

# Sleep Bruxism and Anxiety Impacts in Quality of Life Related to Oral Health of Brazilian Children and their Families

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**Objective:** This study aimed to assess the impact of parent reported sleep bruxism, trait anxiety and sociodemographic/socioeconomic features on quality of life related to oral health (OHRQoL) of children and their families. **Study Design:** Healthy children aged 3-7 years, with (n=34) and without (n=32) bruxism were select for this study. Data was collected by applying the following instruments: The Early Childhood Oral Health Scale (B-ECOHIS) and Trait-anxiety Scale (TAS). The sociodemographic/socioeconomic characteristics were obtained by interviews with parents. Multiple logistic regression tests were performed to observe the influence of sociodemographic/socioeconomic characteristics, bruxism and trait-anxiety on the children's OHRQoL. **Results:** No association between sleep bruxism and all evaluated sociodemographic/socioeconomic conditions, with exception of being the only child ( $p=0.029$ ), were observed. Mean B-ECOHIS and TAS scores were different ( $p<0.05$ ) between children with ( $3.41 \pm 4.87$ ;  $45.09 \pm 15.46$ , respectively) and without ( $0.63 \pm 1.28$ ;  $29.53 \pm 11.82$ , respectively) bruxism. Although an association between bruxism and OHRQoL ( $p=0.015$ ) was observed, it was dropped ( $p=0.336$ ;  $OR=1.77$ ) in the logistic regression model. Trait anxiety was the variable responsible for the impact on the OHRQoL of children ( $p=0.012$ ;  $OR=1.05$ ). **Conclusion:** Our results indicated anxiety as the main factor that interfered in the OHRQoL of children with sleep bruxism.

**Key words:** Children, Sleep Bruxism, Anxiety, Quality of Life.

## INTRODUCTION

Bruxism is a repetitive jaw-muscle activity characterized by clenching or grinding of the teeth and/or by bracing or thrusting of the mandible. It has two distinct circadian manifestations: it can occur during sleep (sleep bruxism) or during awake periods (awake bruxism).<sup>1</sup> It is more frequent in children than in adults, and tends to decrease with age.<sup>2</sup> The prevalence in children ranges from 3.5 to 40.6%. This variability is caused by the lack of specificity for bruxism diagnosis among the studies.<sup>3</sup>

The etiology of bruxism remains unclear; nevertheless, oral habits,<sup>4</sup> temporo-mandibular disorders,<sup>5</sup> malocclusions,<sup>6</sup> extensive caries<sup>6</sup> and emotional factors, such as anxiety and stress<sup>7</sup> could influence its occurrence. All these factors act as motion stimuli to the central nervous system, and the result is the clenching or grinding of teeth.<sup>8,9</sup> Many researchers have strived to identify a scientifically sound connection between psychological stress and bruxism.<sup>7,9-15</sup> They support the concept that emotional factors are a prominent aspect in the development of bruxism behavior.<sup>7,9-15</sup> Some authors also affirmed that bruxers respond more negatively to life events and tend to be more anxious, aggressive and agitated.<sup>13,14,16</sup> For this reason, supposedly, bruxers with a higher level of anxiety,<sup>17</sup> should present alterations in their quality of life.<sup>18</sup> The World Health Organization defines Quality of Life as an individual's perception of their

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position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad concept affected in a complex way by the person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to prominent features of their environment.<sup>19</sup>

Quality of life is a multidimensional concept involving physical, psychological and social functions as well as a subjective perception of well-being of the individual.<sup>20</sup> There are some specific instruments for evaluating OHRQoL in children which enable more accurate measurements.<sup>21</sup> Among them, the Early Childhood Oral Health Impact Scale (ECHOHIS), which was validated to be applied in Brazilian children.<sup>22</sup> A questionnaire to assess the degree of trait anxiety in children, is the Trait-anxiety Scale (TAS)<sup>23</sup> which is also validated to be used in the Portuguese language.<sup>23,24</sup>

Thus, a better understanding of the nature of the association between anxiety, bruxism and other possible factors on children's life quality seems advisable. In this sense, the present controlled study was performed in Brazilian children in order to assess the impact of parent reported sleep bruxism, trait anxiety and sociodemographic/socioeconomic features on quality of life related to oral health (OHRQoL) of children and their families.

### MATERIALS AND METHOD

The Local Ethical Committee approved the study (protocol number 108/017) and all parents/caregivers had signed the Term of Free and Informed Consent before the authors carried out the research.

Children seeking dental care in the Department of Pediatric Dentistry and Orthodontics at the Federal University of Rio de Janeiro (UFRJ), Brazil, from March 2012 to March 2013, were eligible. The inclusion criteria comprised (1) patients aged 3 to 7 years, (2) with a complete primary dentition or early mixed dentition (presence of permanent incisors, and first molars), and (3) report of sleep bruxism by the parents/caregivers. All information was obtained through an interview during the dental appointments. Diagnosis of sleep bruxism was obtained by means of the American Academy of Sleep Medicine (AASM) classification: parents/caregivers indicating the occurrence of audible teeth grinding at night; no other medical or mental disorders (sleep-related epilepsy, abnormal movement while sleeping) and no other sleep disorders (obstructive sleep apnea syndrome).<sup>25</sup> The control group comprised the same inclusion criteria, but without the parents/caregivers report of sleep bruxism. Patients presenting dental caries, dental erosion, malocclusions, periodontal disease, orthodontic devices or presenting any dental anomalies were excluded from this study. The use of any medication that could interfere with the central nervous system was also an exclusion criterion.

### Sample Calculation

A 95% confidence interval level and a 33.2% prevalence of sleep bruxism, obtained from a pilot study,<sup>26</sup> were used for the sample calculation. The prevalence of sleep bruxism was determined in a pilot study conducted with 250 schoolchildren between 3 and 7 years of age who were not included in the study population of the present research. The minimum sample size to satisfy requirements was estimated at 20 and 32 children with sleep bruxism for B-ECHOHIS and TAS analysis, respectively.

### The Early Childhood Oral Health Scale (B-ECHOHIS)

The Early Childhood Oral Health Impact Scale (ECHOHIS), is a tool to assess the negative impact of oral disorders on the quality of life among preschool children.<sup>22</sup> The Brazilian validated version of the Early Childhood Oral Health Scale (B-ECHOHIS) questionnaire<sup>27</sup> was applied, by the main researcher, as an interview directly to the parents/caregiver of all selected subjects from both groups. The B-ECHOHIS has 2 sections: (1) Child impact scale (CIS); and (2) Family impact scale (FIS). It comprises 6 domains and 13 items. The domains for children are: symptoms (1 item); function (4 items); psychological (2 items); and self-image/social interaction (2 items). The domains for the family are: distress (2 items); and family function (2 items). The response options for the B-ECHOHIS are coded: 0 = never; 1 = hardly ever; 2 = occasionally; 3 = often; 4 = very often; 5 = don't know. The total B-ECHOHIS scores and the scores for individual domains were calculated as a simple sum of the response codes ("don't know" responses are not counted). The total score ranges from 0 to 36 in the child section and 0 to 16 in the family section. Higher scores indicate greater impact and/or more problems.<sup>22</sup>

### Trait-anxiety Scale (TAS)

A questionnaire was used as an instrument to assess the degree of trait anxiety in children, and identify if anxiety is a constant condition in the subject.<sup>24</sup> The Brazilian validated version of the Trait-anxiety Scale<sup>23</sup> was applied by the main researcher as an interview directly to the parents/caregiver of all selected subjects from both groups. It is a clinical scale consisting of 34 items with closed questions. It addresses anxiety, not considering the particular psychiatric disorder, but a phenomenon that occurs in individuals without specific disorders. Thus, we evaluated the child's anxiety as a symptom and not as anxiety disorder, considering the level of trait anxiety, identifying whether this is a constant condition in the assessed individual. The parents/caregiver answers are scored as 0= absent 1= rarely 2= often 3= always, the total score is a sum of all codes and it ranges from 0 to 102. Higher scores indicate greater trait anxiety.

### Sociodemographic data collection

Data collection over children sociodemographic characteristics such as child gender, child age, mother age at birth, parents marital status, type of delivery, number of siblings, caregiver schooling, as well as data of who takes care of the child, if the caregiver have sleep bruxism, proximity between the child and the parents' room and for how long does the child grind teeth, were based on the interviews performed directly with parents/caregiver. We used the Brazilian Economic Classification Criterion (ABEP) to assess the economic classification.<sup>28</sup>

### Statistical Analysis

Statistical analysis was performed using the SPSS statistical software (version 20.0, Chicago IL, USA). Properties of the B-ECHOHIS domains were assessed by evaluating the internal consistency (Cronbach's Alfa coefficient =  $\alpha$ ). A test-retest was conducted with 10 children not included in this study, with a seven day interval between interviews, to assess the stability of the instruments used. The difference between children with and without sleep bruxism, considering the B-ECHOHIS total scores and each of its domains were carried out with the unpaired Mann-Whitney test. The score

of B-ECOHIS questionnaire was dichotomized into 0 points (no impact), 1 or more points (impact) to perform Odds Ratio and the Multiple Logistic Regression analysis. Odds Ratio was undertaken for quality of life (0 points, 1 or more points) and the presence of bruxism. Frequencies of independent variables were described and analyzed using Chi-square test.

A multiple logistic regression model was performed to test the association between quality of life (B-ECOHIS questionnaire) and the independent variables, such as: sleep bruxism, trait anxiety scale, socioeconomic status and sociodemographic data. All independent variables were entered into the multiple logistic regression model, then the least significant of them were regressively dropped until only those with  $p < 0.05$  remained in the model (Stepwise backward elimination). After that, only the terms that showed association with quality of life (sleep bruxism and anxiety-TAS), in the three evaluated domains (CIS, FIS and total score), were used to perform the regression model analysis.

### RESULTS

From March 2012 to March 2013, 839 children were clinically evaluated. From these, 420 were aged 3-7 years, and 138 had parent report of teeth grinding (32.9%). After application of the eligibility criteria, 34 (51.5%) children aged 3-7 years with parent reported sleep bruxism, and 32 (48.5%) with no referred reporting were included in the final sample (Table 1). Among all the evaluated characteristics, 12 children from the group with sleep bruxism were the only child in the family, while in the control group this number was 4 ( $p=0.029$ ).

The analysis of test-retest reliability suggests adequate stability of B-ECOHIS and Trait-Anxiety scale. Intra-class correlation coefficient (ICC) was 0.723 for the Children Impact Scale (CIS) and 0.826 for the Family Impact Scale (FIS). For the sum of total score (sum of CIS and FIS scores), ICC was 0.899. ICC for the Trait-Anxiety scale was 0.733. Besides, Cronbach's Alpha for CIS and FIS section and also for the Trait-Anxiety scale demonstrated adequate homogeneity in the field study. It showed satisfactory internal consistency of the domains of children ( $\alpha = 0.707$ ), for the domains of family ( $\alpha = 0.817$ ) as for both ( $\alpha = 0.803$ ) and also for the Trait-Anxiety scale ( $\alpha = 0.827$ ) (Table 2).

Mean scores for the Trait-Anxiety scale was higher in children with sleep bruxism ( $45.09 \pm 15.46$ ) than in children without this condition ( $29.53 \pm 11.82$ ) ( $p < 0.05$ ). The same occurred when OHRQoL was compared in children with and without sleep bruxism ( $p < 0.05$ ). There was statistical difference for the domains of the total B-ECOHIS score, among children with ( $3.41 \pm 4.87$ ) and without ( $0.63 \pm 1.28$ ) this condition (Table 2). We observed statistical differences between groups on the domains of children regarding pain in teeth, mouth or jaw ( $p = 0.019$ ); difficulty to drink hot or cold beverages ( $p = 0.006$ ); became angry ( $p = 0.047$ ) and avoided smiling ( $p = 0.025$ ). Moreover, according to family domains, the statistically significant differences were found concerning the fact that the caregiver became upset ( $p = 0.025$ ) and felt guilty ( $p = 0.025$ ) over the child's condition (Table 3).

The odds ratio results showed that children with sleep bruxism have 3 times greater probability to score on the dichotomized B-ECOHIS questionnaire ( $OR = 3.143$ ) than children without the para-function (Table 4). Considering the multiple logistic regression results,

**Table 1. Sociodemographic conditions and characteristics of parents/caregivers.**

VARIABLE	BRUXISM		p value
	No (n=32)	Yes (n=34)	
<b>Child's gender(n)*</b>			
Male	10	17	0.970
Female	22	17	
<b>Child Age mean <math>\pm</math> (SD) **</b>	5.38 $\pm$ 0.97	5.29 $\pm$ 1.21	0.203
<b>Mother Age at Birth mean <math>\pm</math> (SD)**</b>	28.69 $\pm$ 6.01	27.71 $\pm$ 7.14	0.276
<b>Marital Status(n)*</b>			
Married/Living with partner	29	31	0.634
Divorced	3	3	
<b>Type of delivery(n)*</b>			
Natural Delivery	15	16	0.592
Caesarian	17	18	
<b>Caregiver schooling (n)**</b>			
Illiterate	9	7	0.910
Elementary school	9	5	
High school	12	16	
higher education	2	6	
<b>Social Economic Status (n)**</b>			
High	-	-	0.553
Medium-high	8	6	
Medium-low	22	26	
Low	2	2	
<b>Only Child (n)*</b>			
Yes	4	12	0.029***
No	28	22	
<b>Caregiver (n)*</b>			
Mother/father	27	26	0.311
Another	5	8	
<b>Caregiver with Bruxism (n)*</b>			
Yes	29	26	0.112
No	3	8	
<b>Proximity of rooms (n)**</b>			
Same room	18	18	0.803
Near door	13	15	
Distant door	1	1	
<b>How long child grid teeth (n)**</b>			
Never	32	-	-
One year or less	-	12	
More than one year	-	22	

Distribution significantly different from baseline,  $p < 0.05$ , \*Chi-Square and \*\*Mann-Whitney tests were used; \*\*\*Demonstrated association

we found an association between sleep bruxism and quality of life for both, children ( $p = 0.027$ ) and family ( $p = 0.027$ ); and also for total scores ( $p = 0.015$ ) (Table 5). However, this association has dropped when the TAS was inserted in the regression analysis. Thus, trait anxiety was the variable truly responsible for the impact on the quality of life ( $p = 0.012$ ;  $OR = 1.05$ ) instead of the presence of sleep bruxism ( $p = 0.336$ ;  $OR = 1.77$ ). The same effect occurred when the domains FIS and CIS were evaluated and crossed with anxiety, independently ( $p = 0.038$ ;  $OR = 1.06$  and  $p = 0.027$ ;  $OR = 1.04$ , respectively) (Table 6).

**Table 2. Total scores of B-ECOHIS**

ECOHIS	Bruxism		P value*	Cronbach's Alpha
	No Mean Score (±SD)	Yes Mean Score (±SD)		
Children Impact Scale	0.59 ±1.24	2.59 ±3.66	0.005	0.707
Family Impact Scale	0.03 ±0.17	0.82 ±1.94	0.025	0.817
Total Score	0.63 ±1.28	3.41 ±4.87	0.001	0.803

Distribution significantly different from baseline, p<0.05, \* Mann-Whitney test

**Table 3. Mean scores of B-ECOHIS domains among children with and without bruxism**

Domains		Scores		
		Mean ±(SD)	Range	P value*
<b>CHILD IMPACT</b>				
<i>How often has your child ..... because of teeth or mouth problems?</i>				
<b>Symptom domain</b>				
Had pain in the teeth, mouth or jaw	Bruxism			
	No	0.13 ±0.41	0-2	0.019
Yes	0.59 ±0.98	0-3		
<b>Function domain</b>				
Had difficulty drinking hot or cold beverages	Bruxism			
	No	0.13 ±0.42)	0-2	0.006
Yes	0.68 ±1.09	0-3		
Had difficulty eating certain foods	Bruxism			
	No	0.31 ±0.69	0-3	0.486
Yes	0.44 ±0.86	0-4		
Had difficulty to pronounce some words	Bruxism			
	No	0.00 ±0.00	0	0.088
Yes	0.21 ±0.72	0-3		
Had missed the kindergarten or school	Bruxism			
	No	0.03 ±0.17	0-1	0.321
Yes	0.21 ±0.77	0-3		
<b>Psychological domain</b>				
Had trouble sleeping	Bruxism			
	No	0.00 ±0.00	0	0.332
Yes	0.09 ±0.51	0-3		
Became angry	Bruxism			
	No	0.00 ±0.00	0	0.047
Yes	0.18 ±0.52	0-2		
<b>Self-image/social interaction domain</b>				
Avoided smiling	Bruxism			
	No	0.00 ±0.00	0	0.025
Yes	0.24 ±0.65	0-3		
Avoided talking	Bruxism			
	No	0.00 ±0.00	0	0.167
Yes	0.09 ±0.37	0-2		

**FAMILY IMPACT**

*How often have you or another family member....because of your child's teeth or mouth problems?*

**Distress domain**

Became upset	Bruxism			
	No	0.00 ±0.00	0	0.025
Yes	0.29 ±0.77	0-2		

Domains		Scores		
		Mean ±(SD)	Range	P value*
Felt guilty	Bruxism			
	No	0.00 ±0.00	0	0.025
Yes	0.26 ±0.71	0-3		
<b>Family function domain</b>				
Missed work	Bruxism			
	No	0.03 ±0.17	0-1	0.328
Yes	0.12 ±0.40	0-2		
Felt financial impact on the family	Bruxism			
	No	0.00 ±0.00	0	0.332
Yes	0.03 ±0.17	0-1		

Distribution significantly different from baseline, p<0.05, \* Mann-Whitney test

**Table 4. Odds Ratio's results for B-ECOHIS**

SCORE	Bruxism		P value	Odds Ratio
	No n=32(%)	Yes n=34(%)		
<b>CIS</b>				
0	22 (68.8%)	14 (41.2%)	0.022	3.143
1or more	10 (31.2%)	20 (58.8%)		
<b>FIS</b>				
0	31 (96.9%)	25 (73.5%)	0.009	11.160
1or more	1 (3.1%)	9 (26.5%)		
<b>Score Total</b>				
0	22 (68.8%)	13 (38.2%)	0.012	3.554
1or more	10 (31.2%)	21(61.8%)		

Distribution significantly different from baseline, p<0.05, \* Chi-Square test

**Table 5. Backward stepwise logistic regression to test the association of independent variables with quality of life in bruxism children and controls (n=66)**

Dependent Variable	Independent Variable	P value	OR
CIS	Presence of bruxism	0.027*	3.14
	Child gender	0.173	0.50
	Child age	0.076	0.65
	Mother age at birth	0.161	0.94
	Parents marital status	0.084	7.00
	Type of delivery	0.653	0.80
	Caregiver schooling	0.499	0.71
	Only child	0.121	2.50
	Who's the caregiver of the child	0.499	1.52
	If the caregiver have bruxism	0.509	1.55
	Proximity of child and parents room	0.999	0.00
	Socio economic status	0.161	2.50
	Trait Anxiety Scale Score	0.004*	1.05
	FIS	Presence of bruxism	0.027*
Child gender		0.528	0.64
Child age		0.103	0.58
Mother age at birth		0.184	0.92
Parents marital status		0.213	0.38
Type of delivery		0.835	1.15
Caregiver schooling		0.792	1.09
Only child		0.735	0.75
Who's the caregiver of the child		0.380	0.50
If the caregiver have bruxism		0.546	0.51
Proximity of child and parents room		0.999	0.00
Socio economic status		0.999	0.00
Trait Anxiety Scale Score		0.004*	1.07
Total Score		Presence of bruxism	0.015*
	Child gender	0.247	0.55
	Child age	0.157	0.71
	Mother age at birth	0.072	0.93
	Parents marital status	0.095	6.53
	Type of delivery	0.477	0.70
	Caregiver schooling	0.345	0.62
	Only child	0.158	0.43
	Who's the caregiver of the child	0.246	2.08
	If the caregiver have bruxism	0.583	1.44
	Proximity of child and parents room	0.999	0.00
	Socio economic status	0.129	2.70
	Trait Anxiety Scale Score	0.002*	1.06

CIS= Child impact scale; FIS= Family impact scale. Distribution significantly different from baseline, p<0.05.\*Variables that showed association with OHRQoL of bruxism children and controls

**Table 6. Multiple Logistic Regression Results after the stepwise backward elimination**

Dependent Variable	Independent Variable	P value	OR
CIS	Presence of bruxism	0.370	1.69
	Trait Anxiety Scale Score	0.027*	1.04
FIS	Presence of bruxism	0.176	4.83
	Trait Anxiety Scale Score	0.038*	1.06
Total Score	Presence of bruxism	0.336	1.77
	Trait Anxiety Scale Score	0.012*	1.05

CIS = Child impact scale; FIS = Family impact scale. Distribution significantly different from baseline, p<0.05, \*Variables that showed association with OHRQoL of bruxism children and controls, after the stepwise backward elimination

**DISCUSSION**

The ECOHIS questionnaire has been already applied for healthy children<sup>29</sup> and also for those with specific conditions such as dental trauma,<sup>30,31</sup> caries,<sup>32</sup> and malocclusions.<sup>3</sup> Although a generic instrument has the disadvantage of not providing a detailed and reliable measurement of dimensions that are specific for a certain condition,<sup>33</sup> there are resources to overcome this point such as the analysis of test-retest reliability and the use of Cronbach's Alfa coefficient test. In this study, the Cronbach's Alfa, for all the evaluated domains, and the test-retest values reached satisfactory levels, which represented a good reliability of the instrument (B-ECOHIS questionnaire) used. Moreover, the benefit of employing a generic questionnaire such as B-ECOHIS is that it affords a general overview of the individual or of a group of individuals' quality of life.<sup>34</sup> In the present study, both groups showed low scores for B-ECOHIS, that can be expected from health-related measures.<sup>35</sup> However, these scores values were able to demonstrate differences between the groups with and without sleep bruxism, for both the CIS and the FIS impact. These results demonstrated that the presence of sleep bruxism in children from 3 to 7 years-old exerts a direct influence in their OHRQoL. The Trait-anxiety scale was translated to Brazilian Portuguese by Assumpção *et al.*<sup>23</sup> Studies have been applying this questionnaire to investigate trait anxiety in children for different purposes, such as dental anxiety at dental environmental,<sup>36,37</sup> assessment of anxiety in adolescents,<sup>38</sup> assess anxiety during rapid maxillary expansion,<sup>39</sup> to predict anxiety<sup>40</sup> investigate child behavior<sup>41</sup> and other situations. Some authors have demonstrated that emotional factors, such as stress, anxiety or other personality traits influence the tooth grinding in sleep bruxism patients.<sup>7,10,11,42</sup> Since sleep bruxism is considered a mechanism for stress release, the association of this condition with anxiety and stress is expected.<sup>12</sup> In our study we applied the Trait-anxiety scale to all sample to verify the relationship between sleep bruxism and anxiety as a characteristic of the individual personality and not as a transitional emotional state. We found that sleep bruxism children have characteristics of anxiety as a trait of their personality when compared with those without the parafunction. So, our data confirmed that emotional factors are associated with sleep bruxism, as proposed by other authors.<sup>7,14,43</sup>

The relationship between sleep bruxism and malocclusions, as well as dental caries has already been explored in dental literature.<sup>6</sup> Besides, the presence of comorbid conditions in selected populations, such as other physical or mental diseases, may act

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as a confounding variable for the assessment of sleep bruxism.<sup>3</sup> For these reasons, we established a rigorous eligibility criteria to be included in the present study: children should have a complete primary dentition or early mixed dentition with no caries, malocclusions or periodontal disease. Also, patients with mental/systemic disorders, orthodontic device or with some dental anomalies were excluded. These criteria were used to exclude possible factors that<sup>3-6,33</sup> trigger sleep bruxism. In this way, we could assess the impact of sleep bruxism in the OHRQoL without the interference of other confounding factors. On the other hand, these specific exclusion criteria lead us to a limitation on final sample size.

There is no consensus in the literature regarding the etiology of sleep bruxism and the importance of the association of factors on its development is not well defined.<sup>44</sup> Many reasons have been described as sleep bruxism triggers, such as oral habits, temporo-mandibular disorders, malocclusions, extensive caries<sup>6</sup> and emotional factors.<sup>7</sup> Castelo *et al.*<sup>33</sup> investigated the quality of life in children with and without sleep bruxism using a generic scale and a questionnaire that did not clearly discriminate the groups. They found that children with sleep bruxism presented quality of life scores similar to those without the referred parafunction. In contrast, in our study children with sleep bruxism as well as their parents have higher values of impact on their OHRQoL. The odds ratio results showed that children with sleep bruxism have 3 times greater probability to have impact on OHRQoL (score on the questionnaire B-ECOHIS) (OR=3.143) than children without the parafunction. Thus, comparable studies that investigate the relationship between quality of life and sleep bruxism in children are still needed. Although electronic and digital instruments for sleep bruxism diagnosis, are reported to have a satisfactory consistency,<sup>1</sup> they are very complex to use and expensive.<sup>45</sup> On the other hand, parental report on audible tooth grinding is usually employed and found to be reliable and valid as a criterion for determining the diagnostic of sleep bruxism among children.<sup>11</sup> In the present study, we also used parental report of sleep bruxism as the method of diagnosis, which is proposed by the American Academy of Sleep Medicine (AASM) criteria.<sup>25</sup> Besides, in many cases bruxism diagnosis cannot be confined to hearing noises at night. Thus, to offer a better reliability on the provided information of our research, we asked the caregiver over the proximity of their bedroom with the children's room. Among them, 54.5% answered that the bedroom was the same for both, child and parents; and for 42.5% of them, the rooms are near. These results led us to a more accurate diagnostic for sleep bruxism, since this condition usually occurs during sleep and such as an unconscious habit, children are always unaware of this parafunction.<sup>4</sup>

The majority of families (72.7%) in this study was included in the medium socioeconomic status. From this sample, 26 (39.4%) subjects have the parental report of grinding or clenching of the teeth. Sleep bruxism is considered a mechanism for releasing stress that has accumulated throughout the day. The way in which an individual deals with daily conflicts is closely related to personality traits.<sup>12</sup> Such traits in childhood can continue into adulthood.<sup>10,12</sup> We

did not observe difference related to socioeconomic status between the studied groups, corroborating Antonio *et al.*<sup>42</sup> that speculated in their case report that sleep bruxism is independent of socioeconomic level, but rather much more closely associated with each patient's/child's life events. Considering that the socioeconomic status of sleep bruxism children is still an under investigated issue, more epidemiological assessments should be made to provide a better understanding of this topic as a etiological factors in sleep bruxism.<sup>42</sup>

In our study, among the sociodemographic characteristics of children, being the only child was the only factor that presented statistically difference ( $p < 0.05$ ) between the groups. It is strongly reported that there is an association between the individual personality, emotional factors and sleep bruxism trigger in children.<sup>12</sup> We believe that "only children" tend to be spoiled and more susceptible for emotional problems such as anxiety and stress, which are probably caused by less socialization with others and the strong parents' demand from them. So, multidisciplinary treatment during childhood may help individuals understand their conduct regarding conflict or stress, improving the control of the habit.<sup>12</sup> Thus, the approach for a patient with sleep bruxism must not be limited only to a stomatological evaluation, but also an accurate anamnesis should be done to investigate all of the problems that lead to such parafunction.<sup>15</sup>

In the present study, we identified higher values of trait anxiety in children with sleep bruxism than in controls. We also recognized that sleep bruxism and anxiety produces impact in the life quality of children and their families. Previous study has been carried out using sleep bruxism as dependent variable in logistic regression analysis.<sup>33</sup> However, in our study we used the quality of life as the dependent variable instead of sleep bruxism, since we intend to know the factors which were impacting in the children's life quality and not the factors that favorable influence the sleep bruxism development. Moreover, some factors should also be highlighted, such as: children have a shallow and flat ATM; the final shape of the glenoid cavity only occur with the first permanent molar eruption and with masticatory stimulus. Thus, bruxism that occurs in this stage of life can be considered a transitional physiological event, mainly due to the referred immaturity up to 6 years.<sup>46</sup>

## CONCLUSION

The results of multiple logistic regression showed the truly reason which triggers the impact on the life quality of these children, which was not the sleep bruxism itself as responded by the B-ECOHIS questionnaire, but the presence of the trait anxiety in sleep bruxism children. Our results indicate anxiety as the main factor that interfered in the OHRQoL of children with sleep bruxism, which suggested that this was merely one clinical sign arising from the presence of anxiety. Therefore, future studies aiming at a better understanding of the multiple mechanisms and environmental related to anxiety in children could represent an important target to be explored.

## REFERENCES

1. Lobbezoo F, Ahlberg J, Glaros AG, Kato T, Koyano K, Lavigne GJ, de Leeuw R, Manfredini D, Svensson P, Winocur E. Bruxism defined and graded: an international consensus. *J Oral Rehabil* 40: 2-4, 2013.
2. Bader G, Lavigne G. Sleep bruxism; an overview of an oromandibular sleep movement disorder. *Sleep med Rev* 4: 27-43, 2000.
3. Manfredini D, Restrepo C, Diaz-Serrano K, Winocur E, Lobbezoo F. Prevalence of sleep bruxism in children: a systematic review of the literature. *J Oral Rehabil* 40: 631-642, 2013.
4. Castelo PM, Gavião MB, Pereira LJ, Bonjardim LR. Relationship between oral parafunction/nutritive sucking habits and temporomandibular joint dysfunction in primary dentition. *Int J Paediatr Dent* 15: 29-36, 2005.
5. Molina OF, dos Santos J, Mazzetto M, Nelson S, Nowlin T, Mainieri ET. Oral jaw behaviors in TMD and bruxism: a comparison study by severity of bruxism. *Cranio* 19: 114-122, 2001.
6. Ghafournia M, Hajenourozali Tehrani M. Relationship between Bruxism and Malocclusion among Preschool Children in Isfahan. *J Dent Res Dent Clin Dent Prospects* 6: 138-142, 2012.
7. Serra-Negra JM, Paiva SM, Flores-Mendoza CE, Ramos-Jorge ML, Pordeus IA. Association among stress, personality traits, and sleep bruxism in children. *Pediatr Dent* 34: 30-34, 2012.
8. Seraidarian P, Seraidarian PI, das Neves Cavalcanti B, Marchini L, Claro Neves AC. Urinary levels of catecholamines among individuals with and without sleep bruxism. *Sleep Breath* 13: 85-88, 2009.
9. Vanderas AP, Menenakou M, Kouimtzis T, Papagiannoulis L. Urinary catecholamine levels and bruxism in children. *J Oral Rehabil* 26:103-110, 1999.
10. Restrepo CC, Vasquez LM, Alvarez M, Valencia I. Personality traits and temporomandibular disorders in a group of children with bruxing behaviour. *J Oral Rehabil* 35: 585-593, 2008.
11. Cheifetz AT, Osganian SK, Allred EN, Needleman HL. Prevalence of bruxism and associated correlates in children as reported by parents. *J Dent Child (Chic.)* 72: 67-73, 2005.
12. Serra-Negra JM, Ramos-Jorge ML, Flores-Mendoza CE, Paiva SM, Pordeus IA. Influence of psychosocial factors on the development of sleep bruxism among children. *Int J Paediatr Dent* 19: 309-317, 2009.
13. Pingitore G, Chrobak V, Petrie J. The social and psychologic factors of bruxism. *J Prosthet Dent* 65: 443-446, 1991.
14. Restrepo CC, Alvarez E, Jaramillo C, Velez C, Valencia I. Effects of psychological techniques on bruxism in children with primary teeth. *J Oral Rehabil* 28: 354-360, 2001.
15. Monaco A, Ciammella NM, Marci MC, Pirro R, Giannoni M. The anxiety in bruxer child. A case-control study. *Minerva Stomatol* 51: 247-250, 2002.
16. Kato T, Thie NM, Montplaisir JY, Lavigne GJ. Bruxism and orofacial movements during sleep. *Dent Clin Nort Am* 45: 657-684, 2001.
17. Kampe T, Edman G, Bader G, Tagdae T, Karlsson S. Personality traits in a group of subjects with long-standing bruxing behaviour. *J Oral Rehabil* 24: 588-593, 1997.
18. Mendlowicz MV, Stein MB. Quality of life in individuals with anxiety disorders. *Am J Psychiatry* 157: 669-682, 2000.
19. World Health Organization (WHO). Quality of Life; 1997. Available from: [http://www.who.int/mental\\_health/media/68.pdf](http://www.who.int/mental_health/media/68.pdf). Accessed on August 2015.
20. de Oliveira CM, Sheiham A. The relationship between normative orthodontic treatment need and oral health-related quality of life. *Community Dent Oral Epidemiol* 31: 426-436, 2003.
21. Antunes LA, Leao AT, Maia LC. The impact of dental trauma on quality of life of children and adolescents: a critical review and measurement instruments. *Cien Saude Colet* 17: 3417-3424, 2011.
22. Pahel BT, Rozier RG, Slade GD. Parental perceptions of children's oral health: the Early Childhood Oral Health Impact Scale (ECOHIS). *Health Qual Life Outcomes* 5: 6, 2007.
23. Assumpção FB, Resch CR. Escala de Avaliação da Ansiedade -Traço Infantil – Um Estudo de Sensibilidade e Especificidade. *Arquivos Brasileiros de Psiquiatria, Neurologia e Medicina Legal* 100: 19-25, 2006.
24. Bouden A, Halayen MB, Fakhfakh R. Étude préliminaire de validation d'une échelle d'anxiété-trait chez l'enfant. *Neuropsychiatr Enfance Adolesc* 50: 25-30, 2000.
25. Buysse DJ, Young T, Edinger JD, Carroll J, Kotagal S. Clinicians' use of the International Classification of Sleep Disorders: results of a national survey. *Sleep* 26: 48-51, 2003.
26. Alencar N, Leão ATT, Luiz RR, Antonio AG, Maia LC. Prevalência, Traço de Ansiedade e Impacto do Bruxismo na Qualidade de Vida de crianças atendidas na clínica de Odontopediatria da UFRJ. *Braz Oral Res* 27: 276, 2013.
27. Scarpelli AC, Oliveira BH, Tesch FC, Leao AT, Pordeus IA, Paiva SM. Psychometric properties of the Brazilian version of the Early Childhood Oral Health Impact Scale (B-ECOHIS). *BMC Oral Health* 11:19, 2010.
28. ABEP. Associação Brasileira de Empresas de Pesquisa-Dados com base no Levantamento Sócio Econômico IBOPE; 2010. Available from: [www.abep.org.br](http://www.abep.org.br). Accessed on February 2012.
29. Wong HM, McGrath CP, King NM, Lo EC. Oral health-related quality of life in Hong Kong preschool children. *Caries Res* 45: 370-376, 2011.
30. Aldrigui JM, Abanto J, Carvalho TS, Mendes FM, Wanderley MT, Bonecker M, Raggio DP. Impact of traumatic dental injuries and malocclusions on quality of life of young children. *Health Qual Life Outcomes* 9: 78, 2011.
31. Viegas CM, Scarpelli AC, Carvalho AC, Ferreira Fde M, Pordeus IA and Paiva SM. Impact of traumatic dental injury on quality of life among Brazilian preschool children and their families. *Pediatr Dent* 34: 300-306, 2012.
32. Leal SC, Bronkhorst EM, Fan M, Frencken JE. Untreated cavitated dentine lesions: impact on children's quality of life. *Caries Res* 46: 102-106, 2012.
33. Castelo PM, Barbosa TS, Gavião MB. Quality of life evaluation of children with sleep bruxism. *BMC Oral Health* 14:10-16, 2010.
34. Raat H, Mohangoo AD, Grootenhuys MA. Pediatric health-related quality of life questionnaires in clinical trials. *Curr Opin Allergy Clin Immunol* 6: 180-185, 2006.
35. Gherunpong S, Tsakos G, Sheiham A. Developing and evaluating an oral health-related quality of life index for children; the CHILD-OIDP. *Community Dent Health* 21: 161-169, 2004.
36. Assunção CM, Losso EM, Andreatini R, de Menezes JV. The relationship between dental anxiety in children, adolescents and their parents at dental environment. *J Indian Soc Pedod Prev Dent* 31: 175-179, 2013.
37. Harman K, Lindsay S, Adewami A, Smith P. An investigation of language used by children to describe discomfort expected and experienced during dental treatment. *Inter J Paed Dent* 15: 319-326, 2005.
38. Carey MP, Faulstich ME, Carey TC. Assessment of anxiety in adolescents: concurrent and factorial validities of the Trait Anxiety scale of Spielberger's State-Trait Anxiety Inventory for Children. *Psychol Rep* 75: 331-338, 1994.
39. Gecgelen M, Aksoy A, Kirdemir P, Doguc DK, Cesur G, Koskan O, Ozorak O. Evaluation of stress and pain during rapid maxillary expansion treatments. *J Oral Rehabil* 39: 767-775, 2012.
40. Li HC, Lopez V. Do trait anxiety and age predict state anxiety of school-age children? *J Clin Nurs* 14: 1083-1089, 2005.
41. Campis LB, DeMaso DR, Twente AW. The role of maternal factors in the adaptation of children with craniofacial disfigurement. *Cleft Palate Craniofac J* 32: 55-61, 1995.
42. Antonio AG, Pierro VS, Maia LC. Bruxism in children: a warning sign for psychological problems. *J Can Dent Assoc* 72: 155-160, 2006.
43. Lindqvist B. Bruxism and emotional disturbance. *Odontol Revy* 23: 231-242, 1972.
44. Lindqvist B. Bruxism in children. *Odontol Revy* 22: 413-423, 1971.
45. Serra-Negra JM, Paiva SM, Seabra AP, Dorella C, Lemos BF, Pordeus IA. Prevalence of sleep bruxism in a group of Brazilian schoolchildren. *Eur Arch Paediatr Dent* 11:192-195, 2010.
46. Saadia AM. Development of occlusion and oral function in children. *J Pedod* 5:154-72, 1981.

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