

**Bruxism In Chennai Pediatric Population - A Cross-Sectional Study**

Research Article

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The term bruxism was derived from the Greek word *brychein* meaning grinding the teeth [1]. Marie, Pietkiewicz in 1907 used the term *la bruxomanie* in French. At the start of the 20th century, the term *traumatic neuralgia* was used by Karolyi [2, 3]. Bruxism can be a repetitive jaw-muscle activity with clenching or grinding of the teeth and/or by bracing or thrusting of the mandible [4]. This condition affects both children and adults. Bruxism has two distinct circadian manifestations. It can occur during waking hours (Day Time Bruxism/ Diurnal bruxism /Awake Bruxism) or during sleep (Nighttime bruxism/ Nocturnal bruxism/ sleep bruxism), the latter is more common [5, 6].

Awake bruxism is found to occur predominantly among females while no such gender difference is seen for sleep bruxism. The onset of sleep bruxism is about 1 year of age soon after the eruption of deciduous incisors. The prevalence of sleep bruxism is reported to be 10-20% in children [3]. In preschool children, it is found to be prevalent at 14% [7]. It decreases with advancing age. In young adults aged between 18 and 29 years, it is 13% and 3% in individuals over 60 years of age [4, 7]. The disorder appears more in children with primary dentition. It is usually short-term, often stops by the time secondary dentition erupts [1, 8].

The etiology of bruxism is multifactorial. It includes psychological/behavioral factors such as stress, anxiety, Type A/B personality. Social factors like divorced/single parents, problems at school, high expectation of academic performance by teachers/parents, abusive environment of the child, the birth of a sibling can also contribute to bruxism. Systemic factors such as allergies, asthma, intestinal parasite infestation, nutritional or endocrine disorders, and dental factors like malocclusion, TMJ dysfunction can be

causative towards bruxism [9]. The foremost common clinical sign of bruxism is abnormal wear of teeth which is caused by periodic clenching of teeth. Other orofacial signs of bruxism are tooth hypermobility and early exfoliation of primary teeth, recession, and inflammation of the gums, pain, and hypertrophy of masseteric muscles, degenerative changes of the temporomandibular joint, and headache [10]. Children whose parents had a bruxism history seem to brux 1.8 times over than non-bruxer parents [11]. Disturbed sleep patterns by bruxers have been hypothesized which can cause lethargy, tiredness leading to lesser physical activity. The parental awareness of bruxism is important as it can change the way they approach the dentist for treatment. Thus the study aimed at questioning the parent's knowledge and awareness regarding the child's bruxism habit.

**Methodology**

This cross-sectional descriptive study was done on 150 children of 6-12-year old after getting study approval from the Institutional Ethical committee. The children attending the outpatient Department of Pediatric clinics across Chennai were taken into the study. Children in the age group between 6-12 years, accompanied by at least one of the parents and showing normal milestones of development were included in the study. Exclusion criteria included parents who were unwilling to participate, special children, systemically compromised and developmentally impaired children, autistic children.

After acquiring the parents' informed consent, a pretested self-administered questionnaire was administered to all participants. The questionnaire included 15 close-ended questions along with general information of the pediatric patients like the name, age, gender, and place of residence. After this, the child was examined

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for oral hygiene, gingival inflammation, and the presence of occlusal wear facets.

The questionnaire:

1. Have you heard any clenching/grinding noise from your child's teeth while he/she is sleeping? a) Yes b)no
2. Does your child clench/grind their teeth while sleeping daily? a) Yesb) no
3. Does your child bed wet during sleeping often? a) Yes b) no
4. Do you deworm your child once in 6 months? a) Yes b) no
5. Does your child complain of pain around the mouth / near the ear in the morning? a) Yes b) no
6. Have you ever noticed your child clench/grind his/her teeth during the daytime? a) Yes b) no
7. Will your get child more stressed often / during exam a) Yes b) no
8. Does your child talk /murmur while sleeping? a) Yes b) no
9. Does your child have disturbance in sleep? a) Yes b) no
10. Does your child often wake up in the middle of the night because of nightmares/bad dreams? a) Yes b) no
11. Have you ever heard your child snoring while sleeping? a) Yes b) no
12. Do any of your parents have the habit of clenching/grinding the teeth while sleeping? a) Yes b) no
13. As far as you observed does the child have any dental problems? a) Yes b) no
14. Is your child suffering from any allergies/asthma? a) Yes b) no
15. Have you ever taken any psychologist's help for the child's stress management? a) Yes b) no

**Results**

The results were tabulated and analyzed using SPSS software. Table 1 shows the distribution of sample population based on

parental history on child's bruxism using student t-test and was found to be insignificant. Table 2 shows the presence or absence of bruxism based on the gender of the child. Using the chi-square test, it was found insignificant. Table 3 shows the association between parasomniac activities and bruxism.The chi-square analysis reveals that parasomniac habits like bedwetting/murmurs in sleep/disturbed sleep pattern/nightmares/snoring at sleep are significantly associated positively with children with habits of bruxism at night. There was no significant clinical difference between bruxers and non-bruxers concerning clinical findings.

**Discussion**

The Association of Sleep and Arousal Disorders classifies bruxism as parasomnia [12]. Parasomnias are undesirable physical events that occur exclusively or predominantly during sleep. It takes the form of motor or autonomic phenomena which results in variable degrees of arousal [16]. The relationship between bruxism and a patient's sleep stage has been linked. Generally, most jaw muscle activity occurs during light phases of sleep and has been observed to take place in connection with bodily movement.

The sleep cycle starts with Non-REM (Rapid Eye Movement) sleep. There are three stages of Non-REM sleep. In stage 1, the brain produces high amplitude theta waves, which are very slow brain waves. This period of sleep lasts around five to 10 minutes [5]. Stage 2 is the second stage of sleep and lasts for approximately 20 minutes. During stage 2, body temperature drops, breathing, and heart rate become more regular. In stage 3, muscles relax, blood pressure, and breathing rate drop. It is the deepest phase of sleep. Deep, slow brain waves known as delta waves begin to emerge during stage [3, 13, 14]. Children are less responsive to activities and noises around them. Bed-wetting, sleepwalking is most likely to occur during this deep stage of sleep. In the present study, the association of Parasomnias with bruxism could

**Table 1. Presence or absence of bruxism based on Parental questionnaire.**

Variable	Bruxism	N	Mean	SD	P-value
Age	No	111	10	2.597	0.44
	Yes	39	9.631	2.352	

**Table 2. Presence or absence of bruxism based on the gender of the child.**

Bruxism	Gender		P-value
	Male	Female	
No	71	40	0.72
Yes	23	16	

**Table 3. Association between parasomniac activities and bruxism.**

Variable	Bruxers %	Non-Bruxers %	Chi-square	P-value
Bedwetting	63.2	18.9	26.28	<0.001
Murmur in sleep	60.5	12.6	34.81	<0.001
Disturbed sleep at night	39.5	19.8	5.85	0.016
Nightmares/bad dreams	18.4	7.2	3.93	0.047
Snoring during sleep	39.5	13.5	11.86	<0.001

be related to stage [3]. The brain begins to produce bursts of rapid, rhythmic brain wave activity known as sleep spindles. Body temperature and heart rate starts to decrease. The fourth stage of sleep, known as rapid eye movement (REM) sleep. REM sleep is characterized by eye movement, increased respiration rate, and increased brain activity. It is also referred to as paradoxical sleep because while the brain and other body systems become more active, muscles become more relaxed. Dreaming occurs due to increased brain activity, but voluntary muscles become immobilized.

The transitions between the awake state, rapid eye movement (REM), and non-rapid eye movement (NREM) sleep occur in an orderly manner. The primary sleep parasomnias are disorders of this sleep/wake cycle. Although bruxism may occur at any stage of sleep, it is most likely to take place during stage 2 of NREM sleep or REM sleep and can be triggered by various sleep-disturbing stimuli [15]. In addition to bruxism, other various parasomnias in children are enuresis, somniloquy (sleep talking), somnambulism (sleepwalking), sleep apnoea, panic attacks. Some parasomnias are thought to occur simultaneously.

It could be observed that bedwetting, murmuring, snoring is also observed in non-bruxers too but not significant. 90% of children achieve control of bedwetting by 7 years. Change in dietary patterns, creating an enuresis alarm, pelvic exercises can reduce bedwetting in children which can prevent a child from disturbed sleep at night.

Bruxism can be a significant indicator of comorbid psychopathology. Several studies have identified significant behavioral problems among bruxist children, which are likely to be caused by the nighttime arousals resulting from bruxist episodes [8]. It has been found that stress or anxiety is always a precursor to bruxism [16]. In the present study, the parents did not approach any psychologist or child counselor regarding bruxism. Although dental interventions can minimize physical damage they do not address the possible underlying psychological issues. Hence a significant reduction in anxiety levels leads to a prominent reduction in bruxism in children. A psychological intervention like cognitive behavioral therapy, stress reduction and counseling to both the child and parent plays an important role in the management of parasomnias other than pharmacotherapy.

Neurological disabilities such as autism and cerebral palsy also have been strongly indicated as risk factors for bruxism. The present study has been done only on children with normal milestones in physical, emotional, and cognitive development.

## Conclusion

Based on the given data it is clear that children with bruxism are associated with parasomnias habits. This will eventually create a disturbed sleep pattern which would affect the systemic and oral health of the child. The problems occurring in systemic, psychological, and trauma to dentition have to be managed with a multidisciplinary approach having pediatrics, psychologist, and dentist in the team.

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