IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 24, Issue 11 Ser. 2 (November. 2025), PP 58-62
www.iosrjournals.org

The Impact Of Mental Stress On The Oral Cavity: A Comprehensive Review

Kashish Kukreja[1], Arun KalyanV[1], Swaathi Ravindran[2]*,
Magesh Karuppur Thiagarajan[2], Sathya Kumar Mayilvakanam[2],
Aravindhan Ravi[2], Sivachandran Annamalai[2]

[1]*(CRI, SRM Kattankulathur Dental CollegeAndHospital, Faculty Of Medicine And Health Sciences, Kattankulathur, Chengalpattu-603203, Tamil Nadu, India)*

[2]*(Department Of Oral Pathology And Microbiology, SRM Kattankulathur Dental CollegeAndHospital, Faculty Of Medicine And Health Sciences, Kattankulathur, Chengalpattu-603203, Tamil Nadu, India)*

Abstract:
Individuals with psychological distress are at significantly higher risk of arthritis, cardiovascular disease, and chronic obstructive pulmonary disease. However, theinfluence of psychological distress on oral health remains a concern. Mental stress has a significant effect on both emotional and physical health, often manifesting in the oral cavity. Long-term psychological stress triggers the body's hormonal and immune responses. This raises cortisol levels, lowers immune system efficiency, and raises inflammation. These physiological changes can harm oral health by making the tissues in the mouth more likely to get infected. People who are under a lot of stress for a long time are more likely to get periodontal disease, dental caries, xerostomia, bruxism, recurrent aphthous ulcers, and oral lichen planus. Stress can also change how people live their daily lives. For example, people who are stressed out often skip brushing their teeth, eat sugary snacks, or smoke and drink alcohol, all of which are bad for their oral health. Recent studies indicate that prolonged stress may indirectly facilitate the onset of oral cancer by chronically suppressing the immune system. This research examines the complex relationships between dental and mental health, including the psychosocial problems encountered by those with mental health disorders in maintaining oral hygiene, such as stigma, limited access to care, and financial constraints. It also discusses how psychiatric conditions influence oral health, with regard to issues such as dry mouth, gum disease, and tooth decay, and how poor oral health can aggravate mental well-being. Healthcare providers can help patients protect their oral and overall health by recognizing the signs of psychological stress in dental practice and encouraging dentists, doctors, and mental health professionals to work together.

Key Words:*Psychological stress, Oral health, Immune response, Xerostomia, Hormones, Bruxism*

Date of Submission: 01-11-2025 Date of Acceptance: 10-11-2025

I. Introduction

The mouth actively reacts to both physical and mental factors. Both acute and chronic mental stress can cause a number of biological and behavioral changes that affects the oral cavity in many ways. The relationship between mental and oral health is mostly interconnected and reciprocal;change in one affects the other. More and more evidence supports this two-way relationship, which shows how important it is to think about oral health in relation to overall mental health. [1]. People with mental health issues like depression, anxiety, and serious mental illness are more likely to have poor oral hygiene because they are less motivated, have trouble thinking clearly, and face barriers like stigma and limited access to care [2]. Stress over a long period of time causes the body to make more hormones like cortisol and adrenaline, which weakens the immune system's ability to fight infections and causes more inflammation in the mouth [3]. These physiological changes make the gums and oral mucosa more likely to get infected by bacteria and slow down tissue healing, which makes common oral diseases like periodontal disease and oral ulcers more likely to happen[4,5]. Mental stress affects oral health not only through direct biological effects, but also through indirect pathways that affect daily habits and lifestyle choices. Stress can slow down the flow of saliva and change its composition, which makes it less effective at protecting against acid attacks and helps bacteria grow faster [6]. Behavioral consequences are also common; people who are stressed may stop brushing or flossing regularly, eat more sugary foods, or smoke and drink more alcohol, all of which make oral health problems worse. People who are going through a lot of psychological stress often have problems like bruxism (grinding their teeth), dry mouth, and mouth ulcers that keep coming back [7]. Comprehending this association is essential for clinicians, researchers, and public health professionals striving to enhance oral and overall health outcomes [8].

II. Mechanisms Of Stress-Induced Oral Disease

Neuroendocrine-Immune Axis

Under chronic stress,the hypothalamic-pituitary-adrenal (HPA) axis is activated, which releases cortisol and other stress hormones [3]. High levels of cortisol make the person immunocompromised, lower the activity of natural killer cells, and change the reactionthat the body shows towards inflammation. This leads to weakening of the mouth'sdefense system, making tissues more likely to get affected and taking longer to heal [9].

Allostatic Load and Inflammation

Biological stress caused due to chronic stress, also known as "allostatic load", causes physiological changes that affect oral health. Changes in levels of secondary messengers such as cytokines, oxidative stress and changes in saliva composition lead to periodontal and mucosal diseases[4].

III. Behavioral Pathways

Psychological distress frequently promotes negative health behaviors:

- Increased tobacco and alcohol use
- Neglect of regular oral hygiene
- Consumption of high-sugar foods
- Decreased utilization of preventive dental care [8,9]

These actions make the biological weaknesses caused by stress-related changes in the neuroendocrine system even worse.

IV. Clinical Manifestations In The Oral Cavity

Dental Caries and Gingival Disease

Many studies highlight that higher incidence of dental caries and periodontal diseases are noted in people who are mentally stressed compared to people without higher stress levels. A recent cross-sectional studly indicated that individuals with increased scores on the General Health Questionnaire (GHQ-12) showed significantly higher decayed, missing, and filled teeth (DMFT) indices, alongside plaque and gingival index scores [9]. These relationships continued even after controlling for age, sex, socioeconomic status, and oral habits, thereby confirming stress as an independent risk factor [10,11].

Periodontal disease

Chronic stress impacts gingival health via various mechanisms:

- Immune dysfunction results in microbial colonisation.
- More pro-inflammatory cytokines are released, and cellular repair mechanisms are less effective, which leads to more tissue breakdown [12].
- Research, including Kloostra et al., consistently associates elevated stress scores with increased clinical attachment loss and pocket depth, which are characteristic indicators of periodontitis [13,14,15].

Bruxism and Disorders of the Temporomandibular Joint

Bruxism, which is the habitual grinding and clenching of teeth, is a sign of stress. Bruxism may manifest during wakefulness or sleep, frequently observed in states of anxiety or psychological distress [16]. Chronic bruxism is linked to dental wear and sensitivity, fractures and cracks, myofascial pain, and temporomandibular joint (TMJ) disorders.

Dry Mouth (Xerostomia)

Stress significantly alters salivary gland function, frequently leading to a subjective sensation of dry mouth (xerostomia) and diminished salivary flow [17]. Saliva is very important for buffering acids, controlling bacteria in the mouth, and adding minerals back to enamel. Less flow makes itmore likely to get cavities, mucosal lesions, bad breath, and infections [4].

Oral mucosal disorders

Aphthous ulcers: People who are under chronic stress are more likely to get recurrent aphthous stomatitis [18].
Lichen Planus: This immune-mediated disorder is exacerbated by psychological distress and has been predominantly observed in women, possibly due to hormonal interactions [19].
Herpetic lesions are caused by stress, which is a known factor for recurrent herpes simplex virus [20].

Stress and Oral Cancer

Even though the evidence is still coming in, a number of studies suggest that chronic stress may indirectly lead to the development of oral cancer by making the immune system weaker and encouraging risky behaviors like smoking, drinking, or not taking care of your teeth [21].

V. Social And Demographic Factors

Gender and Age

Older adults frequently encounter increased stress levels, likely attributable to diminished adaptive capacity and the existence of various health issues. Women also seem to be more likely to get oral mucosal conditions that are caused by stress. This could be because of changes in hormones or genetic factors that are already there. [4,9].

Socioeconomic Status

People with low incomes have higher rates of psychological stress.Receiving appropriate and timely dental care is often delayed or avoided by individuals from low income groups which can make the effects of psychological stress on their oral health even worse.

Other Elements

Smoking and theoccurrence of other systemic conditions of the body interlink with increased rates of psychological stress and degraded oral health [22]. Cultural stigmas with respect to mental health can lead to care-seeking behaviors and causes marked impact on both mental and oral health outcomes [23].

VI. Behavioral And Psychosocial Impacts

Long term stress causes negligence in day to day routines such as irregular brushing habits and flossing at home and mostly leads to delayed dental appointments [5].People with chronic stress undergo a behavioral change in the pattern of eating which is often referred to as stress eating which includes sugary snack,fat rich foods which increases the risk of getting affected[5].

Self-Rated Oral Health

Several studies indicatethat individuals having moderate to severe psychological stress are more likely to assess their oral health as "poor". These people tend to report increased symptoms of pain, discomfort, and loss of function [2].

Psychological Screening

People who are at high risk can be identified by routine screening for stress and anxiety in dental and primary health care centers. Individualscreening ofthe patients should be professionally qualified to identify the signs of psychological stress and refer patients for mental health therapy if needed [24].

Multidisciplinary Care

Team work from qualified professionals such as dentist,doctors and mental health specialists provides better results by delivering coordinated care which is necessary for effective prevention and management of stress-related oral conditions. This also permits for behavioral modifications, changes in lifestyle, medication therapy whenevernecessary, and regular follow-ups.

Patient Education

Educating the patients about the relation between mental stress and oral health plays a vital role in the society. Patients can be trained to take active participation in maintaining their oral health by behavior modification, stress and anger management.

VII. Research Methods: Tools For Measuring Stress And Oral Health

Certain methods are commonly used for analyzing and evaluating stress such as :

1.Perceived Stress Scale (PSS)[4]

2. General Health Questionnaire (GHQ-12)[9]

3. Clinical Indices:

- DMFT (Decayed, Missing, Filled Teeth) for dental caries
- Plaque and Gingival Index for soft tissue evaluation [9]

4. Longitudinal studies

Multi-Systemic Effects: Beyond the Mouth

There exists an indirect link between oral and systemic health. Cardiovascular, metabolic and neurodegenerative disorders are the commonly occurringdisorders that are connected with oral health, oral pathogens in relation with stress induced immune-suppression may travel into the bloodstream, leading to various systemic manifestations.

VIII. Strategies For Prevention And Management

1. Stress management
- Cognitive-behavioral therapy
- Relaxation techniques [25]

2. Dietary Counselling: educating the people to decrease the intake of
- food with high sugar content
- acidic foods
- fat –rich foods

3.Regular professional care

4.Targeted Interventions: night guards for bruxism, salivary analogues for xerostomia, and tailored hygiene practices for individuals [26].

IX. Limitations Of Present Research

Current studies analyzing the interlink between mental stress and oral health are cross-sectional, leading to difficulty in providing a definitive cause-and-effect relationships. Depending on self-reported measures of stress and oral symptoms may lead to reporting bias, thereby reducing the accuracy and reliability of the study's findings. Secondary to this, are the differences in culture, geography, and healthcare systems, which cause different views on stress and oral diseases among different populations. To eliminate these limitations, upcoming research should focus more on longitudinal and mechanistic studies which could help in creating causal pathways and evaluate the efficacy of integrated, multidisciplinary interventions designed to manage stress-related oral conditions.

X. Future Directions

Upcoming studies into the impact of mental stress on the oral cavity should focus on providing precise biological mechanisms and pathophysiology linking psychological stress to the onset of oral diseases. Biological markers should be identified by more in-depth molecular and genetic research—such as hormonal changes (salivary cortisol), inflammatory cytokines, that can validate stress-induced changes in the oral cavity.

XI. Conclusion

Mental health plays a vital role in maintaining a balanced oral and systemic health. Psychological distress leads to various oral manifestations such as dental caries, periodontal diseases, bruxism, etc. Proper identification of aperson at risk using standard tools for measuring stress levels is very important. Most of the standard research published relies on self-reported views of patient on how much they are stressed rather than using standard biological markers. This leads to difficulty in finding the interlink between stress and oral health. The most vital role of healthcare professionals here is to educate people on the interlink between mental stress and oral health, its causes, mechanism and prevention methodologies. Ultimately, promoting mental well-being is not only good for systemic health but also a key factor in maintaining a balanced and optimal oral health.

References

[1]. Tiwari T, Kelly A, Randall CL, Tranby E, Franstve-Hawley J. Association Between Mental Health And Oral Health Status And Care Utilization. Front Oral Health. 2022;2:732882.

[2]. Jagadeeswara Rao Sukhabogi, Dolar Doshi, Hangirga Sai Sandeep Kumar, Sanju Sundeep Bhargeva, Katukuri Sai Kumar, Relationship Between Psychological Distress With Self-Rated Oral Health And Dental Caries Status Among Dental Patients,Clinical Epidemiology And Global Health,2023, 23:101395.

[3]. Cay M, Ucar C, Senol D, Cevirgen F, Ozbag D, Altay Z, Yildiz S. Effect Of Increase In Cortisol Level Due To Stress In Healthy Young Individuals On Dynamic And Static Balance Scores. North Clin Istanb. 2018;5(4):295-301.

[4]. Hensel Abby L. J. , Nicholson Kathryn , Anderson Kelly K. , Gomaa Noha Biopsychosocial Factors In Oral And Systemic Diseases: A Scoping Review, Frontiers In Oral Health, 2024;5

[5]. Z K, Siluvai S, Kanakavelan K, Agnes L, Kp I, G K. Mental And Oral Health: A Dual Frontier In Healthcare Integration And Prevention. Cureus ;16(12):E76264.

[6]. Paudel D, Uehara O, Giri S, Yoshida K, Morikawa T, Kitagawa T, Matsuoka H, Miura H, Toyofuku A, Kuramitsu Y, Ohta T, Kobayashi M, Abiko Y. Effect Of Psychological Stress On The Oral-Gut Microbiota And The Potential Oral-Gut-Brain Axis. Jpn Dent Sci Rev. 2022 ;58:365-375.

[7]. Pavlou IA, Spandidos DA, Zoumpourlis V, Papakosta VK. Neurobiology Of Bruxism: The Impact Of Stress (Review). Biomed Rep. 2024 ; 20(4):59.

[8]. Boitsaniuk, S., Levkiv, M., Ostrovskyi, P. The Impact Of Stress On Periodontal Health: A Biomarker-Based Review Of Current Evidence. Igmin Res, 2025; 3(2):097-103.
[9]. Asiri, A., Nazir, M.A., Alsharief, M. Et Al. Effect Of Psychological Distress On Oral Health: A Cross-Sectional Study. BMC Oral Health , 2024;1508.
[10]. Bin Hassan SA, Kumar L, Verma A, Mittal P, Yadav A, Al Malwi AA, Sindi AS, Yassin SM, Shafi S, Morsy MSM, Mattoo K. Evaluation Of Perceived Stress And Its Association With Dental Caries In 290 Undergraduate Medical Students. Med Sci Monit. 2024 ; 30:E946528.
[11]. Adel MI, Karawia I. Stress And Dental Caries Among Dental Students At Pharos University In Alexandria. BMC Oral Health. 2025; 25(1):1412.
[12]. Adi Idris, Sumaira Z. Hasnain, Lu Z. Huat, David Koh,Human Diseases, Immunity And The Oral Microbiota—Insights Gained From Metagenomic Studies,Oral Science International, 2017; 14(2):27-32.
[13]. Micaele M. L. Castro, Railson De O. Ferreira,Nathalia C. F. Fagundes,Anna P. C. P. S. C. Almeida,Lucianne C. Maia,Rafael R. Lima. Association Between Psychological Stress And Periodontitis: A Systematic Review. Eur J Dent 2020; 14(01): 171-179.
[14]. Goyal S, Gupta G, Thomas B, Bhat KM, Bhat GS. Stress And Periodontal Disease: The Link And Logic!! ,Ind Psychiatry J. 2013; 22(1):4-11.
[15]. Kloostra, P.W., Eber, R.M. And Inglehart, M.R. , Anxiety, Stress, Depression, And Patients' Responses To Periodontal Treatment:Periodontists' Knowledge And Professional Behavior. Journal Of Periodontology,2007 ; 78: 64-71.
[16]. Afridi YM . Correlation Between Perceived Stress And Bruxism In Students. Dentistry, 2008; 8: 512.
[17]. Bulthuis MS, Jan Jager DH, Brand HS. Relationship Among Perceived Stress, Xerostomia, And Salivary Flow Rate In Patients Visiting A Saliva Clinic. Clin Oral Investig. 2018 ;22(9):3121-3127.
[18]. Gallo Cde B, Mimura MA, Sugaya NN. Psychological Stress And Recurrent Aphthous Stomatitis. Clinics (Sao Paulo). 2009;64(7):645-8.
[19]. Sandhu SV, Sandhu JS, Bansal H, Dua V. Oral Lichen Planus And Stress: An Appraisal. Contemp Clin Dent. 2014 ;5(3):352-6.
[20]. Henrietta L Logan, Susan Lutgendorf, Andrew Hartwig, Jeff Lilly, Stanton L Berberich,Immune, Stress, And Mood Markers Related To Recurrent Oral Herpes Out Breaks, Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, And Endodontology, 1998; 86(1):48-54.
[21]. Luo, S., Long, H., Lou, F. Et Al. Chronic Restraint Stress Promotes Oral Squamous Cell Carcinoma Development By Inhibiting ALDH3A1 Via Stress Response Hormone. BMC Oral Health , 2024;43.
[22]. Armencia AO, Nicolau A, Bamboi I, Toader B, Rapis A, Panaite T, Argatu D, Balcos C. Associations Between Smoking, Stress, Quality Of Life, And Oral Health Among Dental Students In Romania: A Cross-Sectional Study. Medicina (Kaunas). 2025 ; 61(8):1394.
[23]. Sawma, Toni &Hallit, Souheil&Jaber, Jad&Younis, Chloe &El Khoury-Malhame, Myriam. Cultural Stigma, Psychological Distress And Help-Seeking: Moderating Role Of Self-Esteem And Self-Stigma. 2024.
[24]. Hudson, J. How Mental Health Affects Oral Health. BDJ Student , 2021; 28:21–23.
[25]. Cao R, Lai J, Fu X, Qiu P, Chen J, Liu W. Association Between Psychological Stress, Anxiety And Oral Health Status Among College Students During The Omicron Wave: A Cross-Sectional Study. BMC Oral Health. 2023 ;23(1):470.
[26]. Hans ErlingSkallevold, Nabin Rokaya, Dinesh Rokaya, Importance Of Oral Health In Mental Health Disorders: An Updated Review, Journal Of Oral Biology And Craniofacial Research,2023;13:544-552.