

Psychosomatic Dentistry. A Review

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Abstract

Although dentistry is a profession dedicated to treat somatic disorders of the oral- and orofacial region primarily, there is also a collection of various psychological and pathopsychological conditions dentists should deal with. The most common and widely known phenomenon is dental fear, which may lead to phobic reactions or panic attack in some cases. Further, the oral region appears to be particularly predisposed for functional and somatoform disorders which form another large group of psychosomatic challenges in dentistry. Dental patients counted as risk patient for any psychogenic manifestations in relation with the dental treatment form a significant proportion of the population, and the incidence may increase. Thus, the importance of psychogenic manifestations should not be underestimated, but considered as a rather important and difficult problem of dentistry. Factors unrelated to operative and technological dental skills but contribute to the success of dental treatments, are becoming more and more important.

Keywords: *Dental Fear; Odontophobia; Needle Phobia; Oral Region; Orofacial Pain; Psychosomatic Manifestation; Prevention; Management; Psychosomatic Therapy*

Introduction

Although dentistry is a profession dedicated to treat somatic disorders of the oral- and orofacial region primarily, there is also a collection of various psychological and pathopsychological conditions dentists should deal with [26,30,31]. The most common and widely known phenomena are dental fear and several related manifestations like dental phobic (odontophobic) reactions, needle phobia or panic attack [11,13,14,16,19]. However, the oral region is an area that appears to be particularly predisposed also for a large number of different functional and somatoform psychosomatic disorders [9,29,32,30,33,45]. Therefore, another large group of psychogenic manifestations in dentistry is formed by several oral psychosomatic manifestations [28,30].

Psychological and psychosomatic couplings of mouth and teeth

The rich psychological and psychosomatic couplings of mouth, teeth and other oral structures are rooted in their widespread and psycho-emotionally highly important functions [28,30]. They are important aspects of an individual's facial aesthetics and sexual characteristics [28,30]; play an important role in speech and nonverbal-communication; serve as a primary zone of interaction with the environment [4]; take part in the sexual contact; and act as organs of various senses [25,28,30]. No wonder that tooth loss (or other oral damage) may profoundly affect the psychosocial well-being of patients, even those who are apparently coping well with dentures [3,35]; and complete edentulousness can be a serious life event [10,26,29,33,63]. The oral region is surely tremendously important already in the baby's life [4,28,30] too; as an organ of pleasure, as an organ of contact with the mother as well as an organ of testing, learning, understanding, and social signaling [4].

Accordingly, there is a rich representation of the oral region in the central nervous system [27], and also of great importance is the symbolic value of the mouth teeth and other oral structures [26,28]. Further, it should also be considered that masticatory muscles are highly sensitive to psycho-emotional processes [26,29]. These muscles react earlier, stronger and longer lasting with muscle spasm to psychoemotional stress comparing to other muscles of the body [40]. It is also likely that, increased activity of the facial and masticatory muscles have a special extraordinary role in the attenuation (elimination due to motor activity) of psychoemotional stress [55]. A similar extraordinary role in the attenuation of psychoemotional stress due to autonomic activity (i.e. similar to that of shedding tears) was also expected in relation with the psychoemotional stress induced alterations of saliva secretion [26,27,29].

Neuroanatomical basis of the psychosomatic coupling

The neuroanatomical couplings of the oral/orofacial region are rather peculiar comparing to other parts of the body. In general, those tissues, which are of mesodermic origin in most part of the body, are of ectodermic (ectomesodermic) origin in the orofacial region indicating a strong coupling of the orofacial and the nervous structures [27]. Further, innervation of the orofacial region is originated from the brain stem (instead of spinal cord); which may also form a base of a strong influence of the psycho-emotional functions on the orofacial tissues and their function [27]. It is also obvious that, there is an exceptionally rich representation of the oral region in a large number of various brain structures [27].

Considering neuroanatomical specificities of the orofacial muscles it should be mentioned that the masticatory and facial muscles are highly sensitive muscles having rather small motor units [37,59] and a rather extended representation in the motor cortices comparing to other muscles [58]. It should be also mentioned that motor nervous supplies of the orofacial muscles are conducted by several cranial nerves [39], thus, (in contrast to most other muscles, which are supplied via the spinal cord) motor nervous supplies of masticatory and facial muscles are maintained directly from the brainstem via several cranial nerves. Brainstem is a structure mediating numerous important psychoemotional processes such as pain, arousal, attention, mood (i.e. depression) and anxiety as well as defensive and reproductive behaviors [20,27]. No wonder that, the facial and masticatory muscles are highly sensitive to psycho-emotional processes [36,37,40], increase of their tone (muscle tension) occurs rather frequently [36,37,40], and their reaction (increase of tension) to stress is stronger and longer lasting comparing to other muscles of the body [40].

There are also rather complex and unique neuroanatomical couplings of the salivary secretion [8,27] as well as the various oral sensory functions like the taste sense, the oral thermal and tactile sense, and the oral proprioceptive/sensorimotor function [25,27]. Although all details are not fully understood yet, there is no doubt about that both salivary secretion and the various oral sensory functions are strongly influenced by psychological factors [8,25,27,32] likely because of the rather unique neuroanatomical couplings of their regulation [8,25,27].

The oral proprioceptive/sensorimotor function beside others also includes the proprioceptive sensation of the periodontal tissues. This periodontal sensation serves as basis of the occlusal perception, which is responsible for the recognition of appearing foreign bodies and the consistence of the morsel appearing between the occluding teeth during chewing. In relation with the occlusal perception it should be mentioned that, there is a really great variation of the occlusal sensory perceptive and discriminative abilities among patients. This phenomenon is of great clinical importance, because these abilities in certain patients can be so highly sensitive that it may lead to occlusal dysesthesia [7,27,62]. Especially if the occlusal relief was changed and the patient should adapt to a new relief because of tooth loss, new denture, orthodontic treatment etc. [18,27].

Dental fear

Problems relating to dental fear primarily occur in the childhood, adolescence or early adulthood (before the age of 20) [43] and most patients suffering from dental fear experience at least partial remission at times [43]. The most common reasons of dental fear are bad

(painful or fearful) dental experiences, lack of control over the social situation in the dental chair, lack of control over personal emotional reactions, feeling of powerlessness during treatment and social learning processes with a negative image of dentists [30,48]. A large proportion of these patients are aware of having been exposed to fear-provoking dental treatment in the past [12,15,49,60]. In some cases, an unconscious psychological trauma may also be a cause of dental fear reactions [30].

Prevention (or at least a reduction) of dental fear should be integrated into dental treatment of every patients regularly [26,29,41,44]. The most important method for both prevention and treatment of dental fear is communication [26,29]. Great care should be taken to avoid fear producing terms or phrases describing the dental treatment or the dental instruments [26,29] as well as to make only those promises that can be backed [16,26,29]. It is also important to give the perception of being in control to the patient [16,26,29]. For such purposes, the “tell-show-do” technique [1] may be used, which includes describing in simple terms what is about to occur (“tell”); than allowing the patient to see, feel, explore and manipulate the tools or instruments (“show”); and than the starting of the procedure (“do”) [1,2].

Methods for distraction to refocus patient’s attention away from the potentially painful/fearful stimulus or procedure may also be used, advantageously [2,16,26,29]. Offering of brief brakes during treatment is the simplest method for such purposes [2]. Another simple forms of distraction include jiggling of the patients’ cheek or asking them to hold their legs up in the air during a critical procedure (i.e. administrating of local anesthesia, or making impression) [16]. Music expressing positive emotions [61] may also be used for distraction during the dental treatment [16,65]. Audiovisual methods like video games [2], two-dimensional DVD-glasses and three-dimensional virtual reality technology [5] may also be used advantageously. Mind-body therapies including hypnosis, self-hypnosis, photo-acoustic stimulation, relaxation and several biofeedback methods are also suitable for distraction during the dental treatment [26,29,24,34].

In some cases, certain pharmacological methods including premedication with anxiolytics relative analgesia (inhalation of nitrous oxide - oxygen mixture), conscious sedation (intravenously administered benzodiazepines) and occasionally general anaesthesia as well as several psychotherapeutic approaches may also be used to manage dental fear [26,29].

Patients with dental fear, including patients having phobic reactions (odontophobia, dental phobia), are usually agreeable to using medications and/or several psychological techniques to reduce fear during dental treatment [28]. Patients with panic disorder and patients fearing injections (needle phobia) are exceptions, however, because they usually recognize their indisposition (usually simple collapse or panic attack) as a result of a supposed life-threatening allergic reaction to injected anesthetics, which develops as a rigid, uncompromising behavior [28]. The differential diagnosis of a real allergy to local anesthetics, panic disorder, or needle phobia is extremely important. True allergy can cause life-threatening anaphylactic shock. In such patients, the use of local anesthetics should be strictly avoided [28]. In the case of panic disorder, some data in the literature suggest that the immune reaction regulated by IgE can be increased, which means a possible higher risk of anaphylactic shock [56]. Because of this, great care should be exercised if using local anesthetics with these patients. For needle-phobic patients, the contraindication for the use of local anesthetics (if any) is only psychological.

Psychosomatic manifestations

There are various oral psychosomatic manifestations [28,30] caused by either acute psychological stress conditions (existential trauma, workplace problems, relationship problems with the sexual partner etc.) or by chronic conditions like depression, neuroses, chronic anxiety, death anxiety, schizophrenic or paranoid reactions (etc.). These manifestations more frequently appear in women, usually in the second half of life, although they can appear in children or in young adults as well [28,30]. Because of the multiple psychological couplings and importance of the mouth and teeth, many of the psychopathological mechanisms related to sexuality, aggressivity, autoaggressivity, or death anxiety can lead to orofacial manifestations, especially if these important psychological and symbolic functions are damaged by tooth or mouth disorders [28].

The most frequent symptoms are atypical facial pain, burning mouth syndrome, myofascial pain, temporomandibular dysfunction, bruxism and other parafunctions, gagging, psychogenic denture intolerance, psychogenic taste disorders, certain recurrent oral ulcerations or inflammations, some oral allergic reactions, psychogenic occlusal problems, tic, psychogenic salivation problems, and oral discomfort, but any other symptoms mimicking somatic symptoms of jaws, mouth and teeth may appear. The symptoms may appear singly or in combination [28,30]. Since the appearing psychogenic symptoms may mimic a great variety of (most of) somatic symptoms of jaws, mouth and teeth, a clear-cut diagnosis and proper differential diagnosis could be rather difficult [26,29,33,52]; even if a history of symptoms that are inconsistent with the physical findings and a history of a precipitating life event after which the symptom first appeared are hallmarks of such psychogenic manifestations [22,38,46,47,51].

The most important tool for diagnostic purposes is collecting the patient's detailed history and careful evaluation of all relevant psychosocial, medical, and dental anamnestic data in the context of a biopsychosocial model of orofacial disorders [22,26,29,33,38]. To assess whether a symptom is of psychogenic origin or not, the next five characteristics of psychogenic symptoms [47] may also be considered: (1) well-marked divergence between symptoms and clinical findings, (2) unsuccessful previous somatic treatments, (3) fluctuation of symptoms, (4) conspicuous emotional involvement of the patient in the dental problem, and (5) the presumable relationship between the symptoms and the psychosocial history [47]. Symptoms that meet at least four of the above five criteria are very likely to be of psychogenic origin [26,29,33].

Cornerstones of prevention are screening of risk patients, proper treatment planning and proper communication with the patient [26,29]. A good interpersonal relationship, mutual trust and the exchange of information between the dentist and the patient as well as making treatment-related decisions based on mutuality are also crucial [26,29,33]. Treatment carried out without pain (proper anaesthesia) as well as high quality preparative- and technical dental skills are also cornerstones of prevention [3-5]. Great care should be taken to acquiesce to the wishes of the patient regarding his or her treatment. It may occur that the patient's treatment related wishes may not harmonize with the reality and/or the possibilities of the dental treatment [26,29,33]. It is a matter of considerable significance that the dentist carefully weighs the option of non-treatment in such cases.

In relation with treatment possibilities of orofacial psychosomatic manifestations it should be considered that, majority of dental patients with psychogenic symptoms refuse to accept psychological background of their symptoms [26,29,54,57], and instead of psychiatrists or psychotherapists, first they visit dentist and insist on the somatic origin of their symptoms [26,29,54]. Therefore, a simple referral to psychiatrist and/or psychotherapist would not solve the problem in most cases. Consequently, an initial psychosomatic dental therapy is needed prior to definitive therapy, which is a scope of dental profession's duty [26,29,50,52]. The most important goals of an initial dental psychosomatic therapy are avoidance of further useless invasive dental treatment [6,17,26,29,53] and motivation of patients to participate in a definitive psychosomatic therapy [26,29]. The definitive psychosomatic therapy is the highest level care of patients with oral/orofacial psychogenic symptoms that utilizes any available dental, medical and psychotherapeutical treatment possibilities in an evidence based manner [26,29]. In contrast to the initial dental psychosomatic therapy the definitive psychosomatic therapy is clearly not a scope of every dentist's duties [26,29]. The definitive psychosomatic therapy should be carried out by specialized dental professionals [21,23,26,29,42] as members of a specialized psychosomatic team including experienced dentists and other medical and psychological/psychotherapeutical professionals [26,29]. This is because in most cases close collaboration with medical professionals (especially with psychiatrists and neurologists) and with psychologists/psychotherapists is clearly needed [21,26,29,42,57,64,66].

In dentistry, psychogenic symptoms appear frequently in relation with orthodontic and especially in relation with prosthodontic treatments (psychogenic denture intolerance) [9,26,29], since orthodontic treatments and dentures have a great impact on the aesthetic, sexual, nutritional, phonetic, and, consequently, symbolic function of the teeth [28]. In addition, orthodontic and prosthodontic treatments can be rather uncomfortable, extremely expensive, and time-consuming, which can cause the patient to develop strong emotions toward the dentist (and/or assistant). These factors may induce pressure, aggression, and complication of the dentist-patient-assistant relationship [28].

Conclusion

Taking together all above data it is no wonder that, dental fear patients form a significant proportion of the population, and the orofacial region is affected by psychosomatic manifestations much more frequently comparing to most other parts of the body [26,28]. Although dentistry is a profession dedicated to treat somatic disorders of the oral- and orofacial region primarily, dentist should be able to manage dental fear patients properly, and there is also a collection of various psychological and pathopsychological conditions dentists should deal with [26,30,31]. Factors unrelated to the operative- and technological dental skills, but contribute to the success of dental treatments, are becoming more and more important in dentistry [26,33].

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Conflict of Interest

There is no financial interest or any conflict of interest to declare.

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