



## Pediatric Bruxism: From Etiology to Treatment: A Review

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### Abstract

Bruxism is a common disorder among children, becoming a growing concern for both family members and health professionals. This work is a review of the literature on the etiology and treatments of bruxism in children. It aims to address the clinical characteristics, causes, signs and symptoms, and the importance of diagnosis, in the sense of updating the interested professionals, so that they can clarify their patients and offer treatment options for this condition more functional and safe.

**Keywords:** Bruxism; Children; Pediatric Dentistry

### Introduction

Bruxism is an activity characterized by tightening or creaking of the teeth that occurs most frequently during sleep. There may also be daytime bruxism, which is a semi-voluntary action performed by the child when the child is awake, and is related to a tic or habit [1-3]. Sleep bruxism is a harmful and unconscious activity with sound production, while the child is sleeping. Its etiology is diverse, and may be of local origin, systemic, psychological, hereditary, occupational, sleep disorders and parasomnias [4,5].

There is a difficulty in determining the prevalence of bruxism habit and therefore are important methods of assessment, since only 5.0 - 20.0% of the carrier's habit population are aware that hold the [5,6] habit. Most of the time the individual becomes aware of his condition after someone has warned that he heard the creaking noise of teeth [7].

Furthermore, Pierce., *et al.* (1995) [11] by means of electromyographic measurements examined relations between nocturnal bruxism, stress and individual personality and their interrelationships i.e. stress, bruxism and individual personality. 100 bruxism patients underwent a battery of tests on their personalities indicating when there was stress relationship. Frequency electromyographic measures and duration of bruxism were recorded for 50 consecutive nights. In the first 24 hours there was a low level of stress, obtaining statistically significant data in 8 patients. But patients with high levels of stress reported more anxiety, irritability and depression consequently bruxism [5].

Bruxism can entail several changes on the elements of the stomatognathic system, causing the imbalance. Currently there is a great concern directed at the dysfunctions of the stomatognathic system [8-10]. It was observed higher numbers for children with teeth on occlusal and incisal surfaces. These changes in the incisal or occlusal cervical dimension, which can occur either in the prima-

ry dentition and in permanent, stem from the ranger act or tighten and lock the best known with bruxism teeth. Numerous works have been published on etiological factors and nomenclature adopted by their classification. The etiology is triggered by local factors, systemic, psychological, occupational and hereditary [9,10].

### Aim of the Study

The aim of this study was the quantitative and qualitative synthesis of the literature findings on the treatment of bruxism in pediatric dentistry.

### Methods

Experimental and clinical studies were included (case reports, retrospective, prospective and randomized trials) with qualitative and/or quantitative analysis. Initially, the key words were determined by searching the DeCS tool (Descriptors in Health Sciences, BIREME base) and later verified and validated by MeSh system (Medical Subject Headings, the US National Library of Medicine) in order to achieve consistent search.

### Mesh Terms

The words were included bruxism; children; pediatric dentistry. For further specification, the "bruxism" description for refinement was added during searches. The literature search was conducted through online databases: Pubmed, Periodicos.com and Google Scholar. It was stipulated deadline, and the related search covering all available literature on virtual libraries.

### Series of Articles and Eligibility

A total of 55 articles were found involving bruxism. Initially, it was held the exclusion existing title and duplications in accordance with the interest described this work. After this process, the summaries were evaluated and a new exclusion was held. A total of 39 articles were evaluated in full, and 34 were included and discussed in this study.

## Literature Review

### Etiology and e causes

This etiology occurs in children probably because they are more exposed to emotional problems, such as strong emotional tension, family problems, existential crises, anxiety state, depression, fear and hostility, children in the self-assertion phase, school tests or even the practice of sports competitive and championships can act as factors of psychological and occupational origin to trigger this condition [1-4]. Stress from restless routines and anxiety has been the most studied emotional factor in children. These habits may influence the growth of the facial skull complex, causing damage to the muscles, periodontium, occlusion and mainly generating damage to the TMJ [5].

During childhood, bruxism is more severe in pre-school children because of the structural and functional characteristics of primary teeth, although it also appears in older children and in permanent dentition [6]. Bruxism occurs consciously, when biting pencils or fingers, or unconsciously.

Currently, studies report a prevalence of around 40.0% in pre-school children aged three to six years, from 17.0% in the age range of six to seven years and 24.0% in the age range of eight to nine years [1].

According to the survey, most children had anxious or hyperactive behavior. In babies, bruxism can be observed shortly after eruption of the deciduous incisors around one year of age [6-9]. Although information is still limited, it has been suggested that bruxism appears to be more common in individuals with autism, Down syndrome, developmental disabilities, specifically in severe mental retardation, than in other populations [10].

However, some authors reported that bruxism in individuals with Down syndrome and cerebral palsy prevalence was similar to 10 individuals without cognitive impairment. It has also been reported that some drugs, such as catecholamines and propranolol may influence as a cause of bruxism [11].

Intestinal parasites have also been pointed out as possible etiological agents of bruxism in children, but with discordant results among studies that evaluated this hypothesis [12]. In Brazil, according to researchers, they found no difference between patients with and without bruxism in relation to infestation of intestinal parasites in children aged 6 to 11 years. However, in India, they concluded that in children between 3 and 6 years of age these parasites may be the cause of the onset of bruxism [13].

The influence of secondary cigarette smoke has also been studied as an etiological factor of bruxism in children, since the literature has indicated that the frequency of bruxism is higher among smokers. According to recent research, children moderately exposed to smoke (5 to 10 cigarettes smoked daily in the presence of the child) showed a significantly higher risk for developing bruxism than slightly exposed ones (1 to 5 cigarettes smoked in the

presence of the child daily) and occasionally exposed [14]. Children who were highly exposed to smoke (more than 10 cigarettes smoked in the presence of the child daily) were at twice the risk of moderately exposed and three times greater than those exposed to bruxism [15].

Bruxism may also be associated with parasomnias (phenomena that occur exclusively during sleep), characterized by different degrees of arousal, such as speech during sleep, restless sleep, and nocturnal enuresis. The act of ranger often occurs during sleep, periods of worry, stress and excitement, accompanied by a remarkable noise. Tightening is considered more destructive, since the forces are continuous and less tolerated, it is more common during the day and generally without noise [16-19].

### Signals and symptoms

The most frequent signs and symptoms are occlusal and/or incisal wear, pulpal hypersensitivity, supportive structures destruction, dental mobility, temporomandibular joint pains and disorders, cusp fractures and restorations, masseter hypertrophy, waking headache [20-22]. According to authors, bruxism can act as an adjuvant in the progression of destructive periodontal disease and contributes to the development of false Class III, besides accelerating the rhizolysis of deciduous teeth and provoking changes in the chronology of permanent teeth eruption. It is also described the possibility and bruxism to favor dental crowding [23-26].

In the dental clinic it is common to observe excessive wear on the occlusal and incisal surfaces of the dental surfaces, mainly in the deciduous dentition that after eruption of the deciduous central incisors, can also cause gingival dilations in cases in which the antagonist has not yet erupted [13].

However, the presence of facets of wear on the teeth should not be taken as a basis, since it entails an incomplete diagnosis considering that the wear on the teeth does not necessarily indicate that bruxism is occurring at the same time of life [27-30]. The parafunction may have happened for some time, like past history leaving signs, or having occurred for other reasons. It may be considered secondary to masseter muscle hypertrophy because of the chance of the tightening habit being voluntary [31].

### Treatment of bruxism

There is no specific treatment for bruxism. We must treat according to existing factors to avoid future dental complications so we should individually evaluate each patient [32]. The treatment consists of a multidisciplinary work that covers dentistry, medicine and psychology. Dentistry usually acts on restorative procedures, orthodontic treatment and bite plates, so that, in cases of greater severity, the occlusal surface remains protected against attrition and wear (but less used, because depending on the age of the child it hinders during molding. In some situations, there may be a need for systemic treatment with medication and medical treatment, in addition to psychological counseling [1-3].

In recent studies with [31] children after using psychological techniques and performed exams, they found that occlusal plaques have no efficiency in the signs of bruxism, and there are no studies on the use of this plaque in the literature. The rapid palatal expansion to treat children in cases of bruxism associated with apnea syndrome aims to increase the size of the airways, improving breathing and reducing parafunction [4,5].

As for the use of drugs, treatment in acute and severe cases can be used benzodiazepines, beta-blockers, antidepressants and muscle relaxants. No drug is considered first choice and should be used for a short time [6]. The psychological treatment works with behavioral therapy and relaxation techniques to correct environmental factors and personal habits, aiming to reduce and control the patient's stress and can be effective together with multiprofessionality [7].

## Conclusion

Based on this study it is concluded that when the treatment in childhood can be avoided damages to future health in adults, use of complementary tests such as polysomnography complements the diagnosis, associated to anamnesis and clinical examination; treatment should be multiprofessional and individualized; psychology contributes to the control of emotional stress and anxiety; diagnosis and treatment, and there should be more studies offering a better approach.

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