

## REVIEW ARTICLE

# Bruxism: An Overview

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## ABSTRACT

Bruxism is a common parafunctional habit, occurring both during sleep and wakefulness, and sleep bruxism and awake bruxism should be differentiated. Bruxism usually has no serious effects but may, in some patients, have pathological consequences. There is no specific treatment available at this time to stop bruxism so that the focus has been to reduce the adverse effects of the habit.

**Keywords:** Bruxism, Interocclusion, Oromotor, Parafunctional habit, Tooth wear.

**How to cite this article:** Sribabu E, Behera SSP. Bruxism: An Overview. *Int J Oral Care Res* 2018;6(2):S80-82.

**Source of support:** Nil

**Conflict of interest:** None

## INTRODUCTION

The word 'Bruxism; originated from the Greek word brukhein meaning "gnash the teeth." It also means involuntary habitual grinding of the teeth, typically during sleep. Bruxism, also termed as teeth grinding, is the immoderate grinding of the teeth and/or clenching of the jaw and is an oral parafunctional activity. It is defined as: "A movement disorder of the masticatory system characterized by teeth - grinding and clenching during sleep as well as wakefulness."<sup>[1]</sup>

Bruxism may be classified according to several criteria<sup>[2]</sup>

1. By when it occurs: <sup>[3]</sup>
  - a. Awake bruxism: This is presented when the individual is awake
  - b. Sleep bruxism: This is presented when the individual is asleep
  - c. Combined bruxism: This is present in both situations.
2. By etiology: <sup>[3]</sup>
  - a. Primary, essential or idiopathic bruxism:
    - For which no apparent cause is known.

- b. Secondary bruxism:
  - Secondary to diseases (coma, icterus, and cerebral palsy)
  - Medicinal products (e.g., antipsychotic medication and cardioactive medication)
  - Drugs (e.g., amphetamines, cocaine, and ecstasy).
3. By motor activity type:
  - Tonic: Muscular contraction sustained for more than 2 s
  - Phasic: Brief, repeated contractions of the masticatory musculature with three or more consecutive bursts of electromyographic activity that last between 0.25 and 2 s a piece
  - Combined: Alternating appearance of tonic and phasic episodes.
4. By the period of occurrence:
  - Past bruxism
  - Current or present bruxism.
5. By severity<sup>[4]</sup>
  - Mild as occurring less than nightly, with no damage to teeth or psychosocial impairment
  - Moderate as occurring nightly, with mild impairment of psychosocial functioning; and
  - Severe as occurring nightly, and with damage to the teeth, temporomandibular disorders and other physical injuries, and severe psychosocial impairment.

## Etiological Factors

Body organic functions are mainly controlled by the central nervous system (CNS), through voluntary and involuntary actions. Involuntary actions are controlled by the autonomic nervous system, divided into sympathetic and parasympathetic. The sympathetic system works in stressful situations, while the parasympathetic works in rest situations. During sleep, there is a predominance of the parasympathetic activity. However, in sleep-onset rapid eye movement (REM), that occurs 6–8 times during sleep, there is a decrease of the parasympathetic activity and is observed an increased sympathetic activity.<sup>[5]</sup> Bruxism events are associated with the change from deep sleep to light sleep, usually during stages 1 and 2 of non-REM sleep.<sup>[6]</sup> Bruxism etiology is multifactorial.<sup>[7-9]</sup> The psychoemotional factor is considered one of the most important etiological

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factors. It may be related to bruxers' mental health disabilities since they use their stomatognathic system to "discharge" their aggressiveness.<sup>[10-16]</sup> However, its etiology is also related to local, systemic,<sup>[12]</sup> and neurological factors.<sup>[17]</sup> On the one hand, local factors include traumatic occlusion, dental trauma, premature contact, excess restorations, dentigerous cysts, atypical eruption of deciduous, and permanent teeth. Malocclusions, incorrect restorations, periodontal calculus, tooth mobility, lip deformities, gingival hyperplasia, and other factors related to occlusal physiology and favor its establishment.<sup>[18,19]</sup> On the other hand, systemic factors include nutritional deficiency, parasitosis, Down's syndrome, gastrointestinal disorder, allergic reactions, drugs, uncontrolled enzymatic digestion, brain damages, drug side effects, mental retardation, and a cerebral palsy.<sup>[11]</sup> Nutritional factors such as consumption of xanthine beverages (coffee, tea, chocolate, and so drinks) and smoking habits can also be involved, since they stimulate the CNS, increasing anxiety and stress, and therefore, trigger bruxism.<sup>[11]</sup> Regarding allergies and intestinal parasites, there are several studies focusing on explaining the relation of these disorders with bruxism. However, there is, in fact, intimate relation between IgE levels, eosinophilia, and bruxism. Both in allergies and intestinal parasites infections, IgE, and eosinophilia levels are high and oral manifestations occur.<sup>[18]</sup> Bruxism was also detected in patients with neurological disorders, taking neuroleptic and anticonvulsants drugs, as well as in patients with brain abnormalities, taking levodopa.<sup>[20]</sup> Risk factors include the use of stimulants such as amphetamines and antidepressants<sup>[21]</sup> and, recently, the main cause of this parafunction is considered to be a sleep disorder, explained by the arousal theory.<sup>[22]</sup>

## Diagnosis

Early diagnosis of bruxism is advantageous, because of possible damage that may be incurred and the detrimental effect on quality of life.<sup>[23]</sup> A diagnosis of bruxism is usually made clinically<sup>[24]</sup> and is mainly based on the person's history (e.g., reports of grinding noises) and the presence of typical signs and symptoms. Bruxism - diagnostic features comprise the following:

- Occlusal sounds during sleep
- Functional tooth wear (i.e.,) attrition facets
- Periodontal changes
- Tooth mobility pattern
- Widened periodontal ligament space
- Trabeculation of the alveolar bone
- Exostosis formation
- Masticatory muscle tiredness

- Recurrent migraine
- Fractured filling (or) split teeth
- Soreness of the oral mucosa beneath the denture
- Tender on percussion
- Mucosal ridging of tongue and cheeks
- Increase in size of temporal and masseter, lateral pterygoid
- Deviation of the lower jaw on opening, limited opening
- Increased mobility of teeth.

## Treatment

Treatment demands a multidisciplinary approach, involving psychology, physiotherapy, and speech therapy, having in consideration oral, medical, and psychological aspects of the patient.<sup>[6]</sup> Treatment plan should attend the following objectives: Physical and psychological stress reduction, treatment of signs and symptoms, reduce occlusal interferences, and change the patient's usual neuromuscular pattern.<sup>[25]</sup> The starting point for treatment aims to decrease psychological stress using relaxation exercises, massage, and physiotherapy.<sup>[26]</sup> The habit may restart whenever the patient's tolerance regarding an occlusal change decreases.<sup>[6]</sup> Specific treatment for muscle pain is based on methods that disrupt mechanisms of pain cycle, as myofascial trigger point therapy (cool mist spray), anesthetic block in association with physiotherapy techniques such as exercise to restore function and deep heat massage.<sup>[6]</sup> Occlusal therapy may include occlusal adjustment. Although occlusal condition exerts minor influence on the process, occlusal adjustment, irreversible therapeutic method, is suitable to minimize damages caused by teeth grinding but not for treating bruxism.<sup>[6]</sup> The use of interocclusal splints reduces symptoms, even if it has not stopped bruxism, because they act in TMJ, inducing the condyle to stand correctly in the condylar fossa. The distribution of masticatory forces is responsible for the relief of symptoms.<sup>[27,28]</sup> The splints may differ in material, rigid or resilient, and in structure, thickness and occlusal coverage extension. Thus, according to therapeutic indication, the splints may set different intermaxillary relations.<sup>[25]</sup> Depending on the complexity of the case, it is usually recommended its use at night, for 45 days, with weekly maintenance. Despite its etiology, occlusal therapy can always be suitable, because it promotes functional comfort, preventing further damage to the components of the masticatory apparatus.<sup>[6]</sup> Pharmacological treatment with drugs such as dopamine agonists, anxiolytics, buspirone, non-benzodiazepines hypnotics, antiepileptics, and botulinum toxin is appropriate when bruxism is intense.<sup>[13,14]</sup>

## CONCLUSION

Bruxism is a parafunctional oromotor habit with a high prevalence in the general population. The signs and symptoms of bruxism are detectable, but unfortunately, the hypothesized etiologies and mechanisms of their actions have not been substantiated satisfactorily. At present, there is no effective treatment to eliminate bruxism permanently. Therefore, the therapeutic approach is steered toward attempting to prevent damage and to treat the pathological effects of bruxism on the structures of the masticatory system.

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