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Childhood and Adolescents Sleep Bruxism Treatment: A Systematic Review

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Abstract

Introduction Sleep Bruxism (SB) is a common condition in childhood that can cause multiple consequences such as abnormal tooth wear, tensional headaches, masticatory muscle pain, or fatigue. The literature reports some interventions, however the treatment for SB in children is not well-established.

Objectives A systematic review was performed to investigate the effectiveness of the treatments described for SB in children and adolescents: pharmacological and psychological treatments; behavioral guidelines; and dental approaches.

Materials and methods Randomized clinical trials comparing different SB treatments with a control group were searched in the electronic databases PubMed, Scopus, Web of Science, Cochrane Library, and VHL until August 04, 2021. Two independent reviewers selected the studies, extracted the data, and assessed the risk of bias. After a two-phase selection process, 07 articles were selected. The methodology of the selected studies was analyzed using the Cochrane Risk of Bias Tool. The criteria used to qualify the studies were based on randomization, allocation, blinding of participants and evaluators, and analysis of results.

Results The signs and symptoms of SB were reduced with pharmacotherapy (hydroxyzine/diazepam) and medicinal extracts (*M. Officinalis*), but with occlusal splints and physiotherapy, this improvement was not statistically significant when compared to control groups.

Conclusion Some evidence of the efficacy of pharmacotherapy (hydroxyzine/diazepam) and medicinal extracts (*M. Officinalis*) was found. However, this systematic review is not enough to establish a protocol for the treatment of SB. Besides, the individualized management of SB in this population should be considered, emphasizing the management of risk factors.

Keywords
- bruxism
- sleep bruxism
- treatment
- systematic review

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Introduction

Bruxism is a parafunction described as an involuntary and repetitive jaw muscle activity characterized by clenching or grinding of the teeth and/or by bracing or thrusting of the mandible, which can be rhythmic (phasic) and/or non-rhythmic (tonic). It happens in different phases of the circadian cycle, occurring during wakefulness—awake bruxism (AB) or during sleep—sleep bruxism (SB).[1] SB is more prevalent in children (3.5 to 40.6%) than in adults (8.0 to 31.0%).[2] When not managed in children, SB can cause multiple consequences such as abnormal tooth wear, tensional headaches, masticatory muscle pain or fatigue, and temporomandibular disorders (TMD),[3] affecting the life and well-being of the child and the family.

SB in children may begin around the first year of life right after the eruption of the deciduous incisors, having the prevalence dependent on the age group and the diagnostic method.[2] No gender difference has been reported in the studies.[2] The etiology of SB in childhood and adolescence is not fully understood, but several factors have been reported in the literature, such as: genetics, stress and anxiety, upper airway obstruction, sleep habits (such as using screens), attention deficit hyperactivity disorder, neurological disorders, drugs (methylphenidate and barbiturates), and gastroesophageal reflux.[4–10] SB is also associated with other sleep-related disorders, which are usually related with sleep arousals such as obstructive sleep apnea, insomnia, restless legs syndrome, REM sleep behavior, and mandibular myoclonus.[4]

Due to the variability of the etiology of SB, the diagnosis is often complex and may require the use of different methods, such as: patient or guardian self-report, clinical inspection, and polysomnography (PSG) in a specialized laboratory. The most used diagnostic criterion for bruxism is defined by Lobbezoo et al., which is divided into: possible (based on positive self-report), probable (based on positive clinical assessment with or without positive self-report), and definitive [based on instrumental assessment by electromyography (EMG) (BV) or polysomnography (PSG) (BS), self-report and positive clinical assessment].[1]

We found three systematic reviews (SR) of the literature on the subject, but with some biases that justify this study. The first review dates to 2009 and included only two articles[11] and the last two reviews had adopted criteria (absence of a control group in the selected articles) that may attribute a false interpretation of the positive results of some interventions.[12,13]

Although several studies have evaluated the effectiveness of different treatment modalities to control SB, recent review studies have indicated that there is no appropriate cure for SB.[14,15] However, the literature report some management strategies to SB, such as: pharmacological (benzodiazepines, anticonvulsants, beta-blockers, dopamine agents, antidepressants, muscular relaxants, and others) and psychological treatments (behavior therapy based on sleep hygiene, relaxation to control stress, psychotherapy, hypnosis, and biofeedback) and dental approaches (orthodontic treatments, occlusal appliances, occlusion adjustment) for tooth/restoration protection and SB activity and its related pain reduction. Their effectiveness and adverse effects are not clear in the literature.[11]

Therefore, the aim of this SR was to answer the following question based on the PICO strategy: In patients between the ages of 02 and 17, what is the effectiveness of the main treatments to reduce SB when compared to a control group?

Material and Methods

Protocol

This SR was conducted from March 2020 to August 2021 at the Federal University of Paraná, Brazil, and was performed following the guidelines of the Item Report for Systematic Reviews and Meta-analysis (PRISMA) and the Cochrane Handbook guidelines for SR.[16,17]

Search Strategy

The literature search was carried out in the following electronic database: PubMed, Scopus, Web of Science, Cochrane Library, and VHL Bireme.

The keywords e MeSH terms were applied based on the PICOS' structure question:

- Population: Children and adolescents up to 17 years old with signs and symptoms of SB.
- Intervention: All the interventions reported in the literature (pharmacological intervention, psychotherapy intervention, physical exercises, occlusal splints, orthodontic treatment, medicinal extracts/homeophatic interventions).
- Control: No intervention or placebo interventions.
- Outcome: Reduction of signs and symptoms in SB (self-reported, clinical examination of tooth wear, polysomnographic or electromyographic activity) and symptoms as a result of bruxism (pain reduction).
- Study included: Randomized clinical trials

The keywords used in the research were: ("bruxism" OR "sleep bruxism" OR "teeth grinding") AND ("child" OR "children") AND ("therapy" OR "bruxism therapy" OR "therapeutics" OR "treatment" OR "management"). References were managed and duplicates were removed using appropriate software (EndNote® X9 Thomson Reuters, Philadelphia, PA). The research was conducted from the initial coverage date until August 4, 2021.

Eligibility Criteria

We included only randomized clinical trials that assessed patients up to 17 years old with signs and symptoms of SB confirmed by questionnaires for parents or guardians (Possible bruxism) or clinical examination and/or polysomnography or electromyography (Probable bruxism) and that compared some intervention for SB with a control group without intervention or placebo intervention.[1] Only articles published in English were included. No restrictions on publication date were considered. Studies involving children and adolescents with syndromes or psychological problems were excluded.

Study Selection

The study selection was performed in two phases. In the first phase, the articles were selected by two independent reviewers (J.S. and D.V.B) by reading the titles and abstracts and following the described eligibility criteria. In the second phase, the full texts of the studies were read by the same reviewers and selected by the same eligibility criteria. Disagreements in any phase, was resolved by consensus between the two reviewers.

Data Collection Process

Two reviewers (J.S. and D.V.B.) collected the necessary information from the selected studies and then the accuracy of the collected information was discussed. The collected data were study characteristics (title, authors, year of publication, country, and published journal), population characteristics (sample size related to patients with SB and control patients, age of participants), diagnostic criteria, characteristics of the intervention (inclusion and exclusion criteria, treatment methods) and outcome characteristics (findings, therapy used, follow-up, and main conclusions).

Bias Risk

The methodology of the selected studies was analyzed using the Cochrane Risk of Bias Tool (►**Table 1**). The criteria used to qualify the studies were based on randomization, allocation, blinding of participants and evaluators, and analysis of results.

Table 1 Excluded articles and the respective reasons (n = 18)

Author; Year	Exclusion reason
Giannasi, L. C., et al. (2013)	2
Ommerborn, M. A., et al. (2007)	1
Restrepo, C. C., et al. (2001)	2
Çolak Sivri, R. and F. Akça Ö (2016)	4
Erden, S. (2020)	3
Ghanizadeh, A. (2013)	4
Lin, X. L. and S. Y. Tang (2013)	4
Reimão, R. and A. B. Lefévre (1982)	5
Shakibaei, F., et al. (2008)	2
Bellerive et al. (2015)	2
Bellerive, A., et al. (2013)	6
Bortoletto, C. C., et al. (2014)	2
Giannasi, L. C., et al. (2015)	2
DiFrancesco, R. C., et al. (2004)	2
Eftekharian, A., et al. (2008)	2
Salgueiro M., et al. (2017)	6
Kobayashi F., et al. (2019)	7
Salgueiro M., et al. (2017)	7

Exclusion criteria: 1) Adults (n = 1); 2) without control group (n = 8); 3) Articles in another language than English (n =1); 4) Case-control studies (n =3); 5) Old study (n = 1); 6) Duplicate articles (n = 2) 7) Do not have the results (n = 2).

A positive sign (+) was used when the study met the criteria, a negative sign (-) when the study did not meet the criteria, or a question mark (?) when the information was unclear. This analysis was performed by the two reviewers (J.S and D.V.B) and the disagreements were discussed later by them.

Results

Study Selection

We found 1074 records in the electronic databases: 307 from PubMed, 556 from Scopus, 137 from Web of Science, 32 from Cochrane Library, and 5 from VHL Bireme. After checking out the duplicates, 343 articles were excluded, lefting 731 articles to be analyzed. In the first phase, 25 articles were selected based on previously selected inclusion and exclusion criteria and the reading oftitles and abstracts. One article was excluded because the full text was missing. In phase two, the full articles were read and 16 were excluded for different reasons [Adults (n = 1); without control group (n = 8); articles in another language than English (n =1); case-control studies (n =3); old study (n = 1); duplicate articles (n = 2); do not have the results (n = 2), remaining 7 studies to be included in this SR (►**Table 1**). Further details of the search strategy are shown in ►**Figure 1**.

Studies Characteristics

All studies were randomized clinical trials, published between 2008 and 2020, and carried out in children and adolescents aged 2 to 17 years. The sample size ranged from 24-143 (± 57.2) participants.[18–24] Three studies were conducted in Brazil,[18–20] three in Iran,[21–23] and one in Colombia.[24] The studies performed the diagnosis of SB through self-report and/or questionnaires for parents and/or guardians or clinical examination and/or polysomnography or electromyography. The studies by Ghanizadeh et al.[21] and Bortoletto et al.[18] performed the diagnosis of SB using the classification criteria suggested by the American Academy of Sleep Medicine (AASM). Restrepo et al.[24] and Quintero et al.[20] used the International Classification os Sleep Disordes (ICDS) and Mostafavi et al.,[22] Rahmadi et al.,[23] and Tavares-Silva et al.[19] used only the parents' report. The interventions for SB were pharmacological (n = 3),[21–23] medicinal extracts (n = 2),[18,19] occlusal splints (n = 1),[24] and physiotherapy (n = 1).[20] All studies had a control group, in which one performed a control therapy with warm towels[24] and three a placebo medication.[18,21,22] In the three other studies, the control group was only followed over time.[19,20,24] Further details of the characteristics of the studies are shown in ►**Table 2**.

Occlusal Splint

Restrepo et al., conducted a randomized clinical study with 36 children before mixed dentition with signs and symptoms of SB. The children were randomly distributed in the control (n = 17) and experimental groups (n = 19). The experimental group used occlusal splints for 2 years and was compared to a control group that did not receive any intervention. There was a mean reduction of 20% of SB in the experimental group, but it was not statistically different from the mean of the

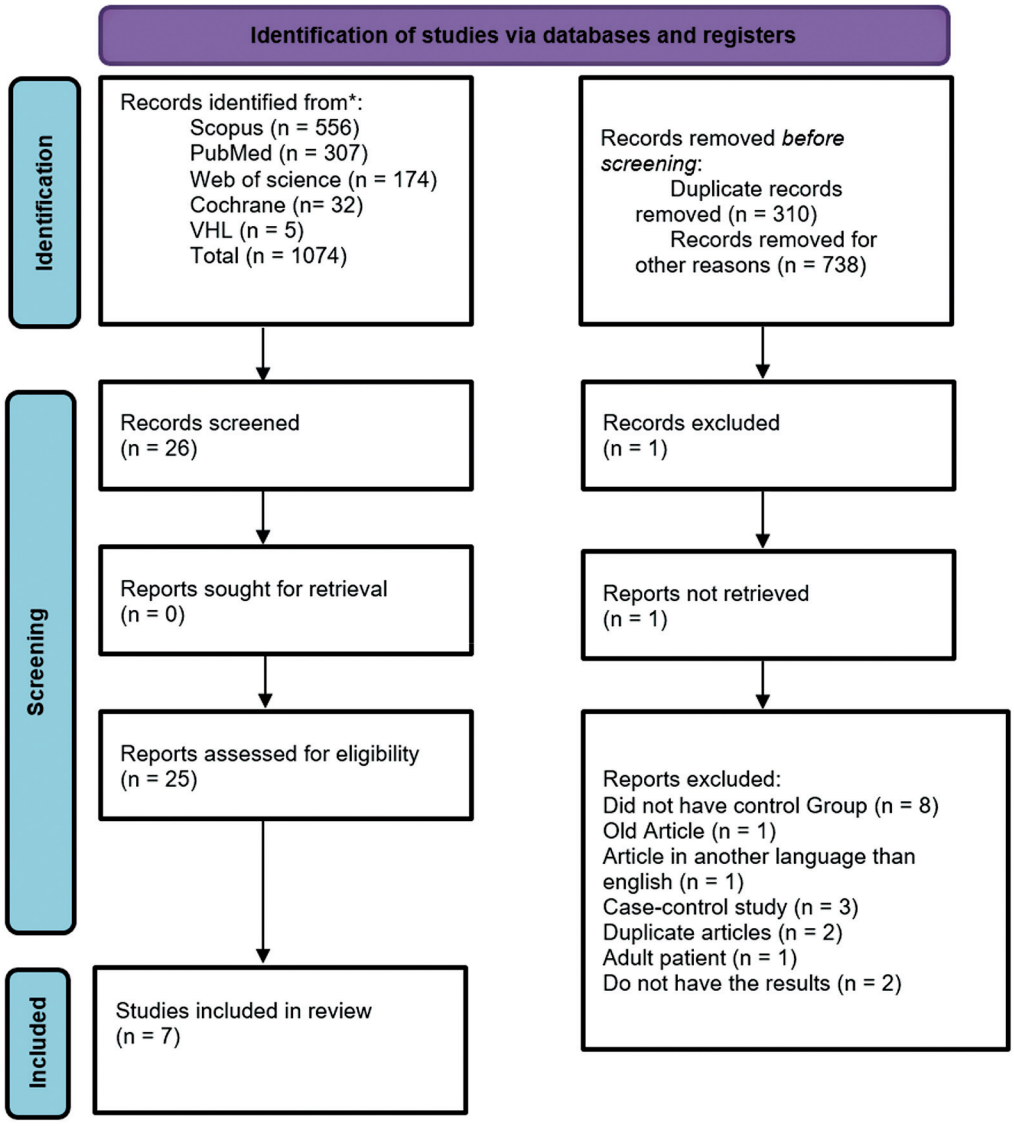

Fig. 1 Prisma Flow Diagram.

control group—which was 15%. In addition, tooth wear, anxiety levels, and TMD signs and symptoms did not differ between both groups. The deviation in mouth opening was smaller in patients who used the occlusal splint when compared to the group that did not use it.[24]

Pharmacotherapy

Three studies tested the medications hydroxyzine or diazepam.[21–23] Ghanizadeh et al. administered hydroxyzine (25-50 mg/day) before bedtime for 4 weeks and a higher dose was administered to children over 8 years. The control group used a placebo drug. After 4 weeks of treatment, bruxism decrease was significant at $p < 0.02$ between groups by parent-report and clinical examination using the Clinical Global Severity (CGS) scale.[21]

The study by Rahmati et al. administered hydroxyzine (5mg/day) before bedtime and from the fifth night onwards, 10mg for 4 weeks, while the control group used only warm towels. The means of bruxism severity in the test and control groups were 5.07 and 4.91, respectively. After 6 weeks of treatment, the participants showed that the severity of bruxism could be considerably reduced with both hydroxyzine and warm towel treatment or warm towel treatment only, being 0.68 and 2.73, respectively. The results of the tests showed recurrence of bruxism symptoms four months after stopping treatment in both groups.[23]

Moreover, the study by Mostafavi et al. used a moderate dose of diazepam (5 mg for 2–8 years old children and 10 mg for 9-15 years old children) in group 1 and a low-dose diazepam (2.5 mg for 2-8 years old children and 5 mg for 9-15 years old children) in group 2 and compared them with the control group. The mean SB reduced significantly in all groups, including the placebo, after the 2 weeks. This effect had short duration and, after 12 weeks, the mean scores nearly returned to the pretreatment scores in all groups.[22]

Medicinal Extracts

Two studies have reported homeopathic interventions to reduce SB. Bortoletto et al. carried out one study involving

Table 2 Included study characteristics[17–23]

	Author; Year; Country	N	Diagnosis criteria	Intervention	Results	Follow-up
1	Restrepo et al. 2011, Colombia	36	ICSD	#1Oclusal splint #2Control Group without intervention	There was no statistical difference between groups after therapy regarding tooth wear, parental report, level of anxiety, and TMD signs and symptoms. Mouth opening deviation was smaller in #1 when compared to #2. TMD signs and symptoms were statistically significant when comparing the beginning and end of treatment in both groups.	Did not evaluate the follow up.
2	Ghanizadeh et al, 2013, Iran	30	AASM	#1Hydroxyzine 25-50mg for 4 weeks. #2 Control group with placebo	Regarding the parents' report, there was a statistical difference between the groups, as 89.5% of #1 responded to the treatment and only 44.4% in the #2. Onthe clinical evaluation, the difference was also statistically significant, as there was a decrease in the Clinical Global Severity (CGS).	Did not evaluate the follow up.
3	Mostafavi et al, 2019, Iran	90	Parents' report	#1 2-8 years old – 2,5 to 5mg of Diazepam and >8 years old – double dose of diazepam #2 Control group with placebo	After 2 weeks of intervention, the mean SB reduced in both groups, but it did not differ between groups and follow-ups.	After 6 weeks, SB increased and, after 10 weeks, SB remained in the same level as in the beginning.
4	Rahmati et al, 2015, Iran	143	Parents' report	#1 Hydroxyzine 5mg, after 5 days 10mg and hot towels #2Control Group with hot towels	The mean bruxism in #1 and #2 was 5.07 and 4.91, respectively. However, six weeks later, the severity of bruxism was reduced in #1 and #2 to 0.68 and 2.73, respectively. Statistical tests fo bruxism symptom recurrence four months after the treatment	The statistical test results showed bruxism symptoms recurrence four months after stopping the treatment in both groups.

(*Continued*)

	Author; Year; Country	N	Diagnosis criteria	Intervention	Results	Follow-up
					discontinuation in both groups were carried out.	
5	Bortoletto et al, 2016, Brazil	24	AASM	#1 *M. officinalis* 20% 15 drops twice a day #2 Control group with placebo	There was a reduction in muscle activity after both therapies. There was no significan statistical differences between initial and final muscle activity in both groups.	Did not evaluate the follow up.
6	Tavares-Silva et al, 2019, Brazil	39	Parents' report	#1*M. officinalis* #2 *P. Decandra* #3 Association of *M. officinalis* e *P. decandra* #4Control group	At the beginning, #1 had a reduction in bruxism when compared to #2 and #4. #3 showed a similar result to #1. The sleep diary showed no difference between the beginning and end of each treatment.	Did not evaluate the follow up.
7	Quintero et al, 2008, Brazil	26	ICSD	#1 Physiotherapy 1 a week for 10 weeks #2 Control group	After the intervention, 77% of #1 reported no bruxism, while in #2, it was 15 to 38%. As positive results of this investigation, the children of #2 started physical therapy. The results were not statistically significant as in #1.	Did not evaluate the follow up.

International Classification of Sleep Disorder (ICSD) American Academy of Sleep Medicine (AASM).

24 children with signs and symptoms of SB. The subjects were randomly allocated into two groups. Group 1 ($n = 12$) ingested 15 drops of a tincture containing *Melissa officinalis* 20% twice a day (1 hour after lunch and 1 hour after dinner) for 30 days. Group 2 ($n = 12$) received a placebo solution (water with food dye) with the same dose and frequency as group 1 for 30 days. A reduction in muscle activity was found after the therapy in both groups. However, the Wilcoxon test revealed no statistically significant differences between the initial and final muscle activity in both groups (Group 1, $p = 0.157$; Group 2, $p = 0.414$).[18]

On the other hand, using a visual analog scale (VAS) and parents' report, Tavares-Silva et al. observed a reduction of the signs and symptoms of SB in 52 children. The study comprised a crossover design that included 4 phases of 30-day treatment: placebo; *Melissa Officinalis* (MO) 12c; *Phytolacca Decandra* (PD) 12c; and MO 12c + PD 12c, with a washout period of 15 days between treatments. A significant reduction of SB was observed in VAS after the use of placebo (-1.72 ± 0.29), MO (-2.36 ± 0.36), PD (-1.44 ± 0.28), and MO + PD (-2.21 ± 0.30) when compared to the baseline (4.91 ± 1.87). MO showed better results when compared to PD ($p = 0.018$) and placebo ($p = 0.050$), and similar result when compared to MO + PD ($p = 0.724$). It was not observed any recurrence of SB in 2 years of follow-up.[19]

Physiotherapy Intervention

Only one study evaluating physical therapy intervention for SB was found. Quintero et al. carried out a randomized clinical study with 26 children with signs and symptoms of bruxism based on parents' reports. The children were randomly distributed in an experimental ($n = 13$) and a control ($n = 13$) group. A physiotherapeutic intervention was applied in the the experimental group once a week for 10 weeks. After the intervention, 77% and 15% of parents reported a reduction of SB in the experimental and control group,

respectively. Considering the positive results of the physiotherapy, the control group also received the treatment. The control group results did not present the same results as the experimental group. However, the authors suggested that physical therapy can be considered effective to reduce SB in children and adolescents.[20]

Quality Assessment

The selected studies were mostly heterogeneous. Two studies[19,22] was classified as low risk of bias, 4 as moderate risk,[20,21,23,24] and 1 as high risk.[18] Most studies with high or moderate risk of bias had up to 3 of the 6 risk analysis tool domains assigned as "unclear", as they reported insufficient data to allow a clear judgment (►**Figure 2**).

Risk of Bias Between Studies

Only one study had all the positive points,[19] followed by other studies with six,[22] five,[20] three,[22] and two[21] positive points. Two studies did not obtain any positive points.[18,23] The most recurrent sources of bias were related to: (i) adequate blinding of the results' evaluation (objective measures); (ii) results with incomplete data; (iii) adequate blinding of the results' evaluation (self-report results), and (iv) adequate blinding of the participants. ►**Figure 2** provides more information on the risk of bias.

Discussion

This SR investigated the available evidence for the treatment of SB in patients under 17 years old and found 4 treatment modalities in the 7 selected articles. Most therapies demonstrate slightly positive results for the reduction of SB.[18–23] In some interventions, such as occlusal splints, this improvement was not statistically significant when compared to the control group.[24] The SR is important fora therapeutic decision based on evidence, as the articles included in it undergo a process of systematized analysis.

Due to the high prevalence of SB in children and adolescents (18%) and the challenge in dental practice, there is a large number of publications on the subject, however, this SR has shown a lack of well-designed studies that use validated diagnostic methods, well-established outcomes, and a control group to compare the interventions. Many treatments proposed for adults have been used in children, but there are several doubts about the effectiveness and adverse effects in this population. For example, although occlusal splints (OS) are highly recommended for SB management in adults,[25] their use is controversial to children and requires close monitoring due to the craniofacial growth phase. The use only at night and the close monitoring minimize possible impacts on growth, but the literature is scarce. Considering

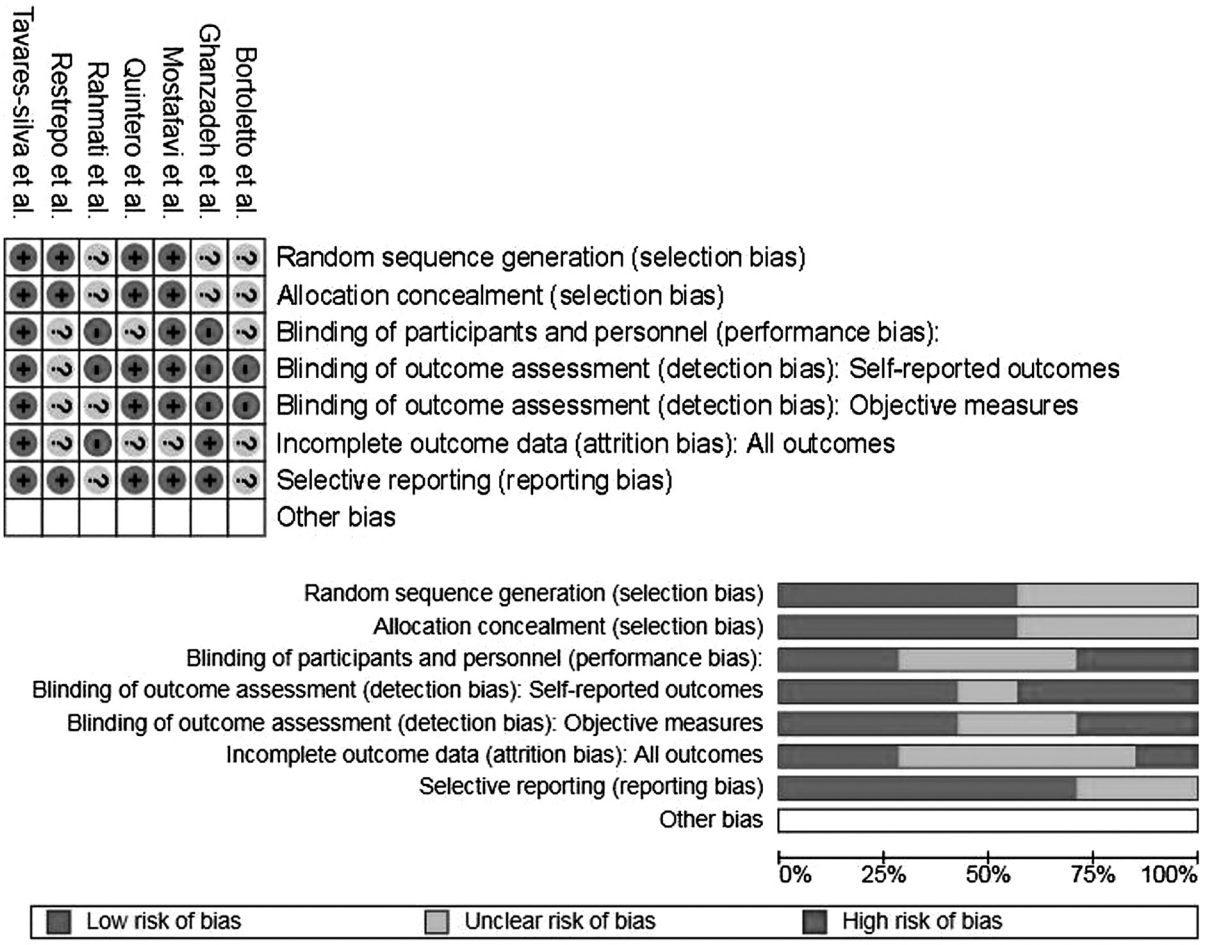

Fig. 2 Bias ris.

the literature gap on the adverse effects of OS, orthopedic appliances are used to simulate the interocclusal device for dental protection and to enable orthodontic movements frequently indicated in this age group.[26] Despite the resistance to indicate the use of OS for the pediatric population, some studies support this practice. According to Giannasi et al. (2013), 17 children used occlusal splint for 90 days, and most of the participants had a reduction in self-reported SBsigns and symptoms. In addition, snoring was reduced in almost 50% of children.[27] This study had similar results to those shown by Carra et al. (2013), in which the use of an occlusal splint for a short-term reduced SB and snoring when evaluated by PSG.[28] However, these studies were not randomized and, therefore, not included in this SR. Only the study of Restrepo et al. (2011) was included in this SR, which showed that the group that used the occlusal splint had no statistically significant difference when compared to the control group, except for the deviation in mouth opening. The different age groups assessed may justify the variability of results and the effectiveness of this therapy.[24]

The main findings of this review are related to the role of pharmacological therapies to control SB in children and adolescents. The studies with the best methodological strategy (presence of randomization, double-blinding, and control group) come from the studies that used drugs.[21–23] De Baat et al. (2021) reported that many drugs can minimize or exarcerbate bruxism episodes. As already described, most medications used for SB have a central mechanism of action on the serotoninergic and dopaminergic pathways.[29] Two articles included in this SR reported that hydroxyzine used for 4 weeks showed a reduction in parent-reported bruxism when compared to the placebo medication.[21,23] Hydroxyzine is an antidopaminergic and antihistamine medication that leads to the induction of a deeper and more continuous sleep, having a possible beneficial effects for SB since it reduces the number of micro-awakenings—one of the etiological factors associated with SB.[30] Moreover, diazepam is a benzodiazepine with anxiolytic and antispasmodic action, which acts on the dopaminergic pathway—one of the neurotransmitters involved in bruxism.[22] Mostafavi et al. (2019) observed a substantial reduction in signs and symptoms of SB by consuming low or moderate-dose of diazepam for 2 weeks. This finding elucidates that the placebo effect of consuming any medication might transiently reduce SB episodes or SB reports by parents in children.[22]

It is important to emphasize that the decision to prescribe this class of medication for this population in the daily clinic is still very controversial in normal reactive patients and requires a high level of knowledge about adverse effects. Evidence indicated some related adverse effects including some psychological side effects, somnolence and risk of dependency limit long-term use of the agents in this field.[31] The study of Mostafavi et al. (2019) shown that nineteen children were dropped out during the study because of sleepiness.[22] Its use should be for limited periods and in patients refractory to other therapies and when risk and behavioral factors have been excluded.

Few studies used homeopathic medicines as an alternative intervention. *Melissa officinalis* was the most investigated medicinal extract in the studies, but the results of the use were controversial and there is no consensus about it. Bortoletto et al. (2016) carried out a randomized clinical trial where *Melissa officinalis* did not reduce episodes of SB in children when investigated by polysomnography.[18] However, in the study by Tavares-Silva et al. (2019) a reduction in self-reported bruxism was observed with the use of *Melissa officinalis* and *Phytolacca decandra* compared to placebo medication. No recurrences of SB were identified on 2 years of follow-up.[19] The different results could be explained by SB different etiology and diagnostic tools. To indicate this therapy, further studies are needed that use the SB definitive diagnosis and reach a consensus on the effective dose.

It is important to emphasize that the difficulty of establishing a single etiological factor for SB in children makes it difficult to propose an effective treatment. SB has multifactorial factors, such as: depression and anxiety, sleep disorders, light and noise in the bedroom, sleeping position, sleeping with open mouth, smoking (including passive smoking), neurological disorders of the movement, centrally acting medications such as selective serotonin reuptake inhibitors (SSRIs), gastroesophageal reflux, respiratory problems, and some sleep disorders.[3] For a better diagnosis of SB and its associated factors, a multidisciplinary treatment with different professionals such as dentist, pediatrician, psychiatrist, otolaryngologist, and psychologist is needed. As previously reported, there is strong evidence that respiratory factors could mediate the etiology of SB in children, and it is worth remembering that the pediatric population is frequently affected by these problems. However, no study investigating this condition was selected in this SR because they did not have all the inclusion criteria.[8]

The main limitation of this SR is related to the different diagnostic methods used on the investigation of SB. Only one article used polysomnography for the definitive diagnosis of SB.[18] Polysomnography with electromyography in masticatory muscles is considered the gold standard test for the diagnosis of SB as it provides more detailed information of muscle activity and intensity and duration of SB. However, due the cost and complexity of pediatric patients to sleep in the laboratory, it is not often used in clinical routine. The non-instrumental approach such as questionnaires and guardian reports associated with clinical examination are the most used methods for diagnosing SB in children as they are simpler and more accessible, although they are subjective tools, having more chances of bias.[32,33] This lack of standardization of diagnostic methods and well-defined clinical parameters make it difficult to interpret the results and, consequently, to measure the effectiveness of the proposed therapies.[1] The randomized clinical trial was the only type of study, but the small sample size, methodological flaws in

randomization, and blinding affect the interpretation of results.

This systematic review of the literature showed many options to control SB in children and adolescents. A reduction in parents' reports on bruxism was observed in studies that used pharmacotherapy (hydroxyzine/diazepam) and medicinal extracts (*M. Officinalis*). Medicinal extracts such as *P. Decandra,* occlusal splints, and physiotherapy showed inconclusive results regarding the reduction of SB. Occlusal splints must be constantly monitoring as children are in growth phase and development of maxillofacial structures. Moreover, important contraindications on the use of medication in children and adolescents seeking to decrease bruxism were reported. Future studies with adequate methodologies, standardized diagnostic methods, representative samples, and presence of a control group must be carried out to provide strong evidence of the effectiveness of SB treatments for children and adolescents.

Conclusion

Given the small quantity of studies with adequate methodologies, we conclude that there is insufficient evidence to recommend a protocol for the treatment of SB. Thus, new studies with standardized diagnostic methods, representative samples, and presence of control groups must be carried out to better understand the effectiveness of SB treatment for children and adolescents.

The choice for conservative treatments based on diagnosis and management of SB risk factors, as well as sleep hygiene, seems to be the first-choice therapy. The indications, contraindications, and side effects of the administration of drugs, medicinal extracts, and use of interocclusal devices must be individually evaluated.

Conflict of Interest
None declared.

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