



ISSN Print: 2394-7489
ISSN Online: 2394-7497
IJADS 2022; 8(2): 74-77
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www.oraljournal.com
Received: 16-12-2021
Accepted: 05-02-2022

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Bruxism in pediatric dentistry during the pandemic COVID-19

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DOI: <https://doi.org/10.22271/oral.2022.v8.i2b.1490>

Abstract

Introduction: Bruxism is a behavior that has negative consequences, its prevalence is in 33.65% of children. It can present as probable bruxism, awake bruxism, and sleep bruxism. This has been frequently present during the COVID-19 pandemic.

Objective: Analyze the literature about bruxism and its relationship with signs and symptoms, psychological factors, sleep disorders, screen time, and treatment.

Methodology: Articles on the subject published through the PubMed, SCOPUS and Google Academic databases were analyzed, with an emphasis on the last 5 years. It was carried out with the words "bruxism", "pediatric dentistry", "treatment", "symptoms" and "signs".

Results: The signs and symptoms of bruxism are present more frequently in patients with attention deficit, hyperactivity disorder and with previous bruxism. Stress and anxiety are the psychological factors that influence more the increase of bruxism during the COVID-19 pandemic. Likewise, sleep disturbances have risen, so it is recommended to be more physically active and to reduce screen time to improve health status. Due to the limitations caused by the current pandemic, it is necessary to take advantage of electronic media to guide patients and provide care.

Conclusion: Bruxism has increased during the COVID-19 pandemic. Patients present characteristic signs and symptoms, which are affected by different factors such as stress, anxiety, sleep disturbances and screen time. Due to current limitations, it is important to take advantage of teleodontology to guide and care for patients.

Keywords: Bruxism, pandemic, children, treatment, signs, and symptoms, screen time

1. Introduction

Bruxism has detrimental results which include dental wear, periodontal problems and muscular pain especially in the masticatory muscles and the temporomandibular joint (TMJ) [1]. Bruxism is present in 6% to 50% of children [2], with a prevalence of 33.65% [3].

It is characterized by repetitive and involuntary movements of the jaw in a way that clenches or grinds the teeth [4] and has been described as a behavior [5]. Bruxism can occur when awake or asleep, when awake bruxism (AB) is performed by protrusion of the jaw and is a non-functional behavior, unlike bruxism during sleep (SB) which is performed by the activity of the masticatory muscles which can be rhythmic or non-rhythmic [6].

Confinement by COVID-19 has resulted in the increased likelihood of developing parafunctional habits and bruxism [7]. There is no adequate review of bruxism in pediatric dentistry during the COVID-19 pandemic, therefore, the aim of this article is to analyze the literature on bruxism in relation to signs and symptoms, psychological factors, sleep disturbances, screen time and treatment.

2. Materials and methods

Information from articles published in PubMed, Science Direct, Springer and EBSCO was analyzed with emphasis on the last 5 years. The quality of the articles was analyzed based on

the PRISMA guidelines, i.e., identification, review, choice, and inclusion. The quality of the review was assessed using the measurement instrument for evaluating systemic reviews (AMSTAR-2) [8]. The search was performed using Boolean logical operators AND, OR and NOT. It was realized with the words "bruxism", "pediatric dentistry", "psychological factors", "sleep disturbances", "screen time", "treatment", "symptoms" and "signs", in conjunction with logical Boolean operators OR y AND.

3. Results & Discussion

3.1 Signs and symptoms

The signs and symptoms present are masticatory muscle pain, morning pain, headache, tooth wear, muscle hypertrophy, articular "click", jaw deviation when opening the mouth and/or tongue bites [3], TMJ problems and divergence between the incisal relationship of the teeth can be observed [9]. Of the above mentioned, the most prevalent are wear of the primary canines, tooth wear and headache [3]. The initial sign of probable bruxism is occlusal wear which is usually not detectable [10]. In addition, in preschool patients who present this disruptive behavior, bruxism has been associated with tooth wear and poor sleep quality [11]. Children with a unilateral crossbite and no occlusal relationship often exhibit signs and symptoms of TMJ disorder. In addition, it can cause overjet, overbite, midline deviation, limitation of TMJ movements and opening [9]. When they have mixed dentition, their jaws are deviated when opening the mouth [12], rarely a TMJ sound is heard [13]. Dolichofacial patients have a lower tendency to present sleep disorders which are usually associated with bruxism [14]. Patients with attention deficit hyperactivity disorder often present with AB and SB [15].

The signs and symptoms of bruxism are associated with occlusal wear, pain, TMJ disorder, decreased mouth opening, malocclusions, muscle pain and sleep disorders, which are more frequently present in patients with attention deficit hyperactivity disorder, previous bruxism, etc. These signs are more evident when bruxism is chronically present.

3.2 Psychological Factors

The situation of confinement due to the COVID-19 pandemic has led to increased anxiety, depression and worry, which has contributed to an increase in the prevalence of the development of various harmful behaviors such as bruxism [16]. Some psychosocial factors that may be present in patients with bruxism are anxiety and stress triggered by: emotional tension, family problems, existential crises, anxiety, depression, self-assertion, fear, depression and hostility [17, 18]. In the case of probable sleep bruxism, it may be associated with some of the psychosocial problems due to harmful oral habits [19]. Stress itself is a predictor of bruxism and can be measured by some salivary biomarkers [6, 20]. It has been found that cortisol and salivary amylase production are elevated in patients with anxiety symptoms who present TMJ problems [20]. It is also important to consider that, generally, more than one variable has an influence on the development of bruxism [21]. Another factor that has also been identified as a risk for developing bruxism is separation anxiety [22], which is defined as a reaction to stress in children aged 12 to 18 months who are separated from their parents and attachment is disrupted [23]. Likewise, certain psychological characteristics of the mothers, such as depression and environmental changes that cause stress, influence the children of adolescent mothers to present AB [24].

The psychological factors most frequently affected are stress

and anxiety, which have increased due to confinement. Since these can have great repercussions in children, it is of utmost importance to detect and treat them in a timely manner.

3.3 Sleep Disturbances

Sleep disturbances are those interruptions that affect the quality and timing of sleep [25]. Stress is closely related to sleep disturbances [26]. Confinement by COVID-19 directly influenced the increase in stress, anxiety, depression, and sleep disturbances [27]. The increased occurrence of sleep disturbances was observed especially in the first wave of the pandemic [28], which influences stress and anxiety [29]. This affects the severity of bruxism [30]. Sleep talking and drooling on the pillow are factors found to be associated with AB. In addition, children who wake up at night and those who wake up in fear may have a greater potential for AB [31]. Sleep walking, difficulty getting up in the morning, nocturnal anxiety, sleep-disordered breathing, parasomnias, and resistance to going to sleep are all present in patients with AB [32]. Likewise, AB occurs more frequently in patients with poor sleep quality and who are in the age range of 8 to 10 years old [33].

Patients with sleep disturbances also frequently present bruxism, with a higher incidence during confinement. For this reason, it is recommended that patients engage in more physical activity to improve their state of health.

3.4 Screen Time

Screen time was described by the Canadian Pediatric Society as time spent in a sedentary manner in front of the television screen, playing video games, as well as using the computer or cell phones [34]. This influences the presence of sleep disturbances in infants and preschoolers [35]. This is a factor that has influenced the increase in bruxism during the pandemic. Added to this is the consumption of sugars, which has a possible correlation with sleep bruxism [36]. The use of smartphones for a prolonged period of time is found to be related to AB [37]. This is very important to consider since the amount of time spent using cell phones has greatly increased [38] to the extent that a massive impact of the use of social networks has been reported [39] and its use close to bedtime influences the occurrence of sleep disturbances [40]. It is also important to consider that cell phone addiction also influences the development of bruxism [41].

The time patients spend in front of the screen has increased due to confinement, which influences the development of bruxism. It is therefore recommended to reduce screen time.

3.5 Treatment

Bruxism is multifactorial, so it is necessary to highlight the importance of multidisciplinary management to achieve better results and greater progress. Therefore, the care team for these patients should be made up of physicians, dentists, psychologists, speech therapists and educational programs [31]. There are several methods available for the treatment of this parafunctional behavior, below are some treatments and suggestions that can be considered, especially during the current pandemic confinement. Treatment usually consists of oral appliances and splints to decrease muscle tension, prevent tooth wear and reduce TMJ pain [42]. In children with SB, kinesiotherapy, massage, infrared therapy, low level laser therapy [43] and short exposure time laser acupuncture stimulation [44] may be used. Treatment with drugs such as hydroxyzine and flurazepam [45] can be used. In children with SB, medications can be indicated, for example, buspirone,

which has been reported to be an effective treatment [46]. Likewise, the use of *Melissa officinalis* homeopathic medicine can be used in the treatment when the patient has been diagnosed with possible SB [47, 48]. However, pharmacotherapy with hydroxyzine is the most effective treatment for AB for four weeks [45]. In times of confinement, one can resort to the guidelines available on the internet that are aimed at patient education, home care, relaxation techniques and self-care. The aim is to contribute to reducing the impact of the factors related to bruxism [49]. In addition, it is important that treatment is carried out in a timely manner and can be intervened from the beginning. Nowadays, technology can be used to take advantage of teleodontology to provide remote care to patients [30]. It is also possible to monitor the patient by means of smartphone applications for ecological momentary assessment, for example, the BruxApp [50].

There are many options for the treatment of bruxism, however, during the pandemic there have been limitations, which is why teleodontology can be used to provide care to patients.

4. Conclusions

The most common signs and symptoms of bruxism are: occlusal wear, pain, TMJ disorder, decreased mouth opening, malocclusions, muscle pain and sleep disorders. Stress and anxiety are psychological factors that have a strong influence on the development and continuity of bruxism. Likewise, sleep disturbances influence the patient to present bruxism, and, in turn, this is increased by prolonged time in front of the screen, especially if this is done close to bedtime. In addition, during the pandemic, it is important to take advantage of electronic media to guide the patient through teleodontology.

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