

## ORIGINAL ARTICLE

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## Association of Respiratory Problems and Bruxism - A Clinical Study

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### Abstract

**Background:** In non-functional behaviors, bruxism is the practice of clenching or grinding one's teeth which impacts children and adults alike. Respiratory disorders are known to be the etiological causes for bruxism, such as asthma and upper airway infections. **Objective:** The aim of this study was to determine any association between respiratory problems and bruxism. **Design:** This was a Cross-Sectional study. **Setting:** Dental department, Sri Manakula Vinayagar Medical College & Hospital **Participants:** 50 children with either complete primary or mixed dentition who were not in dental treatment were included in the study. **Methods:** After obtaining consent, all the children underwent detailed history taking and thorough oral clinical examination. Data was collected as per a questionnaire. Data were presented in the form of statistical Tables and charts. SPSS software version 20 was used for statistical analysis. **Results:** The mean age of the study population was recorded to be 6.22 years. The male gender accounted for higher proportion. 66% of the children with bruxism were found to have respiratory problems which were statistically significant ( $p < 0.05$ ). **Conclusion:** There was a significant association between respiratory problems and bruxism. Further research evaluating this association is indicated.

**Keywords:** Bruxism, Respiratory problems, Children, Para nasal Sinuses, Respiratory Tract Infection

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### Introduction

Bruxism has multifactorial etiology the central or pathophysiological triggers of neurotransmitting of the brain or basal ganglia is associated with bruxism and grinding. The other peripheral conditions such as dental occlusion, psychosocial effects, such as stress or anxiety have been correlated with Sleep Bruxism and grinding. Mouth breathing and bruxism can both result in craniofacial and postural shifts, as well as face muscle problems, concentration, attention, occlusion, mastication, swallowing and sleeping<sup>1-4</sup>. Due to the anatomical continuity between the oral cavity and the respiratory tract, the oral cavity is considered a potential reservoir of respiratory pathogens. The relationship between upper respiratory tract infection (URTI) and oral health remains unclear, i.e. infections involving

nose, paranasal sinuses, pharynx and larynx. Respiratory tract infections (RTI's) can affect the sinuses, throat, and airways of lungs. Infections of the respiratory tract in early life have been hypothesized to influence the risk of lower lung function and asthma in later childhood and adulthood. Infections of the respiratory tract could lead to increased sensitivity of the airways leading to obstruction and hyper reactivity of the airways and subsequent asthma. Infections of the respiratory tract may lead to persistent respiratory morbidity as both the immune system and the respiratory system develop in early life. On the other hand, respiratory infection is the leading cause of death in children under the age of 5, accounting for more than 20% of the world's 10.6 million annual deaths. There is some evidence to suggest that middle ear and respiratory tract infections (RTIs) in early

childhood increase the risk of developing childhood caries and/or enamel developmental defects in permanent teeth. The occurrence of serious acute lower respiratory tract infections (LRTIs) among children in industrial countries was calculated at 1 episode every 100-personyear. This research explored the correlation of bruxism and respiratory tract infections (RTI) for controlling these two diseases and safeguarding children's health.

## Materials and Methods

**Place of Study:** Dental department, Sri Manakula Vinayagar Medical College & Hospital

**Type of Study:** This was a Cross-Sectional study.

**Sample Collection:** Sample size: 50 Patients

**Sampling Methods:** Consecutive Sampling

**Inclusion Criteria:** Children with either complete primary or mixed dentition who were not in dental treatment were included in the study.

**Exclusion Criteria:** Children whose parents didn't provide consent, those undergoing any dental treatment and those with chronic systemic illness were excluded from the study.

**Statistical Analysis:** Data were presented in the form of statistical Tables and charts. SPSS software version 20 was used for statistical analysis.

**Ethical Approval:** Approval was taken from the Institutional Ethics Committee prior to commencement of the study.

## Results

**Table 1: Distribution of sample according to variables studied**

Variables	Male	Female	P - Value
Age	4 years	3 (50%)	0.543
	5 years	6 (43%)	
	6 years	4 (27%)	
	7 years	9 (60%)	

The above table displays the distribution of the overall sample according to gender and age. Out of 50 children the majority of children around 56% were female's i.e. 28 children and 44% were males around 22 children. Out of 50 children with respiratory problems or bruxism, The majority of the children approximately 60% belonged to the age group of 6 and 7 years respectively followed by 28% belonging to age

group of 5 years and least with 12% belonging to the age 4 years. The p value obtained was 0.543

**Table 2: Association between bruxism and respiratory problems**

Groups	Respiratory problems		Total	P Value
	present	absent		
With bruxism	16	6	22	0.027*
%	73%	27 %	44%	
Without bruxism	8	20	28	
%	29%	71%	56%	
Total	24	26	50	
%	100 %	100%	100%	

The children with respiratory problems exhibited the habit of bruxism. Out of 50 children we classified them according to respiratory problems and associated bruxism. The respiratory problems were present in 48 % i.e.24 children. Around 67% i.e. 16 children exhibited bruxism with respiratory problems and 33% i.e. 8 children didn't exhibit bruxism, they only had respiratory problems. Out of 50 children around 52 % i.e. 26 children didn't exhibit respiratory problem. Only bruxism was present in 23 % i.e. 6 children and other 77 % i.e. 26 children didn't had bruxism nor respiratory problems. The p value obtained was 0.027

## Discussion

Bruxism can induce dental damage, jaw muscle pain and fatigue, and acute nausea, and can impair oral functions such as chewing, listening, and swallowing in some severe forms.. Nevertheless, there was no direct relationship between the form of bruxism, frequency, and additional clinical signs and symptoms. In fact, it has been reported that patients with frequent sleep bruxism are less prone to complain about fatigue and pain in the masticatory muscles than the patients with fewer masticatory events per night. The reality of their low impact on the value of life and also the crucial risk factor for temporomandibular dysfunctions has proved to be a growing concern for children in recent years.<sup>5</sup> According to our study prevalence of only bruxism without other factors was found to be 23% which is similar to other studies by Blount RL finds out that several diurnal audible

teeth grinding (bruxism) was found to affect 21.5% of population.<sup>6</sup> Their study is in contradiction with Jain A et al; according to them the prevalence of bruxism in children is estimated to range from 7% to 15.1%.<sup>7</sup> Christer hublin et al;<sup>8</sup> reported a case on —Sleep bruxism based on self-report in a nationwide twin cohort. He concluded that females compared to males reported more childhood bruxism. Even our study shows that prevalence was more in females compared to males. The findings of this study indicate a correlation between bruxism and children's respiratory problems. The results are in line with those recorded in previous studies of Grechi et al<sup>9</sup>, Eftekharian et al<sup>10</sup>, Di Francesco et al<sup>11</sup> that show that a primarily mouth respiratory pattern may cause temporomandibular and postural disorders and is also considered a risk factor for bruxism. Dehydration of the gingival layer, decreased sensitivity of the epithelium to bacterial plaque growth, and loss of salivary self-cleaning may be thought to be the likely causes. Bruxism and habitual snoring are closely related. Sleep bruxism is also a frequent complaint of parents of children who are mouth breathers. One theory suggests there is a correlation between bossism and upper airway obstruction, with obstnictive sleep apnea causing sleep bruxism. Bruxism does appear to be more prevalent when sleeping in a supine position, which correlates with a greater possibility of airway obstruction. A link has also been made between bruxism and tonsillar hypertrophy, which is strongly correlated to upper airway obstruction. Adenotonsillectomy surgery has been shown to improve bruxism in some children. Bruxism may also be caused by allergic processes such as asthma and respiratory airway infection.<sup>12</sup> The nasal obstruction and bruxism in children with allergies are closely linked to the allergic inflammation of the acoustic meatus, which in turn leads to the emergence of bruxism in effort to clear the ear canals.<sup>12</sup> Therefore, early diagnosis of these disorders is important in order to enable prompt clinical treatment if appropriate.<sup>13</sup>

## Conclusion

Bruxism should not be viewed as a condition in otherwise healthful people, but rather as an attitude that can be a risk factor (and/or protective) for certain medical effects. There are no appropriate diagnostic validity approaches for the assessment of bruxism clinically. Tooth wear is regarded as bruxism analogous, but may also be the result of attrition, abrasion and erosion. Cut-outs should not be used in otherwise healthy individuals to ascertain the prevalence or lack of bruxism, but instead bruxism-based masticatory involvement in the behavioural spectrum should be measured. In the absence of clear evidence, occlusal tools, recommendations, changes in lifestyle and pharmacological treatments will help control bruxism.

**Conflict of Interest:** None declared

**Source of Support:** Nil

**Ethical Permission:** Obtained

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