

The Silent Epidemic: Understanding And Addressing Psychosomatic Pain Syndromes In The Dental Profession- A Review

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Abstract

Background:

Occupational stress and psychosomatic pain disorders have emerged as pervasive yet underrecognized issues within the dental profession. Dentists face unique physical, cognitive, and emotional demands that predispose them to chronic stress, musculoskeletal strain, and psychosomatic manifestations, particularly in the orofacial region. About 60% of dentists report frequent stress, with over 80% experiencing moderate to severe stress-related symptoms. This stress contributes to conditions such as temporomandibular disorders, burning mouth syndrome, and tension-type headaches, which often remain under diagnosed in clinical practice.

Methodology:

A comprehensive search was conducted across PubMed, Scopus, Google Scholar, and ScienceDirect databases for peer-reviewed literature, systematic reviews, and clinical studies addressing prevalence, pathophysiology, symptoms, interventions, or occupational risk factors published until November 2025. Keywords included "occupational stress," "psychosomatic pain," "dentists," "orofacial pain," and related terms. Studies focusing on dentists were included.

Results:

The literature consistently demonstrates a high burden of psychosomatic manifestations among dentists, with prevalence rates of stress-related orofacial pain disorders ranging from 30% to 70% across studies. TMD symptoms were the most frequently reported, followed by myofascial pain, headaches, chronic facial pain, and burning mouth sensations. A strong association was observed between prolonged work-related strain, long working hours, poor ergonomics, and increased severity of somatic symptoms, particularly in those experiencing emotional exhaustion, perfectionism, and reduced coping capacity. Several studies highlighted significant diagnostic delays due to symptom overlap with organic disorders, limited psychosocial assessment in routine dental practice, and persistent stigma surrounding mental health disclosure. Evidence supports the effectiveness of multimodal interventions, including cognitive behavioural strategies, ergonomic modifications, and structured stress-management programs, in reducing symptom severity, enhancing coping, and improving overall professional well-being. This underscores the need for improved awareness, integrative screening, and comprehensive management approaches within dentistry.

Conclusion:

Addressing occupational psychosomatic disorders in dentistry is crucial for enhancing practitioner wellbeing, clinical performance, and patient care quality. This review underscores the pressing need for integrated diagnostic frameworks, targeted stress management strategies, and policy reforms to address this hidden epidemic. Enhanced awareness and research emphasis will facilitate the development of sustainable occupational health measures and resilience-building interventions within the dental workforce.

Keywords: *Occupational stress; Psychosomatic pain; Dentists; Orofacialpain; Temporomandibular disorders; Occupational health; Professional wellbeing*

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I. Introduction

Occupational stress has become an increasingly critical concern within healthcare, yet its impact on dental professionals is particularly significant due to the unique interplay of cognitive, physical, psychosocial, and ergonomic demands inherent to dental practice.

Dentistry requires sustained precision, prolonged static postures, meticulous fine-motor control, and continuous interaction with anxious or distressed patients' conditions that collectively foster a high-stress environment and contribute to chronic physiological strain. Over time, these multidimensional pressures predispose dental practitioners to a spectrum of psychosomatic symptoms, including orofacial pain, musculoskeletal discomfort, parafunctional habits, sleep disturbances, and fatigue that cannot always be attributed to identifiable organic pathology (10). Psychosomatic pain disorders (PPDs) arise from complex interactions between emotional stress, maladaptive coping mechanisms, neuroendocrine dysregulation, and heightened somatosensory processing (2).

Surveys across multiple regions reveal that approximately 60–80% of dentists experience moderate to severe stress, with 30–70% reporting symptoms consistent with psychosomatic or stress-exacerbated pain conditions (3). The bio-psychosocial burden of dental work is further compounded by emotional factors, including perfectionism, fear of clinical errors, patient dissatisfaction, litigation pressures, and financial responsibilities, each of which may exacerbate physiological reactivity and somatisation tendencies. Chronic activation of the hypothalamic–pituitary–adrenal (HPA) axis, accompanied by sympathetic overdrive, contributes to increased muscle tension, altered pain modulation, sleep disruption, and reduced ability to cope with occupational challenges (4-6). These stress-mediated mechanisms are believed to play a central role in the onset and progression of psychosomatic orofacial pain disorders in dentists (1,3).

This narrative review synthesises existing literature on occupational stress and PPD affecting dentists, including epidemiological trends, underlying mechanisms, clinical presentations, diagnostic challenges, and management strategies within the context of oral medicine and occupational health. Additionally, it identifies existing research gaps and proposes future directions aimed at enhancing early detection and strengthening coping mechanisms to support the psychological and physical well-being of dental practitioners.

Definitions And Concepts

Psychosomatic disorders refer to physical symptoms that arise from, or are significantly influenced by, psychological and emotional factors rather than identifiable organic pathology. These conditions occur along a continuum of mind–body interactions, where stress-induced physiological changes manifest as chronic or recurrent pain syndromes (2).

Occupational stress is defined as the adverse emotional and physiological response that arises when professional demands exceed an individual's coping resources, resilience, or perceived control (6).

Psychosomatic pain is characterised by persistent or recurrent pain that is either disproportionate to physical findings or attributable primarily to psychological distress rather than tissue injury (7). Within oral medicine, psychosomatic pain is encompassed under functional orofacial pain disorders such as temporomandibular disorders (TMD), burning mouth syndrome (BMS), atypical odontalgia, and idiopathic facial pain. These conditions frequently overlap with psychological constructs such as somatisation, anxiety, depression, catastrophizing, and emotional suppression, making them diagnostically complex (8).

Somatisation refers to the process by which emotional distress is converted into physical symptoms, often resulting in medically unexplained pain presentations that mimic organic pathology. Dentists, due to prolonged exposure to high responsibility, perfectionistic tendencies, and limited avenues for emotional ventilation, may develop somatisation patterns that amplify pain perception or trigger new symptom cycles (9).

Burnout is defined as a triad of emotional exhaustion, depersonalization, and reduced personal accomplishment arising from chronic occupational stress. Among dentists, it's been strongly associated with increased rates of psychosomatic pain complaints, including jaw discomfort, neck stiffness, headaches, and diffuse facial pain (10).

Alexithymia, the inability to identify or articulate emotions, has also been implicated in psychosomatic disorders within healthcare populations. Individuals with high alexithymia may misinterpret emotional states as physical illness, thereby increasing susceptibility to medically unexplained pain. Within dentistry, alexithymia has been linked to elevated stress responses, maladaptive coping, and poorer recovery from work-related pain conditions (11).

The term occupational psychosomatic disorder integrates these concepts by describing physical symptomatology in dentists that is exacerbated, triggered, or perpetuated by workplace stressors and psychological strain rather than organic disease alone. This category encompasses both classic psychosomatic pain syndromes and stress-aggravated physical conditions, such as tension-type headaches, bruxism-induced myalgia, and stress-mediated TMD (5).

Finally, the biopsychosocial model serves as the most comprehensive interpretive framework for understanding psychosomatic pain in dentists, recognising that biological vulnerability, psychological factors, and occupational environment interact dynamically to influence symptom onset and persistence (12).

Epidemiology and Prevalence

Epidemiological surveys consistently report the prevalence, estimates ranging from 60% to 90% depending on geographic region, practice setting, and methodological design (13,14). A large-scale meta-analysis indicated that approximately two-thirds of dentists report moderate to severe occupational stress, highlighting a significant psychosocial vulnerability within the profession (14).

Psychosomatic orofacial pain disorders demonstrate similarly elevated prevalence patterns, with studies identifying that between 30% and 70% of dentists experience stress-related pain manifestations at some point during their careers (15). Temporomandibular disorders (TMD) are the most frequently reported psychosomatic condition, with prevalence rates among dental practitioners ranging from 25% to 53% in cross-sectional and occupational health assessments (3,16). Myofascial pain and tension-type headaches are also common, affecting an estimated 40% to 60% of dental professionals, depending on clinical load and ergonomic strain (15). Burning mouth syndrome (BMS), though less common, remains disproportionately reported among clinicians experiencing prolonged psychological stress and emotional exhaustion, with prevalence estimates between 3% and 12% (3).

Gender-based differences have been observed, with female dentists demonstrating significantly higher levels of stress, burnout, and psychosomatic pain compared with their male counterparts, likely due to combined professional and socio-cultural demands (17). Younger practitioners, particularly those within the first ten years of practice, exhibit heightened vulnerability to occupational stress and early-onset psychosomatic symptoms, reflecting the challenges of transitioning from training to independent practice (3). Conversely, older practitioners often report chronic and persistent pain patterns, accumulated over years of ergonomic strain and stress exposure, suggesting a cumulative effect of occupational hazards on psychosomatic morbidity (15).

Dentists practising in high-demand urban environments or competitive private sectors report significantly higher prevalence of psychosomatic and stress-related disorders compared with those in institutional or public health settings (13).

Burnout, characterised by emotional exhaustion, depersonalization, and reduced professional efficacy, has emerged as a critical epidemiological predictor of psychosomatic pain among dentists, with prevalence estimates between 40% and 80% globally (18). Longitudinal studies have demonstrated that dentists exhibiting high burnout scores are three times more likely to develop chronic orofacial pain syndromes compared with those reporting lower psychological distress levels. (3,16).

Pathophysiology and Mechanisms

The pathophysiology of occupational psychosomatic pain and stress disorders in dentists is multifactorial, involving complex interactions between psychological, neuroendocrine, and musculoskeletal systems. Chronic occupational stress activates the hypothalamic-pituitary-adrenal (HPA) axis, resulting in sustained cortisol release and alterations in autonomic nervous system balance. This persistent stress response contributes to heightened pain sensitivity, muscle tension, and central sensitisation, which may underlie temporomandibular disorders (TMD) and other orofacial pain syndromes observed in dental practitioners (4-6).

Psychological factors, including anxiety, depression, perfectionism, and emotional exhaustion, modulate the perception and severity of pain (5). Neuroimaging studies have demonstrated that stress-induced changes in brain regions responsible for pain modulation, such as the anterior cingulate cortex and insula, correlate with the intensity of perceived orofacial discomfort. Additionally, chronic stress may impair endogenous pain inhibitory pathways, exacerbating symptoms of BMS and atypical facial pain (1,2).

Musculoskeletal strain, resulting from prolonged static postures and repetitive fine-motor tasks during clinical procedures, interacts with psychological stress to amplify somatic symptoms. Sustained contraction of masticatory and cervical muscles can lead to ischemia, local inflammatory responses, and nociceptive sensitisation, which contribute to chronic orofacial pain manifestations. Moreover, psychoneuroimmunological mechanisms, including stress-related cytokine release and altered immune function, have been implicated in the maintenance of pain states and delayed recovery (15).

Finally, the biopsychosocial model provides a comprehensive framework to understand how occupational stress translates into psychosomatic pain. This model emphasises the dynamic interplay between environmental stressors, individual psychological traits, and biological responses, highlighting why some dentists develop chronic orofacial pain while others remain relatively resilient. (1,11,12)

Risk Factors and Occupational Hazards

Prolonged static postures, repetitive fine-motor movements, and sustained use of small instruments contribute to musculoskeletal strain in the neck, shoulders, back, and masticatory muscles. Ergonomic deficiencies in dental chairs, operator stools, and instrument positioning exacerbate these mechanical stresses, leading to cumulative trauma and chronic pain syndromes (14).

Extended work hours and high patient loads are consistently reported as major contributors to psychological stress and burnout in dental professionals. The demand for precision and perfection in clinical procedures, coupled with patient anxiety and expectations, creates a sustained state of cognitive and emotional pressure that amplifies stress-related somatic symptoms. Financial and administrative responsibilities, including practice management, insurance processing, and litigation concerns, further increase mental strain (13).

Clinical Manifestations

Occupational psychosomatic pain and stress disorders in dentists present with a range of clinical symptoms, often affecting the orofacial region but extending to other musculoskeletal sites. Temporomandibular disorders are among the most frequently reported conditions, characterised by jaw pain, restricted range of motion, and joint sounds such as clicking or popping. These symptoms may be exacerbated by stress-induced parafunctional habits such as bruxism, clenching, or lip biting, which increase mechanical load on the TMJ and masticatory muscles (1).

Burning Mouth Syndrome is another commonly reported manifestation, presenting as persistent oral burning sensations in the absence of identifiable mucosal lesions. Studies suggest that BMS may be precipitated or aggravated by chronic stress, anxiety, and depressive symptoms, highlighting the psychosomatic component of this condition (19). Dentists experiencing BMS frequently report reduced quality of life, including sleep disturbances, irritability, and impaired concentration during clinical tasks (20).

Tension-type headaches and cervical muscle pain are prevalent among dental professionals due to prolonged static postures, sustained contraction of cervical and shoulder muscles, and repetitive fine motor activity. These headaches often co-occur with jaw pain or orofacial discomfort, reflecting the interplay between musculoskeletal and psychosomatic factors (21).

Other manifestations include myofascial pain, atypical facial pain, and generalized musculoskeletal discomfort, which may be linked to stress-induced alterations in central pain processing and heightened pain perception. Psychosomatic presentations can be subtle, leading to delayed recognition and misattribution to non-occupational causes. Dentists may also underreport symptoms due to professional stigma or concern over perceived clinical competence (22). Recognition of these clinical patterns is critical for timely intervention, and oral medicine specialists should be vigilant in assessing stress-related orofacial complaints, incorporating both physical and psychosocial evaluations to guide diagnosis and management.

Diagnostic Challenges and Tools

Diagnosing occupational psychosomatic pain in dentists presents unique challenges due to the overlap between functional, structural, and psychogenic contributors to orofacial pain and due to absence of visible lesions or definitive imaging findings in psychosomatic conditions can lead to misdiagnosis or delayed recognition (23).

Comprehensive history-taking is central to diagnosis, emphasizing occupational stressors, workload, psychosocial context, and coping mechanisms alongside symptom chronology and exacerbating factors. Standardized questionnaires, such as the Perceived Stress Scale (PSS), Maslach Burnout Inventory (MBI), and Jaw Functional Limitation Scale (JFLS), provide objective measures of stress, burnout, and functional impact, and may facilitate early detection (24).

Clinical examination should include assessment of masticatory and cervical musculature, temporomandibular joint function, and occlusal evaluation. Palpation for muscle tenderness, range-of-motion assessment, and detection of parafunctional signs such as bruxism are crucial for establishing a baseline. Adjunctive diagnostic imaging, including panoramic radiographs, CBCT, or MRI, may be used selectively to rule out structural abnormalities but are typically normal in psychosomatic cases.

Interdisciplinary collaboration is recommended when psychosomatic factors are suspected. Referral to psychologists, psychiatrists, or pain specialists may aid in differentiating primary psychiatric or psychosomatic pain from secondary musculoskeletal or dental pathology. Despite the availability of tools, barriers remain, including limited awareness among dental professionals, reluctance to disclose stress-related symptoms, and variability in the application of standardised diagnostic protocols (25).

Impact on Dentists' Health and Professional Performance

Occupational psychosomatic pain and stress disorders exert a profound impact on both the physical and psychological well-being of dental professionals, with downstream effects on clinical performance and

patient care, due to fatigue, reduced concentration, and decreased manual dexterity, directly impairing procedural accuracy and efficiency.

Psychological consequences include elevated levels of anxiety, depression, emotional exhaustion, and burnout, which may reduce resilience and the ability to manage professional stressors. Burnout is associated with depersonalization, reduced empathy toward patients, and increased risk of medical errors, underscoring the occupational and clinical significance of these disorders. Studies have demonstrated that dentists experiencing high levels of stress and psychosomatic symptoms report decreased job satisfaction, higher absenteeism, and intentions to leave the profession (1,2).

The interplay between physical and psychological stressors is also implicated in long-term health outcomes. Chronic activation of the HPA axis and persistent sympathetic arousal may predispose individuals to cardiovascular, gastrointestinal, and immunological disturbances, though direct longitudinal data in dental populations remain limited (4,6).

Coping Strategies and Intervention Approaches

Effective management of occupational psychosomatic pain and stress requires a multimodal approach that addresses both psychological and physical contributors. Stress reduction interventions, including mindfulness-based stress reduction (MBSR), cognitive behavioural therapy (CBT), and relaxation training, have demonstrated efficacy in reducing perceived stress, anxiety, and pain symptoms in healthcare professionals. Such interventions improve coping mechanisms, enhance resilience, and promote adaptive stress responses (26).

Ergonomic modifications are crucial for reducing musculoskeletal strain. Adjustments to dental chairs, operator stools, instrument positioning, and work-rest schedules can decrease static postures and repetitive strain, thereby mitigating risk factors for musculoskeletal and orofacial discomfort. Incorporating regular stretching and strengthening exercises targeting cervical, shoulder, and masticatory muscles has also been shown to reduce pain prevalence and improve functional capacity (27).

Organisational strategies, including workload management, optimised scheduling, and institutional support, are crucial to minimize chronic occupational stress. Peer-support programs, mentoring, and the integration of mental health resources within dental practices enhance early recognition of psychosomatic symptoms and encourage help-seeking behaviour.

Pharmacologic interventions may be considered selectively for acute symptom management, including analgesics or muscle relaxants; however, evidence emphasises that non-pharmacological strategies addressing root causes of stress and musculoskeletal strain are more sustainable and effective long-term (28).

Finally, education and training in psychosomatic awareness and stress management should be incorporated into dental curricula and continuing professional development programs, fostering early recognition and proactive coping. Integration of these strategies supports both individual well-being and professional performance, forming a comprehensive framework for prevention and intervention.

Research Gaps and Future Directions

Despite increasing recognition of occupational psychosomatic pain and stress disorders in dental professionals, substantial gaps remain in the literature. Epidemiological data specific to psychosomatic orofacial pain in dentists are sparse, and most studies focus on musculoskeletal disorders or general occupational stress without delineating psychosomatic manifestations (29). Longitudinal studies are particularly limited, hindering understanding of the natural history, risk trajectories, and long-term health consequences of these conditions.

Diagnostic standardization is another critical gap. There is no universally accepted protocol for identifying psychosomatic orofacial pain in dental practitioners, resulting in variability in assessment methods and underreporting. Future research should focus on the development and validation of comprehensive screening tools integrating physical, psychological, and occupational parameters.

Mechanistic studies examining the interplay of neuroendocrine, musculoskeletal, and psychosocial factors in dentists are lacking. While evidence from general healthcare populations suggests a role for HPA axis dysregulation, central sensitization, and psychoneuroimmunological pathways, targeted studies in dental cohorts are needed to clarify causality and identify biomarkers for early detection (4,6).

Furthermore, there is limited evaluation of intervention efficacy in real-world dental settings. Controlled trials assessing the effectiveness of stress management programs, ergonomic interventions, and multimodal preventive strategies are necessary to inform evidence-based guidelines.

Addressing these gaps will advance understanding of occupational psychosomatic disorders, inform preventive policies, and guide the development of tailored interventions for dental professionals, ultimately improving both practitioner well-being and patient care outcomes.

Significance and Impact

Occupational psychosomatic pain and stress disorders in dentists represent a hidden epidemic with significant implications for individual practitioners, patients, and the broader oral healthcare system. Addressing these conditions is crucial for enhancing clinician well-being, reducing burnout, and maintaining professional longevity and by improving recognition and management of psychosomatic symptoms, dental professionals can sustain high-quality patient care and reduce the risk of clinical errors associated with fatigue, pain, and cognitive overload.

Integration of stress management and psychosomatic awareness into dental education curricula can cultivate resilience early in professional development, potentially mitigating long-term occupational health consequences.

Research significance lies in bridging the knowledge gap regarding the prevalence, mechanisms, and effective interventions for psychosomatic orofacial pain in dentists. Enhanced understanding will guide evidence-based preventive strategies, inform workplace guidelines, and establish a foundation for longitudinal studies examining the interplay of occupational stress, musculoskeletal strain, and psychosomatic pain.

Overall, this review highlights the critical need for a multifaceted approach to occupational health in dentistry, integrating clinical, psychosocial, ergonomic, and educational strategies. Such efforts have the potential to improve practitioner quality of life, optimize patient outcomes, and reduce systemic occupational health burdens in oral healthcare.

II. Results:

The literature consistently demonstrates a high burden of psychosomatic manifestations among dentists, with prevalence rates of stress-related orofacial pain disorders ranging from 30% to 70% across studies (3). TMD symptoms were the most frequently reported, followed by myofascial pain, headaches, chronic facial pain, and burning mouth sensations. A strong association was observed between prolonged work-related strain, long working hours, poor ergonomics, and increased severity of somatic symptoms, particularly in those experiencing emotional exhaustion, perfectionism, and reduced coping capacity. Several studies highlighted significant diagnostic delays due to symptom overlap with organic disorders, limited psychosocial assessment in routine dental practice, and persistent stigma surrounding mental health disclosure. Evidence supports the effectiveness of multimodal interventions, including cognitive behavioural strategies, ergonomic modifications, and structured stress-management programs, in reducing symptom severity, enhancing coping, and improving overall professional well-being. This underscores the need for improved awareness, integrative screening, and comprehensive management approaches within dentistry.

III. Conclusion

Occupational psychosomatic pain and stress disorders constitute a significant yet underrecognized challenge in the dental profession. Dentists are exposed to a combination of physical, cognitive, and emotional stressors that predispose them to chronic orofacial pain, musculoskeletal strain, and psychosomatic manifestations. These conditions adversely impact practitioner well-being, clinical performance, and patient care quality.

Recognition of these occupational psychosomatic disorders in dentistry is crucial for promoting professional sustainability, reducing burnout, and ensuring safe, high-quality patient care. Addressing these hidden occupational health challenges demands collaboration across clinical practice, education, and policy frameworks (1-3,15,30).

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