

Quality of life of children with sleep bruxism

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ABSTRACT

Aim: The aim of this study was to compare the Quality of life (QoL) of children with and without sleep bruxism in Chennai population. **Materials and Methods:** A cross-sectional study was conducted with participants of both genders assigned as bruxers ($n = 36$) and non-bruxers ($n = 36$) from different regions of Chennai with the age range of 6–12 years. Parents/Caregivers answered a questionnaire in the waiting room. The QoL was assessed using the Oral Health Impact Profile (OHIP-14). OHIP-14 was analyzed by Mann-Whitney U test. **Results:** The sociodemographic characteristics presented no significant differences between bruxers and non-bruxers ($P > 0.005$). There was a significant difference in QoL between the case and control group (<0.001). Bruxers had worse QoL than controls. **Conclusion:** Sleep bruxism may be associated with a negative impact on QoL.

Keywords: Bruxism, quality of life, sleep

Introduction

Sleep bruxism (SB) is “an oral parafunction characterized by grinding or clenching of the teeth during sleep that is associated with an excessive or intense sleep arousal activity.” The above definition is according to the International Classification of Sleep Disorders, second edition (ICSD-2). It has been noted down in the new sleep-related movement disorders category.^[1,2] SB is regarded as the most frequent parasomnias encountered by children.^[3] The etiology of SB is complex and multifactorial demanding systemic, psychological, occupational, and genetic factors. Recurrent provocation during sleep, which is associated with increased anxiety and stress, is regarded as the main cause of poor sleep quality.^[4] These variables influence the release of chemical mediators, which provoke catecholamine release, altering the initiation and maintenance of wakefulness and sleep.^[5] Children with SB may have additional symptoms, such as temporomandibular disorders,

presence of tooth wear facets,^[6] headaches, earaches, and pain in the masticatory muscles.^[7] According to Carra *et al.*^[8] SB in young children can also be associated with fatigue of the masticatory musculature, headaches, and noisy breathing during sleep.^[9-11] Bruxism is a result of stress and anxiety in children. Hence, pediatric dentist needs to play an important role in providing effective primary care leading to cessation of the habit.

Epidemiological studies showed that bruxism can be seen in all age groups but more common in the young population.^[12] The literature reports prevalence rates of bruxism in children ranging between 14% and 20% while in adults ranging between 6% and 8% and it decreases with age.^[12,13]

The diagnosis of SB is usually based on an interview, clinical examination, and objective polysomnography (sleep test).^[14] The most common method for diagnosing bruxism in children is parental reports of grinding the teeth.^[15,16] Therefore, parents/caregivers play an important role in the detection of SB in children. However, detection is often impeded by a lack of prior knowledge regarding bruxism.^[17] Occlusal splint can be given to patients to wear it during the night for treatment. Some studies suggest that psychological support can help children with bruxism.^[18-20]

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To the best of our knowledge, there have not been any studies on the quality of life of children in Chennai population. Consequently, the purpose of the present study was to evaluate the quality of life (QoL) of children with SB by means of a generic scale, in addition to the association of sociodemographic characteristics.

Materials and Methods

Ethical approval

The present study was carried out in the Department of Paediatric and Preventive Dentistry, Saveetha Dental College, Chennai, after obtaining ethical clearance from the Institutional Ethical Committee (SRB/MDS/PEDO/18-19/0008) on 16/08/2018. After receiving clarification regarding the procedures, parents/caregivers who agreed to participate signed a statement of informed consent.

Sample selection

This study evaluated variables related to the QoL in children with (experimental, $n = 36$) and without SB (control, $n = 36$) from different regions of Chennai with the age range of 6–12 years who agreed to participate in the study and whose parents/caregivers also authorized participation. The inclusion criteria were the presence of mixed dentition with first permanent molars erupted, no history of trauma, and no previous orthodontic treatment. The exclusion criteria were: children outside the age range of 6–12 years, children with dental caries, toothache, early tooth loss, systemic and/or mental developmental disorders, use of medications that could interfere with the central nervous system, and/or children who did not accept taking part in the study.

The interviews were conducted using a prestructured questionnaire and data were collected directly from parents/caregivers. Two previously trained dentists conducted this process. The Quality of Life (QoL) of children with SB was evaluated by using the Portuguese version of the Oral Health Impact Profile (OHIP-14) questionnaire.^[21,22] OHIP-14 comprises 14 items distributed in seven dimensions: Functional limitation, pain, psychological discomfort, physical disability, psychological disability, social disability and handicap.^[23] All participants were instructed to rate the frequency they experienced the impact of dental problems for each OHIP item. A 5-point Likert-like scale was used, and the answers “very often,” “fairly often,” “occasionally,” “hardly ever,” and “never” were scored from 4 to 0, respectively. The sum of all 14 items ranges from 0 (very good) to 56 (very poor). The parents/caregivers answered the questionnaire individually without consultations or discussions with colleagues or family. Upon completion, the questionnaire was immediately returned to the researcher and the participants received information on bruxism.

Statistical analysis

Statistical analysis was performed by calculating the means, frequencies, and standard deviation. The demographic

characteristics of participants were analyzed by Chi-square test [Table 1]. The domain scores of OHIP-14 were obtained by summing responses to 7 corresponding items, and overall scores were derived by summing domain scores. A higher score represents poor QoL. Since the data did not follow normal distribution, non-parametric test was used in the data analysis. Mann–Whitney-U test was used to test the significant difference in 7 domains of OHIP-14 scores during the study period [Table 2]. All analysis was performed using social sciences software (SPSS) version 16.0 (SPSS, Chicago, Illinois, USA) with a significance level of 5%.

Results

A total of 72 children participated in the study with both genders assigned as bruxers ($n = 36$) and non-bruxers ($n = 36$) with the age group of 6–12 years. The sociodemographic characteristics presented no significant differences between bruxers and non-bruxers [Table 1]. There was a significant difference in QoL between the case and control group [Table 2]. Across all of the seven OHIP-14 domains, there were significant differences in mean scores between the case and control groups: functional limitation ($P < 0.001$), physical disability ($P < 0.001$), pain ($P < 0.001$), psychological discomfort ($P = 0.001$), psychological disability ($P < 0.001$), social disability ($P < 0.001$), and handicap ($P < 0.001$).

Compared to controls, bruxers had the highest scores in all domains ($P < 0.001$), revealing the negative perception of oral health on the quality of life in this group [Table 2].

Discussion

In the present study, most parents/caregivers were unaware of the meaning of bruxism, which may have led to an underestimation of the prevalence of this parafunctional habit. In the previous investigation, 61.9% of parents/caregivers lacked knowledge of SB and did not know what caused the

Table 1: Demographic characteristics of the sample

Variables	With Bruxism Frequency n (%)	Without Bruxism Frequency n (%)	P
Child's gender			
Male	21 (58.3)	17 (47.2)	>0.005
Female	15 (41.7)	19 (52.8)	
Child's age			
<9 years	16 (44.4)	17 (47.2)	>0.005
≥9 years	20 (55.6)	19 (52.8)	
Parent			
Mother	20 (55.6)	22 (61.1)	>0.005
Father	10 (27.8)	10 (27.8)	
Others	6 (16.7)	4 (11.1)	
Knowledge of meaning of bruxism			
Yes	10 (27.8)	6 (16.7)	>0.005
No	26 (72.2)	30 (83.3)	

Table 2: Mean values and standard deviation of OHIP-14 domains from subjects with and without sleep bruxism

Variables	Bruxers		Non-Bruxers		P
	Mean	Std. Deviation	Mean	Std. Deviation	
Functional limitation	4.67	1.29	1.47	1.13	<0.001
Physical disability	2.33	1.04	0.72	0.70	<0.001
Pain	2.67	1.07	0.64	0.64	<0.001
Psychological discomfort	2.25	1.13	1.39	0.93	0.001
Psychological disability	1.58	0.91	0.00	0.00	<0.001
Social disability	1.97	1.03	0.00	0.00	<0.001
Handicap	2.53	1.59	0.00	0.00	<0.001

condition (Tavares-Silva *et al.* 2016).^[17] Therefore, there appear to be large gaps in knowledge about bruxism that need to be clarified by healthcare professionals. As childhood bruxism can persist into adulthood (Serra-Negra *et al.* 2009),^[6] early diagnosis can help control the habit and prevent harm to components of the masticatory system (Serra-Negra *et al.* 2013).^[24] Thus, knowledge of SB is essential and allows parents/caregivers to report the medical history and current medical status of their children with greater accuracy.

Some researchers report that bruxism is more prevalent in boys (Liu *et al.* 2005; Naha's-Scocate *et al.* 2014).^[25,26] The present study is also in accordance with the literature, whereas other studies have found no significant association between SB and gender in a pediatric population (Bharti *et al.* 2006; Manfredini *et al.* 2013).^[27,28] A number of studies report that girls in the menarche phase may have sensory disorders in trigeminal muscles caused by sex hormones, which may be directly related to bruxism and temporomandibular disorder (Pereira *et al.* 2010; Fernandes *et al.* 2016).^[29,30] The present study showed that SB was more prevalent among older children (6–12 years). Some studies have shown a greater prevalence of SB in the mixed dentition (Restrepo *et al.* 2006; Kobayashi *et al.* 2012; Restrepo *et al.* 2016).^[31-33] The premature appearance of some teeth, occlusal imbalances, and the possible effects of occlusal and periodontal forces may explain these associations (Restrepo *et al.* 2016).^[33]

QoL is a global construct that emerges from several, overlapping aspects, or domains of life. In the last three decades, this construct has been developed quite extensively in research to assess the individual's perception of overall well-being. Thus, it is important to apply a reliable and valid instrument to assess patient's QoL. OHIP-14 is the most widely used indicator in evaluating QoL. OHIP-14 is a shorter version of OHIP-49 original version which was often not practical in a clinical setting because of its length and also because many questions were irrelevant to specific oral health states.^[34]

Functional limitation affected the quality of life of the children of this sample with SB, and these results corroborate with the literature.^[35-37] The domain of functional limitation comprises issues that deal with the children's experience as to difficulties

in the physiological functions of biting or chewing food, pronouncing certain words, and eating or drinking hot or cold food. Physical pain domain demonstrated the impact on QoL by the second-highest mean scores in this study. This can be in accordance with the previous study by Rajagopalachari *et al.*^[38] This can be explained by the fact that most of them visited the dentist only when they had pain. Monterio AAKS in his study stated that masticatory muscle activities could lead to muscle overloading which could be associated with local blood flow and microcirculation disorders, and pain derived from ischemia.^[39] Another study by Raphael *et al.* mentioned that increase in muscular activities may lead to TMJ pain or masticatory muscle pain.^[40] Physical disability domain had a negative impact on bruxers in the present study. This was similar to a study in the literature. According to Kobayashi *et al.*, children with SB consequently required more chewing cycles to break down food into smaller particles.^[32] Psychological domain too affected the QoL of children with bruxers compared to non-bruxers in the present study. This could be in accordance with Edward Kuch *et al.* study which suggested that bruxism may be a common childhood habit and at age 5–6 years, this habit appears to have little psychological significance.^[41] Social disability domain comprises of thought disorders, conduct disorders, and antisocial disorders. All these have found to be higher in bruxers compared with non-bruxers in the present study. A study by Serra-Negra *et al.* and Restrepo *et al.* stated that neuroticism, perfectionism, aggressiveness, higher sensitivity to stress, and coping strategies were related to increased risk of developing bruxism.^[6,42,43] The handicapped domain scored the second-lowest mean score in the present study and meant that, although children were in pain, they either did not feel handicapped or did not like to express such feelings.

The patient-reported outcomes were compared between bruxers and control subjects. The main finding was the worse QoL presented by volunteers with SB. The total domain scores of OHIP-14 indicated that bruxers had a negative perception of their QoL compared to controls.

The present study has the limitations inherent to a cross-sectional design and the answers to the questionnaire may have been subject to information bias. The under-notification of bruxism can occur when parents/caregivers are unaware of this habit in their children. Thus, longitudinal studies should be conducted to gain a better understanding of the causality of factors in the occurrence of this parafunctional habit.

Conclusion

Males presented with higher association with this parafunctional habit. Moreover, the majority of parents/caregivers did not know the meaning of bruxism. The QoL of children with SB appears to be worse than that of children without SB. Thus, the SB had a negative impact on QoL. It creates an alarming need to focus on these risk groups with special emphasis on the factors contributing to the poor oral health status.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patients/parents/caregivers have given their consent for their images and other clinical information to be reported in the journal. The patients/parents/caregivers understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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