis, mucous membrane pemphigoid, erythema multiforme, recurrent herpes labialis, necrotizing ulcerative gingivostomatitis, chronic periodontal diseases etc.), because their pathogenesis is complex and not fully understood yet. Additionally, they are pretty rare in everyday practice.

## MANAGEMENT AND POSSIBLE TREATMENT MODALITIES

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People become patients when they present some medical symptoms to the doctor. The prevalence of medically unexplained symptoms ranges from 5–65% in primary care, and to 37–66% in specialty clinics. However, the prevalence is approximate, because it is hard to define what constitutes these symptoms. As we mentioned previously, in the DSM-5, this group of disorders belong to the somatoform group, because there are no diagnostic biomarkers for any other psychiatric diagnosis. In the diagnos-



tics an intensive, deep anamnesis for all important facts in early life, as well as socio-economic state of patient, relationships and family lives are important. It needs too much time and patience, which is a problem in the contemporary lifestyle. The evaluation comprises all available methods in dentistry even fMRI. As we said before, all clinical examinations in this group of patients remain negative. The psychological evaluation is most important.

The current approaches propose to measure stress with some psychometric instruments (Perceived stress scale) and measures of affect (Profile of moods state), measures of stressor exposure (Major life events stress scale) and lastly the stress biomarkers (Cortisol, C-Reactive protein and interleukins). In our practice, we used electrodermal activity as a fast and valuable measure for stress level [25-28].

The commonly used stress biomarkers include:

- Metabolic markers – cholesterol, high-density lipoprotein (HDL) cholesterol, total cholesterol-HDL ratio, albumin, glycosylated hemoglobin;
- Immunological markers – interleukin-6 (IL-6), tumour necrosis factor (TNF- $\alpha$ ), C-reactive protein (CRP), insulin-like growth factor (IGF-1);
- Neuroendocrine markers – cortisol, dehydroepiandrosterone (DHEA), and cortisol / DHEA ratio, adrenaline, noradrenaline, dopamine and aldosterone;
- Other parameters: i.e. arterial tension (systolic/diastolic), heart rate, electrodermal activity, brain spectral characteristics etc.

Recently, it has been shown that chronic stress alters ultrastructure of mitochondria of masticatory muscles in experimental animals. In some studies, anaerobic metabolism was shown increased, as well as the positive findings for oxidative stress. The fragmentation of mitochondria that is observed under chronic stress is due to unbalanced fission. A buccal swab can give enough cells to observe mitochondrial changes and the morphological changes of mitochondria could be used as biomarkers for chronic stress. Buccal swab collection is non-invasive and inexpensive, making ultrastructure changes in mitochondria easy to use for large epidemiological studies. The intensity of ultrastructure integrity

loss can be related to the length of time under stress [29-33].

Many forms of psychotherapy can help these patients. Most frequently, the Cognitive-behavioural therapy, Self-observation, Relaxation training, Hypnotherapy, Biofeedback are used. Sometimes, the medication prescription is inevitable. As medication Antidepressants, Anti-anxiety drugs or even Antipsychotic drugs can be used [34-38]. Our results with biofeedback are very encouraging. For stress diminishing the peripheral biofeedback is extremely useful and has cost-beneficial effects.

## CONCLUSION

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We showed that many manifestations in the oral cavity have a psychological component in their aetiology. Additionally, many psychiatric disorders have an influence upon health of oral tissue. As stress keeps increasing in everyday life, there are increased chances for dental practitioners encountering patients with such disorders. Hence, one should be familiar with such manifestations, and if accounted, should try to manage them with psychiatrists and psychologist whenever needed. This has emphasized the multidimensional work as necessary. In psychosomatic dentistry, not only dental intervention, but also some psychological treatment and even medication are indicated.

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## Резиме

### ЗА ПСИХОСОМАТСКИТЕ ПРОБЛЕМИ ВО СТОМАТОЛОГИЈАТА

Нада Поп-Јорданова<sup>1</sup> и Софија Лолеска<sup>2</sup>

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Во секојдневната практика стоматолозите честопати се среќаваат со пациенти што имаат знаци за орални манифестации поврзани со стрес во најразлични форми. Етиологијата на оралните промени индуцирана од стрес не е доволно истражена и претставува подгрупа на психосоматски растројства што се одамна препознаени во медицината. Препознавањето на ваквите психолошки и емоционални растројства налага длабока евалуација по пат на исклучување и е полезна и за пациентите и за клиничарите. Психолошкото менаџирање треба да се земе предвид кога се лекуваат пациенти со вакви психосоматски растројства. Терапискиот приод подразбира разни форми на психотерапија, но и давање медикаменти.

**Клучни зборови:** психосоматика, стрес, стоматологија, менаџирање