



Role of Parafunctional Habits in the Progression of Periodontitis – A Narrative Review

Ardra Rajkumar¹, Brindha. S², Dr Deepshika Saravanan³, Dr Vijay V.K⁴, Dr Maria Subash Aaron Muthuraj⁵

^{1,2}Intern, RVS Dental College and Hospital, Sulur, Coimbatore, Tamil Nadu, India.

³Professor & HOD, Department of Periodontics, RVS Dental College and Hospital, Sulur, Coimbatore-, Tamil Nadu, India.

⁴Director cum Principal & Professor, Department of Periodontics RVS Dental College and Hospital, Sulur, Coimbatore, Tamil Nadu, India.

⁵Reader, Department of Periodontics RVS Dental College and Hospital, Sulur, Coimbatore, Tamil Nadu, India.

*Corresponding Author.

OPEN ACCESS

Article Citation:

Ardra Rajkumar¹, Brindha. S², Dr Deepshika Saravanan³, Dr Vijay V.K⁴, Dr Maria Subash Aaron Muthuraj⁵, "Role of Parafunctional Habits in the Progression of Periodontitis – A Narrative Review", International Journal of Recent Trends in Multidisciplinary Research, July-August 2026, Vol 6(04), 404-409.



©2026 The Author(s). This is an open access article distributed under the terms of the [Creative Commons Attribution License](https://creativecommons.org/licenses/by-nc-nd/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. Published by 5th Dimension Research Publication

Abstract: Periodontitis is a multifactorial inflammatory disease and is one of the leading causes of tooth loss worldwide. While dental plaque remains the primary etiological factor, several modifying factors influence the severity and progression of periodontal destruction. Among these, parafunctional habits such as bruxism, tongue thrusting, mouth breathing, lip biting, and nail biting play a significant role. These habits exert abnormal mechanical forces on the supporting periodontal structures, leading to occlusal trauma, increased tooth mobility, widening of the periodontal ligament space, alveolar bone loss, and deepening of periodontal pockets. Here in our narrative review, we are going to discuss the role of parafunctional habits in periodontal disease.

Keywords: Bruxism, Clenching, Thumb sucking, Tongue thrusting, Mouth breathing, Parafunctional habits, Periodontitis

1. Introduction

Periodontitis is one of the most common oral disease occurring worldwide. ^[1] Periodontitis is a leading cause of tooth loss in adults. ^[2] As a multifactorial disease, periodontitis involves many factors that play a significant role in its development. Although bacterial plaque is the primary etiologic factor in the development of periodontitis, uncontrolled diabetes, parafunctional habits, smoking, and tobacco use also play a role in the progression and the severity of periodontal disease. In this article, we will discuss about the role of parafunctional habits in the progression of periodontitis.

2. Materials And Methods

This review article was developed through a comprehensive literature search of published scientific studies related to the role of parafunctional habits and their role in periodontitis. Relevant articles were identified using electronics databases such as PubMed, Google Scholar and Scopus. Keywords used for the search included “bruxism”, “clenching”, “thumb sucking”, “mouth breathing”, “parafunctional habits”.

3. Habits and Its Classification

According to Dorland (1957), habit can be defined as a fixed or constant practice established by frequent repetition ^[3] Parafunctional habits such as bruxism, clenching, tongue thrusting, and mouth breathing are considered risk factors for periodontal disease. ^[4]

4. Classification of Habits^[3]

Obsessive (Deep rooted)	
A. Intentional or meaningful	Nail biting Digit sucking Lip biting
B. Masochistic or self-inflicting injurious habits	Gingival stripping

C. Non-obsessive (Easily learned and dropped)	
A. Unintentional or empty	Abnormal pillowing Chin propping
B. Functional habits	Bruxism Tongue Thrusting Mouth Breathing

5. Prevalence

According to Murshid Z et al., the prevalence of parafunctional habits such as mouth breathing, bruxism and thumb sucking is 20.2%, 30.2%, 16.7% and 13.6%, respectively. ^[5]

In patients with all types of adverse oral habits or no habits who participated in the study, the majority (69.7% and 86.1%) had PI and GI scores of 2, respectively. Mean probing pocket depth showed varying results: 128/330 (38.8%) had a normal PPD of up to 3mm, 200/330 (60.6%) had 3 to 5mm (shallow), and 2/330 (0.6%) had more than 5mm (Deep). Moderate PPD was found in 183/330 (55.5%) and severe PPD in 65/330 (19.7%) among the participants. Frequency distribution and percentage of adverse oral habits according to age group and gender show that among female participants, 11.8% had bruxism and 3.5% had nail biting habit. Parafunctional habits were found to be more prevalent among female participants. ^{[5],[6]}

Parafunctional habits can cause harmful effects on the periodontium involving gingival wear, occlusal wear and trauma from occlusion. Trauma from occlusion caused by these habits can accelerate bone loss, increase tooth mobility, and widen the periodontal ligament, which results in periodontitis ^[7]

6. Bruxism

According to Frank Lobbenzoo (2013), Bruxism is defined as “repetitive jaw-muscle” activity characterised by clenching or grinding of the teeth and /or by bracing or thrusting of the mandible.

Types of Bruxism:

- 1) During sleep (sleep bruxism)
- 2) During wakefulness (Awake bruxism) ^[8]

Aetiology of Bruxism:

Causes of bruxism include

- 1) Central nervous system lesions
- 2) Psychological factors such as anxiety and aggression
- 3) Occlusal discrepancies/ abnormalities
- 4) Heredity
- 5) Systemic factors
- 6) Allergies
- 7) Occlusal factors

The features of bruxism depend on

- 1) Frequency of bruxing
- 2) Intensity
- 3) Age of patient
- 4) Duration of the habit ^[3]

Bruxism may act as a contributing factor for excessive loading of the supporting tooth structures, that is, periodontium ^[9]

The forces generated during bruxism are transmitted to the components of the masticatory system. Based on the resistance of each structure, a portion of these forces is absorbed, while the remaining forces are transferred to other structures. The forces generated during bruxism are transmitted to the components of the masticatory system. Based on the resistance of each structure, a portion of these forces is transferred to other structures.

The following manifestations may be seen in bruxism:

1) Occlusal trauma:

Bruxism can lead to tooth mobility, which may be pronounced in the morning due to parafunctional activity during sleep. It may also play a significant role in the progression of gingivitis into deeper periodontal tissues, contributing to the resorption of alveolar bone.

2) Occlusal wear pattern

Non-functional patterns of occlusal wear may be evident as indicators of bruxism. It can also result in increased tooth sensitivity due to extreme enamel abrasion. The large muscular forces generated during sleep can fracture the enamel prisms, which are subsequently worn down by repeated jaw movements. ^[3]

Bruxism can result in masticatory muscle pain, temporomandibular joint discomfort, headaches, mechanical tooth wear, prosthodontic complications and cracked teeth. Severe bruxism may also contribute to the development of apical periodontitis.^[10]

7. Effect Of Bruxism On Periodontium

Bruxism is a **parafunctional habit involving repetitive or sustained clenching / grinding of teeth**. Excessive occlusal forces can affect the periodontium, particularly when the supporting tissues are already compromised by inflammation.

It leads to:

- 1) Occlusal trauma
- 2) Periodontal ligament changes
- 3) Tooth mobility
- 4) Alveolar bone changes
- 5) periodontal inflammation
- 6) Fremitus

Bruxism → excessive occlusal forces → occlusal trauma → PDL Changes + increased tooth mobility + possible bone changes.

TONGUE THRUSTING

According to Adam Schneider (1982), Tongue Thrusting is a forward placement of the tongue between the anterior teeth and against the lower lip while swallowing.

Classification:

- 1) **Physiologic:** This comprises the normal tongue thrust swallow of infancy.
- 2) **Habitual:** The tongue thrust swallow is present as a habit even after the correction of the malocclusion.
- 3) **Functional:** A tongue thrust pattern is considered functional if it arises as a compensatory mechanism to maintain oral closure.
- 4) **Anatomic:** A person with an enlarged tongue can have an anterior tongue posture.^[11]

Prevalence:

The study investigated the prevalence of tongue thrusting among periodontal patients. The study group consisted of 450 patients, 105 of whom (24.2%) had a tongue thrusting habit. Tongue thrusting has been reported to occur in approximately 3% of the general population. The higher prevalence of this oral habit among periodontal patients is indicative of a possible correlation between tongue thrusting and periodontal disease.^[10]

Aetiology of Tongue thrusting:

- 1) Retained infantile swallow
- 2) Neurological disturbance
- 3) Feeding practices and tongue thrusting
- 4) Induced due to other oral habits
- 5) Hereditary
- 6) Tongue size

The clinical findings observed in patients with tongue thrust swallowing vary depending on factors such as intensity, frequency, duration and type.

Extra-oral findings:

- 1) Lip posture
- 2) Mandibular movements
- 3) Speech
- 4) Facial form
- 5) Tongue posture
- 6) Malocclusion^[3]

8. Effect Of Tongue Thrusting On Periodontium

The tongue thrust swallowing pattern can lead to various periodontal problems including:

- **Periodontal pocket**
- **Gingival recession**
- **Alveolar bone loss**
- **Tooth mobility**
- **Diastema**

While tongue thrusting is not a direct factor of periodontitis, it can act as a contributing or aggravating factor in the presence of poor oral health or existing periodontal disease.

Mouth Breathing

According to Sassouni (1971), mouth breathing is defined as habitual respiration through the mouth instead of the nose.

Classification:

Finn (1987) classified mouth breathing into

- 1) **Anatomical:** The anatomic mouth breather is the one whose short upper lip does not permit complete closure without undue effort.
- 2) **Obstructive:** Increased resistance to a complete obstruction of the normal flow of air through the nasal passages, the child is forced by sheer necessity to breathe through the mouth.
- 3) **Habitual:** A Habitual mouth breather is a child who continuously breathes through the mouth by force of habit, although the abnormal obstruction has been removed.

Etiology:

A Large proportion of children are affected by some level of nasal insufficiency.

Allergies, physical obstructions and chronic infections lead many children to breathe through the mouth.

The airway obstruction may be due to many reasons:

- 1) Enlarged turbinate
- 2) Deviated septum and other nasopharyngeal deformities
- 3) Obstructive sleep apnea syndrome
- 4) Obstruction in the bronchial tree or larynx

The clinical features of mouth breathing mainly depend on

- 1) Intensity of the habit
- 2) Frequency of the habit
- 3) Duration of the habit ^[12]

Effect of Mouth Breathing On Periodontium

Individuals who habitually breathe through the mouth frequently present with gingival inflammation and irritation, especially in the anterior maxillary area. The gingiva becomes hyperplastic as a result of prolonged exposure to dryness in mouth breathing patients. The chronic gingival condition results from reduced salivary flow, which impairs the removal of debris and promotes bacterial growth. The drying effect of moving air can also result in the accumulation of heavy plaque deposits. The gingiva of mouth breathers displays a characteristic rolled margin along with enlarged interdental papilla. Therefore, mouth breathing may play a significant role in the development and progression of periodontitis □ ^[13]

Lip Habits

According to Christensen et al, “Habits that involve manipulation of the lips and perioral structures.”

Classification: (Schneider-1983)

- 1) Lip licking – Wetting of lips by the tongue
- 2) Lip sucking habit- Pulling the lips into the mouth between the teeth.

Prevalence:

Data on oral parafunctional habits were collected using a structured, self –administered questionnaire along with a clinical examination.

The study assessed several oral parafunctional habits, including bruxism, clenching, nail biting, lip biting, cheek biting, and tongue thrusting. A total of 120 individuals participated in the investigation. The participants had a mean age of 32.8 ± 9.4 years, with ages ranging between 18 and 58 years. Among them, 92 individuals exhibited one or more oral parafunctional habits.

Lip biting- Frequency (n) – 20

Percentage – 16.7% ^[14]

Aetiology:

- 1) Malocclusion
- 2) Emotional stress
- 3) Anxiety

Clinical manifestations:

- 1) Protrusion of upper incisors
- 2) Retrusion of lower incisors
- 3) Lip trap
- 4) Reddened and Chapped lip area below the vermillion border ^[15]

Effect Of Lip Habits On Periodontium

Lip habits include **lip biting, lip sucking, lip licking, and lip holding between the teeth**. Persistent or excessive lip habits can produce mechanical irritation and may indirectly affect periodontal health.

It causes:

- 1) Gingival irritation
- 2) Gingival recession
- 3) Gingival enlargement
- 4) Periodontal ligament effects
- 5) Plaque retention
- 6) Traumatic lesions
- 7) Periodontal lesions

Lip habit → chronic abnormal pressure/trauma → tooth displacement + gingival irritation → plaque retention → possible periodontal tissue changes.

NAIL BITING

Definition:

Operational definition of Nail biting is “putting one or more fingers in the mouth and biting on the nail with teeth.” [16]

Prevalence:

A total of 120 subjects were enrolled in the study. The participants' ages ranged from 18 to 58 years, with a mean age of 32.8 ± 9.4 years. Oral parafunctional habits were identified in 92 participants.

Nail biting – Frequency (n) – 28

Percentage – 23.3% [14]

Aetiology:

- Insecurity
- Psychosomatic succession of thumb sucking
- Nervous tension

Effects:

Crowding, Rotation and Attrition of incisal edges of incisors. [3]

Effect of Nail Biting On Periodontium

Nail biting is a common parafunctional habit involving repetitive biting of the fingernails. Although it is not a primary cause of periodontal disease, chronic nail biting can produce mechanical trauma and abnormal forces on the periodontium.

- 1) Gingival trauma
- 2) Gingival recession
- 3) Tooth mobility
- 4) Periodontal ligament widening
- 5) Alveolar bone resorption
- 6) Plaque accumulation
- 7) Gingival inflammation
- 8) Tooth displacement and malposition

Nail biting → repetitive mechanical trauma + abnormal forces → gingival irritation/ periodontal ligament stress → possible tooth displacement and mobility → increased difficulty in plaque control → gingival inflammation

9. Conclusion

Parafunctional habits (example: bruxism, clenching, tongue thrusting) are important contributing factors that accelerate the progression of periodontitis. Although they do not directly cause gum disease, these unconscious excessive mechanical forces expose the teeth to horizontal and vertical trauma, thereby accelerating alveolar bone loss and increasing periodontal pocket depth in the presence of inflammation.

Reference

1. Kassebaum NJ, Bernabé E, Dahiya M, Bhandari B, Murray CJL, Marcenes W. Global burden of severe periodontitis in 1990–2010: a systematic review and meta-regression. *J Dent Res*. 2014;93(11):1045-1053.
2. Fenessy KE. Periodontal disease: An overview for physicians. *MT Sinai J Med*. 1998; 65:362-9.
3. Tandon S. Textbook of Pedodontics. 3rd ed. New Delhi: Paras Medical Publisher; 2018. p. 485–490.
4. Murshid Z, Phil M, Abdulaziz AM, Amin HE, Al Nowaiser AM. Assessment of parafunctional oral habits among a sample of Saudi dental patients. *Med Sci*. 2007;14:35-47.
5. Natto S, Baljoon M, Bergström J. Tobacco smoking and periodontal health in a Saudi Arabian population. *J Periodontol*. 2005;76(11):1919–1926.

Role of Parafunctional Habits in the Progression of Periodontitis – A Narrative Review

6. Shaikh H, Shankar S, Vinay S. Assessment of periodontal status and treatment needs among beedi factory employees in Harapanahalli town, Davangere district, Karnataka. *J Indian Acad Dent Spec.* 2011;2:13-17.
7. Mokdad AH, Jaber S, Abdel Aziz MI, AlBuhairan F, AlGhaithi A, AlHamad NM, et al. The state of health in the Arab world, 1990–2010: an analysis of the burden of diseases, injuries, and risk factors. *Lancet.* 2014;383(9914):309-320.
8. Lobbezoo F, Ahlberg J, Glaros AG, Kato T, Koyano K, Lavigne GJ, et al. Bruxism defined and graded: an international consensus. *J Oral Rehabil.* 2013;40(1):2-4
9. Wank GS, Kroll YJ. Occlusal trauma: an evaluation of its relationship to periodontal prostheses. *Dent Clin North Am.* 1981;25:511-532
10. Miremadi SA, Khoshkhounejad AA, Mahdavi E. The prevalence of tongue thrusting in patients with periodontal disease. *Front Dent.* 2005;2(2):50-53.
11. Schneider PE, Peterson J. Tongue thrust: Its impact on malocclusion and speech. *Dent Clin North Am.* 1982;26(3):511-530.
12. Finn SB. Clinical pedodontics: oral habits in children. 4th ed. Philadelphia: WB Saunders Co.; 2003. p. 370-385.
13. Kaur M, Sharma RK, Tewari S, Narula SC. Influence of mouth breathing on outcome of scaling and root planing in chronic periodontitis. *BDJ Open.* 2018;4:17039.
14. Simlai J, Bhuvan Jyoti B. Prevalence of oral parafunctional habits in individuals with anxiety and stress disorders. *Int J Med Pharm Res.* 2026;7(1):1014-1018.
15. Asnani KH. *Essentials of Pediatric Dentistry.* 1st ed. New Delhi: Jaypee Brothers Medical Publishers; 2010. p. 119-137.
16. Teng EJ, Woods DW, Twohig MP, Marcks BA. Body-focused repetitive behavior problems: prevalence in a non-referred population and differences in perceived somatic activity. *Behav Modif.* 2008;2:13. doi:10.1186/1753-2000-2-13.