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## Association of Dental Caries and Bruxism – A Clinical Study

N Padma Priya

Associate professor, Sri Manakula Vinayagar Medical College and Hospital Kalitheerthalkuppam, Madagadipet, Puducherry

### Abstract

**Background:** Dental caries is the childhood's most serious chronic infectious disease induced by bacterial activity, mostly *Streptococcus mutans* and sweet substances on tooth enamel. This research aimed at establishing the incidence of dental caries and bruxism in children and their related factors. **Objective:** The aim of this study was to determine any association between dental caries and bruxism. This was a Cross-Sectional study was conducted in the Dental department, Sri Manakula Vinayagar Medical College & Hospital. N=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 5.93 years. The male gender accounted for slightly higher proportion. 78% 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 dental caries and bruxism. Further research evaluating this association is indicated.

**Keywords:** Bruxism, Dental caries, Sleep bruxism, Gnashing, Clenching

**Address for correspondence:** Dr. N. Padma Priya, R.K Skin and Dental Clinic, 221A, Nethaji Road, Manjakupam, Cuddalore- 60700, Mobile: 9842371235. Email: [drpadmapriya0@gmail.com](mailto:drpadmapriya0@gmail.com)

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### Introduction

Bruxism is a state of grinding, gnashing, or clenching your teeth.<sup>1,2</sup> If a person has bruxism, they may unconsciously clench their teeth when they are awake (awake bruxism) or clench or grind their teeth during sleep (sleep bruxism). Sleep bruxism is considered a movement disorder correlated with sleep. Many sleep disorders, such as snoring and breathing disturbances (sleep apnea), are more likely to occur to persons who clench or grind their teeth during sleep. It may not be necessary to treat mild bruxism. Yet bruxism can be frequent and severe enough in certain people to lead to jaw disturbances, nausea, damaged teeth and other issues. The etiology of this disease is not fully understood as bruxism is a dynamic, multifactorial syndrome frequently correlated with emotional stress, occlusal issues or a

combination of the two.<sup>2,3</sup> In contrast to the influence of bruxism on dentition, this disorder may also impact the temporo-mandibular joint, cause headaches and behavioral and emotional consequences.<sup>4,5</sup>

One of the most infectious diseases in the world is Dental caries. It is the most prevalent chronic disease affecting the human race. Dental caries are defined as a multifactorial disease in which the anatomy of the oral cavity, dental capacity, salivary composition, crevicular fluid and diet are just as important as the development of bacterial plaque and the microorganisms that cause the disease.<sup>6</sup> Dental caries is a biofilm-mediated, sugar-driven, multifactorial, dynamic disease that results in the demineralization and remineralization of dental hard tissues. Once it occurs, its manifestations persist throughout life even though the lesion is treated. There are practically no geographic area in the world

whose inhabitants do not exhibit some evidence of dental caries. It affects persons of both sexes and all races. It usually begins soon after the teeth erupt into the oral cavity. Caries can occur in both primary and permanent dentitions during life and can damage the crown of the tooth and exposed root surfaces throughout later life. The relationship between pathological and protective factors affects caries initiation and development. Dental caries are an unevenly distributed disorder with significant economic and quality of life pressures that can be prevented.

### 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%)	3 (50.0%)
	5 years	6 (43.0%)	8 (57.%)
	6 years	4 (27.0%)	11 (73.0%)
	7 years	9 (60.0%)	6 (40.0%)

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 dental caries 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 dental caries**

Groups	Caries		Total	P - Value
	Present	Absent		
With bruxism	16	6	22	0.002*
%	73%	27 %	44%	
Without bruxism	8	20	28	
%	29%	71%	56%	
Total	24	26	50	
%	100 %	100%	100%	

The children with dental caries exhibited the habit of bruxism. Out of 50 children we classified them according to dental caries and associated bruxism. The dental caries were present in 48 % i.e. 24 children. Around 67% i.e. 16 children exhibited bruxism with dental caries and 33% i.e. 8 children didn't exhibit bruxism, they only had dental caries. Out of 50 children around 52 % i.e. 26 children didn't exhibit dental caries. Only bruxism was present in 23 % i.e. 6 children and other 77 % i.e. 26 children didn't had bruxism nor dental caries. The p value obtained was 0.02.

### Discussion

Dental caries in the permanent dentition are considered to be a common local cause of delayed development. Dental caries was prevalent among 4 to 7-year-old primary school children. Dental caries is considered a typical local cause of delay. We have established specific factors covering three major areas of risk, children oral health behavior and practices, child feeding practices, and dietary habits that were predominantly associated with dental caries' experience in our study. In addition, dental caries have been strongly linked with the behavior, including brushing teeth at least once daily, practicing of brushing as early as 2 years of age and regular visits to a dentist. Additionally, kids who were combined with breast milk and powdered milk, kids who slept with bottles in their mouths and the custom of two or more snacking products between meals was related to children's dental caries. Dietary habits like lower fresh fruit consumption once a week or less and higher soft and flavored milk

consumption (more than once a week) were significantly linked to dental caries in our study. Out of 50 children around 52 % i.e. 26 children didn't exhibit dental caries. Only bruxism was present in 23 % children and other 77 % children didn't have bruxism or dental caries.

In Brazil, Valera et al.<sup>7</sup> used parent's reports for the assessment of nocturnal bruxism and found a 43% frequency of the condition. In American children, Cheifetz et al.<sup>8</sup> reported a 38% frequency of bruxism, based on parent's reports. Together with dental caries, bruxism has a negative impact on the quality of life of this group of individuals. The prevalence of dental caries associated with bruxism was much higher in females than in males. Possible reasons for higher prevalence of dental caries in children are identified as poor oral hygiene and increased consumption of sugary foods and beverages. Bimstein et al.<sup>9</sup> reported that there was no correlation between the prevalence of dental caries, oral hygiene. Blomqvist et al.<sup>10</sup> stated that, despite the high prevalence of dental caries in children, oral hygiene was not poor. The reason of inconsistency among the results of these studies was stated as less number of examined patients and the differences between patient groups.

## Conclusion

The risk of dental caries and related bruxism in school children between the ages of 4 and 7 suffering from this preventable disorder is high. Several individual factors were found to be more relevant to dental caries than socio-economic factors, including oral health behaviors and practices, child feeding practices, and dietary habits. Their results support public education and programs aimed at primary school children to promote good oral health, feeding and dietary habits. They also support public awareness campaigns and health education programs.

**Conflict of Interest:** None declared

**Source of Support:** Nil

**Ethical Permission:** Obtained

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