

## REVIEW ARTICLE

### STRESS AND PERIODONTAL DISEASE: A REVIEW

Rushil Shah<sup>1</sup>, Aditi Kumbhalwar<sup>2</sup>, Komal Vyas<sup>3</sup>, Chintan Raval<sup>4</sup>, Rushi Kothari<sup>5</sup>, Maitri Jinwala<sup>6</sup>

<sup>1</sup>B.D.S, Ahmedabad Dental College & Hospital, <sup>2</sup>B.D.S, V.S.P.M DCRC, Nagpur, <sup>3</sup>B.D.S., College of Dental Science and Research Centre, Ahmedabad, <sup>4</sup>B.D.S., Karnavati School of Dentistry, Ahmedabad, <sup>5</sup>B.D.S., SDM Dental College, Karnataka, <sup>6</sup>B.D.S., Vaidik Dental College & Research Centre, Diu-Daman

#### ABSTRACT:

Stress is a form of despondency which has been clearly conspicuous in the current era of economic and social issues. It has been an explicit constituent in the etiology and perhaps is responsible for a consequential rise in the already existent periodontal disease. Stress has been directly implicated in compromising the immune system of the body, resulting into a detained healing of the impaired periodontium. Stress, therefore warrants for an important risk factor associated with almost all possible periodontal diseases. The basic goal of the paper is to associate stress with the variegated prevalent periodontal disease.

Key Words: Stress, periodontal disease, periodontitis

Corresponding author: Dr. Rushil Shah, B.D.S, Ahmedabad Dental College & Hospital, Gujarat,  
Email: rushil1206@gmail.com

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#### INTRODUCTION:

Stress, usually psychological stress, is associated with the requirement surpasses one's capacity to adapt<sup>[1]</sup> occurs when an individual perceives that environmental demands tax or exceed his or her adaptive capacity. However, in broader terms, it is designated as inimical riposte to an unfavorable encounter. Accurately, it is a reaction involving physiological & psychological elements, which degrade the errands of an individual and is usually shunned away by the involved individual.<sup>[2]</sup>

Periodontal Diseases, have been proposed as a term and classified in a variety of ways over the periods of several decades.<sup>[3]</sup> At times, it was looked at either it is plaque induced or non- plaque induced. It has also been looked in the form of being acute or chronic. Nevertheless, it is currently apparent to be a group of diseases associated with the oral as well as the systemic health of the individuals. Amongst the risk factors analogous with periodontal diseases, oral and general habits and social elements like stress play an extremely vital role.<sup>[4]</sup>

Contemporarily, stress has been designated as a strong risk factor for a periodontal disease.<sup>[2]</sup> Stress has been affiliated with a significant decline in a colossal number of cytokines and their subsequent expression. Various cytokines which includes interleukins 1 and 8 along

with the tumour necrosis factor are instrumental in elevating the phagocytes at the site of injury along with enhancement of epithelial cells and fibroblasts. Since an elevation in stress could cause a significant decline in the cytokine population, they may have an adverse effect on the inflammatory process, thus hindering the wound healing. This when associated in oral condition, will affect the healing of the periodontal conditions.<sup>[5]</sup> However studies have shown that those patients who subject to surmount through stress have a relatively improved oral healing and a significant decline in already established diseases, as compared to those subjects who could not cope to stress.<sup>[6-7]</sup>

There are 3 particular conditions associated with the periodontium that is severely affected by stress.

- A) Stress and ANUG
- B) Stress and Aggressive Periodontitis
- C) Stress and Herpes Virus

A) **Stress and Acute Necrotizing Ulcerative Gingivitis:** Acute necrotizing ulcerative gingivitis has been commonly associated with a lot of pre-disposing factors which include smoking, stress, immune-compromised conditions and poor oral hygiene. The basic consequence of stress and depression is the compromised resistance of the

periodontium and is usually considered opportunistic by growing colonies of bacteria.<sup>[8]</sup> Stress is responsible for modifying the host response by causing a considerable elevation in the epinephrine and non-epinephrine levels which causes a significant decline in the flow of saliva and impaired gingival blood flow. Opportunistic bacteria like *Prevotella intermedia* and other spirochetes are expedited by the impaired conditions leading to acute necrotizing ulcerative gingivitis. This theory is supported by a statistical study demonstrating how common it is for the students in the university to have such outbreaks of acute necrotizing ulcerative gingivitis when an important exam is close.<sup>[9]</sup>

**B) Stress and Aggressive Periodontitis:** Very clearly, stress along with other psychological factors have been implicated as a risk factor for Aggressive Periodontitis.<sup>[10]</sup> About 2000 people were made a part of a case control study which demonstrated that those subjects who were suffering from aggressive periodontitis were more distressed as compared to subjects suffering from chronic periodontitis.<sup>[11]</sup> People suffering from aggressive periodontitis were subjected to a psychological evaluation which demonstrated that certain patients had outbreaks of diseases at diffused locations owing to the elevated stress levels at the time.<sup>[12]</sup>

**C) Stress on latent herpes viruses:** Herpes, especially herpes simplex infections, are usually incriminated as an emanation of various oral traumatic operations. Herpes virus have been found to be latent and affect human body as and when the person is immune-compromised. Whenever the immunity of the subject is compromised especially during organ transplant procedures, the herpes virus gets re-activated. It could have an austere effect, sometimes even fatal. Stress has been subjected to reduce the immunity of the individuals. Several studies have supported the hypothesis that herpes zoster is triggered by some sort of stress.<sup>[13-14]</sup> A finding has suggested that depression observed in the elderly may also be responsible for depriving specific type of immune system of the body which particularly results into oral herpes infection.<sup>[15]</sup>

**DISCUSSION:** As early as 1950's, stress amongst other factors has been associated with periodontium. With the number of research studies, it has been demonstrated that stress is a vital risk factor responsible for causing periodontal disease. Moreover, it may also hinder the prognosis of a periodontal disease. Subjects under stress often have impaired immunity which is customarily tangled with poor oral hygiene, subsequent Xerostomia, altered level of calcium as well as impaired vascular healing. Stress may have a trivial effect on the periodontal healing if it is controlled upto a desired level. This article has concentrated on the effect of stress on the three major periodontal problems which includes acute necrotizing ulcerative gingivitis, aggressive periodontitis and oral herpes infection. Majorly conducted cohort & case-based studies have pointed stress as an important implication in the etio-pathogenesis of periodontal diseases. However, it is not possible to currently co-relate a direct effect of stress on periodontium since it is extremely arduous to develop a study that co-relates the amount of stress to periodontium due to lack of availability of sample subjects.

**CONCLUSION:** The fact that a lot of evidence points stress as an crucial risk factor affecting periodontal healing as well in the etiology of periodontal disease, one cannot deny the fact that the clinician must be fully aware of the medical importance of stress and consider it while undertaking a treatment plan. Measures should be taken to control the stress for a full recovery and a favorable prognosis of the subject.

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