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“From Brain to Dentistry”: Oral Psychosomatic Disorders-A Review

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Abstract

Chronic pain, occlusal discomfort, burning mouth syndrome, atypical odontalgia, unexplained oral symptoms/syndromes (MUOS), phantom bite syndrome, oral cenesthopathy and halitophobia are the common oral symptoms seen in dentistry. These symptoms are thought to be of mental or emotional origin. These kinds of psychosomatic manifestations are significantly high in dental patients. Dentists should be able to recognise various psychological and pathopsychological conditions and develop new and interdisciplinary approaches to dental management. In this review we are highlighting depression, anxiety and stress and its effect on oral cavity and management of oral psychosomatic disorders.

Keywords: Psychosomatic Disorders; Depression; Anxiety; Stress; Medically Unexplained Oral Symptoms (MUOS); Somatic Symptom and Related Disorders

Abbreviation

MMPI: Minnesota Multiphasic Personality Inventory; ZSDS: Zung Self-Rating Depression Scale; DASS-42: The Depression Anxiety Stress Scale; BDI: Beck Depression Inventory

Introduction

The mouth is the complex and delicate structure of the head and other parts of the body. Mouth is the only part of the body which contains so much symbolism, performs many functions. According to Shore, the bridge between the oral cavity and the rest of the body, is the mandible. The four compensating parts of the stomatognathic system are the teeth, the periodontium, the temporomandibular joint, and the neuromuscular system. When the balance between these structures is in complete harmony, resulting in physiologic aging when this equilibrium is upset, pathologic conditions may develop [1].

Mood disorders

These are the clinical conditions associated with loss of self-control and experience of great distress. There can be elevated mood conditions like flight of ideas, decreased sleep, and grandiose ideas. Decreased mood leads to experience of a loss of energy, loss of interest, guilt feeling, loss of concentration, loss of appetite and suicidal tendency. Other symptoms include change in activity level, speech, cognitive abilities, vegetative functions such as sleep, appetite, sexual activity, and other biological rhythms.

These mood disorders leads to impaired interpersonal, social, and occupational functioning [2].

However, Dentist and the physician neither of them completely realized the relation which the condition of the mouth bears to the total wellbeing of the patient.

Psychosomatic disorders

The word “Psychosomatic” was coined by German psychiatrist Heinroth in 1818. “Psychosomatic medicine” was introduced in 1922 by Felix Deutsch. The word psyche represents mind and soma means body [3].

Definition of Psychosomatic disorder is “disorders characterized by physiological changes that originate, at least in part, from emotional factors”. The oral cavity is related directly or symbolically to the major human instincts and passions and is linked to potential physical expressions of psychological origin [4,5].

The concept of psychological medicine was included in the first edition of “Diagnostic and Statically Manual, Mental Disorder” (DSM-1) in 1952 as “Psychosomatic Disorders” and in DSM-II, published in 1968, as Psycho Physiological Autonomic and Visceral Disorder.

In 1980 this is renamed as “Psychological Factor Affecting the Physical Conditions” by DSM III [6,7].

DSM-5 defines psychosomatic as “somatic symptom disorder” because there is one or more somatic symptoms that are distressing or result in significant disruption in daily life and excessive thoughts, feelings, or behaviors related to the symptoms or related health like (a) excessive and persistent thoughts about the seriousness of the symptoms, (b) persistently high level of anxiety about health or symptoms, or (c) excessive time and energy spent on these symptoms or health concerns.

Symptomatic state should be persistent more than 6 months or may not be continuously present. The specifiers may be: with prominent pain, persistent, and severity specifiers or mild, moderate, and severe [8].

Oral psychosomatic disorders

“From Brain to Dentistry” was the theme originated by Japanese Society of psychosomatic dentistry in 2015 [9]. There are several classification regarding Oral psychosomatic disorders. Mc. Carthy P.L and Shklar. G. classified the oral psychosomatic disorders in 1980 (Table 1) [9].

| | | |
|----|--|--|
| 1. | Oral psychosomatic diseases | Lichen planus Aphthous ulcers Stomatitis Areata Migrans and glossitis |
| 2. | Oral diseases in which psychologic elements may assume some etiologic part | Erythema Multiformae Mucous membrane pemphigoid. Chronic periodontal disease. |
| 3. | Oral infection in which emotional stress serves as a predisposing factor | Recurrent herpes labialis Necrotizing gingivitis |
| 4. | Oral diseases induced by neurotic habits | Leukoplakia Biting of oral mucosa Physical/mechanical irritation. Dental/periodontaldisease produced by bruxism. Oromucosal pain Glossodynia Dysgeusia. Neurotic oral symptoms. |

Table 1: Classification of the oral psychosomatic disorders.

Classification for Psychosomatic Disorders with clinical presentation and dental practice (Table 2) [10,11].

| Sl. No | Psychosomatic disorders | Clinical Presentation |
|------------|---|---|
| I | Pain related disorders | |
| 1 | Myofascial pain dysfunction syndrome | Masticatory muscle spasm, TMJ pain |
| 2 | Atypical facial pain | Idiopathic facial pain |
| 3 | Atypical odontogenic pain | Tooth achePhantom tooth pain, phantom bite syndrome and intraoral |
| 4 | Phantom pain | stump pain |
| II | Disorders related to altered oral sensation | |
| 1 | Burning mouth syndrome | Burning sensation on oral mucosa |
| 2 | Idiopathic xerostomia | Dryness of oral mucosa |
| 3 | Idiopathic dysgeusia | Abnormal taste sensation |
| 4 | Glossodynia | Painful tongue |
| 5 | Glossopyrosis | Burning tongue |
| III | Disorders induced by neurotic habits | |
| 1 | Dental and periodontal diseases caused by bruxism | Abfractions, Hypersensitivity, Periodontal distraction, |
| 2 | Biting of oral mucosa (self mutilation) | Temporo-mandibular dysfunction Torn oral mucosa |
| IV | Autoimmune disorders | |
| 1 | Oral lichen planus | Burning sensation on oral mucosa with interlacing white keratotic lines |
| 2 | Recurrent aphthous stomatitis | Ulcers on oral mucosa |
| 3 | Psoriasis | Geographic tongue, fissured tongue, temporomandibular joint pain, |
| 4 | | ulcers on oral mucosa |
| 5 | Mucous membrane pemphigoid | Blisters on oral mucosa |
| | Erythema multiforme | Ulcers on oral mucosa |
| V | Disorder caused by altered perception of dentofacial form and function | |
| 1 | Body dysmorphic disorder | “Phantom” dysmorphia |
| VI | Miscellaneous disorders | |
| 1 | Recurrent herpes labialis | Blisters on oral mucosa |
| 2 | Necrotizing ulcerative gingivostomatitis | Ulcers on gingiva |
| 3 | Chronic periodontal diseases | Tooth mobility, loss of attachment, bone loss |
| 4 | Cancerophobia | Burning sensation on oral mucosa |
| 5 | Delusional halitosis | False offensive mouth odour |

Table 2

In Dentistry some patients often complain of certain physical symptoms without identifiable etiologies. Such symptoms are known as medically unexplained oral symptoms [MUOS] (Table 3) [9].

Oral symptoms may be the first or only manifestation of a mental health problem like facial pain, preoccupation with dentures, oral dysaesthesia, atypical facial pain, excessive palatal erosion or self-inflicted injury [12]. About 30% of dental patients show psychopathologic symptoms; this often goes undetected and hence untreated [13].

| | |
|----|---|
| 1. | Burning Mouth Syndrome (BMS) |
| 2. | Atypical Odontalgia (AO) |
| 3. | Oral Cenesthopathy (Oral Dysesthesia) |
| 4. | Halitophobia (Olfactory reference syndrome) |
| 5. | Occlusal discomfort (Phantom Bite Syndrome) |
| 6. | Odontophobia (Dental Phobia) |

Table 3: Medically Unexplained Oral Symptoms/Syndromes (MUOS).

Facial anatomy is complicated compare to other parts of the body:

- **Nerves:** Nerves in orofacial region is originated from the brain stem rather than spinal cord. Hence that leads to the strong influence of the psycho-emotional functions of the facial tissues.
- **Masticatory and facial muscles:** Are the highly sensitive muscles with small motor units which shows extended representation in the motor cortices comparing to other muscles.
- **Brainstem:** Which mediates psychoemotional processes like pain, arousal, depression, anxiety and attention, as well as defensive and reproductive behaviours.
- **Salivary secretion:** Various sensory functions of oral cavity like taste sense, thermal and tactile sense, and proprioceptive/sensorimotor functions are strongly influenced by psychological factors. These are mediated by complex and unique neuroanatomical couplings of saliva.
- **Periodontal tissues:** Occlusal perceptions like recognition of foreign bodies between the occluding teeth during chewing is based on proprioceptive sensation of the periodontium [14].

Depression and dentistry

- Dental treatment is preferable deferred until depression is under control.
- Patients on Tricyclic Antidepressants, use of Acetaminophen can inhibit the metabolism of tricyclics.
- Patients on MAOIs (Monoamine Oxidase Inhibitors) are at risk from General Anaesthesia due to prolonged respiratory depression may result.
- MAOIs interacts with CNS depressants like opioids, phenothiazines etc may precipitate coma.
- MAOIs interacts with ephedrine and cocaine leads to hypertension in the patients, hence not to be used during dental procedures.
- MAOIs is safer in relation to Epinephrine in Local Anesthesia.
- Tricyclic Antidepressants and MAOIs drugs can cause postural hypotension, these patients should not be stood immediately upright from dental chair.
- Dry mouth, altered taste sensation are the common side effects of Tricyclic Antidepressants and Lithium.
- Atypical facial pain, burning mouth syndrome, TMJ Dysfunction syndrome, Halitosis, Dry mouth, Delusional symptoms like fluid, slime or powder coming into the mouth are the common complaints of depression patients during dental visits [15].

Anxiety

Anxiety in dental patients is defined as, the feeling of tension associated with dental treatment and is not necessarily connected to external stimuli” [16].

65% of patients report some level of fear of dental treatment. Younger patients are commonly affected than older patients. Facial arthromyalgia, dry mouth, lip chewing, bruxism and cancer phobia are the dental manifestations of chronically anxious people [15].

Patients fear for: Effects includes:

- Noise and vibration of the drill-56% 64%-Muscle tension
- The sight of injection needle-47% 59%-Faster heartbeat
- Sitting at the dental chair- 42% 37%-accelerated breathing
- 32%-sweating
- 28%- stomach cramps [15].

Psychiatric and pain rating scales/questionnaire

To measure the behaviour and psychiatric symptoms to support the clinical diagnosis there are different psychiatric scales and questionnaires. These scales are self-rating scales completed by the patient or observer rating by the clinician.

The most common forms are: 1) ‘Case finding’ instruments, 2) Mood check list, 3) Personality scales, 4) Life event scales, 5) Illness behaviour and 6) Pain [3].

Several studies are conducted in relation to psychosomatic disorders and oral manifestations.

Oral Lichen planus (OLP)

In 1961, Altman and Perry conducted a study on of 197 patients with LP, which revealed that 10% were aware of a precipitating stressful incident at the onset of their LP. Andreasen pointed out in 1968 that patients with LP were found to be in conditions of stress, anxiety, and emotional changes.

Other psychiatric tests includes, Hamilton Depression Scale which was demonstrated on OLP patients shows higher depression and Anxiety score. According to McCartan study on 50 patients with OLP shows anxiety was prevalent in 50% of the cases. Colella, *et al.* used “General Health Questionnaire,” “Hamilton Anxiety Scale,” “Melancholia scale in one of the study in 1993 [17].

Temporomandibular Disorders (TMD)

According to Meldolesi, *et al.* TMD patients scored higher than healthy controls on the depression, hypochondriasis, and hysteria scales of MMPI [18].

Chronic pain

Turner and Romano conducted a study to test the validity of the ZSDS, BDI, and MMPI (Minnesota Multiphasic Personality Inventory) against the diagnosis of major depression on the basis of the DSM-III criteria in chronic pain patients. ZSDS and BDI showed good sensitivity and specificity and were comparable in detecting major depression [19].

Glossodynia

Eli, *et al.* conducted a study in 1994, where 56 glossodynia patient’s psychopathologic profiles were evaluated with a SCL-90 questionnaire. In this data, glossodynia patients showed relatively high psychopathologic profiles, especially on the scales of somatization and depression [20].

Salivary flow rate

According to Russ and Ackerman in 1987 proposed that diminished salivary flow rate in depressive illness may be more closely related to the appetite disturbances commonly associated with depression [21].

Burning mouth disorders (BMS)

Depression, anxiety, subjective oral dryness, age, medication, taste disturbances, intake of L-thyroxines, illness, and stimulated salivary flow rate associated with BMS according to the study conducted by Bergdahl and Bergdahl in 1999 [22].

Recurrent Aphthous Ulcers (RAS):

Suwarna Dangore-Khasbage, *et al.* evaluated the prevalence of RAS, BMS, and OLP in psychiatric patients, they found that the prevalence of RAS, BMS, and OLP was 19.33%, 20.66% and 5.3%, respectively, in all psychiatric patients [23].

Periodontal diseases

Stress, distress and coping behaviours are the important factors leads to periodontal diseases suggested by Dean (1945) and Schulger (1949). Other factors like oral hygiene, bruxism, drug abuse, smoking, diet can change the periodontal status of the person [24].

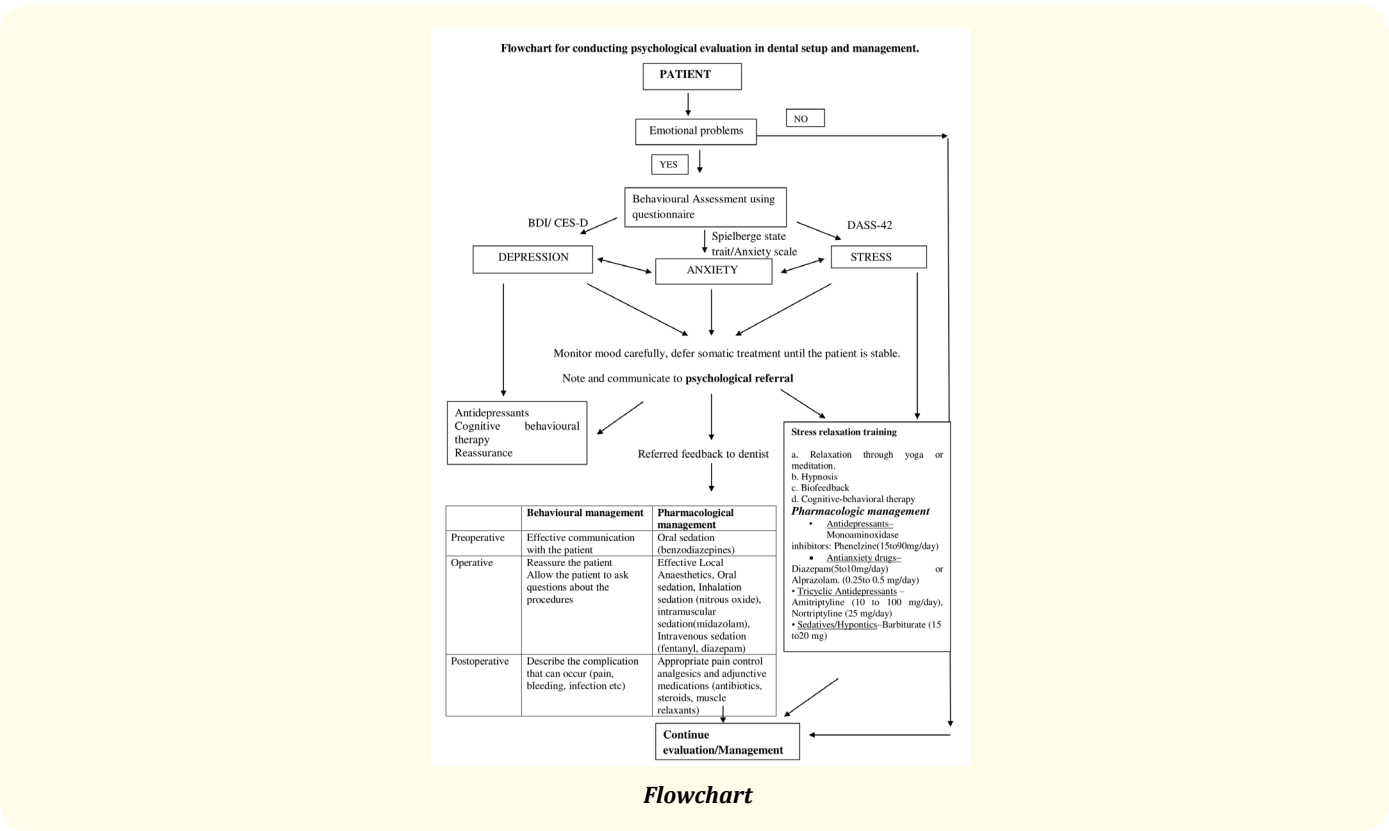
Evaluate the patient’s problem and propose a treatment plan:

This requires, at the beginning,

1. Collecting the patient’s detailed history and careful evaluation.
2. To assess psychogenic disorders, 5 five characteristics of psychogenic symptoms may also be considered.(a) well-marked difference between symptoms and clinical findings, (b) unsuccessful previous somatic treatments, (c) fluctuation of symptoms, (d) conspicuous emotional involvement of the patient in the dental problem, and (e) the presumable relationship between the symptoms and the psychosocial history Symptoms that meet at least four of the above five criteria are very likely to be of psychogenic origin [14].
3. Patients expectations about past and future dental treatment.
4. **Questionnaires:** These are the questions regarding patients problems like sleep disturbances, mood, appetite, weight gain or loss, quality of life and the consequences of the disease. These helps to achieve more accurate solutions for the patients problems.
5. Establishment of good dentist- patient exchange.
6. Communication skills of the dentist, knowledge about neuroleptics and antidepressant medications and identification of the psychosomatic diseases and management is essential.
7. **The therapeutic management:** Includes the resolution of the symptom and the patient’s personal development [17,25].

Main psychosomatic treatment is psychopharmacological one with SSRIs (Selective Serotonin Reuptake Inhibitors), SNRI (Serotonin-Noradrenaline Reuptake Inhibitor), SDAs (Serotonin-Dopamine antagonists) etc. And supportive psychotherapies are applied.

Flowchart for conducting psychological evaluation in dental setup and management [2,26,27].



Conclusion

Psychosomatic disorders needs an interdisciplinary approach using social, psychological and behavioural management. Oral psychosomatic disorders in patients presenting to dental practice needs an early identification and referral to psychiatrists. Medical, dental and psychiatric unit collaboration is needed to serve the needs of these patients.

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