Fatores associados ao bruxismo em crianças de 4 a 6 anos***

Factors associated to bruxism in children from 4 - 6 years

Marcia Simões-Zenari*
Mariangela Lopes Bitar**

*Fonoaudióloga. Doutora em Saúde Pública pela Faculdade de Saúde Pública da Universidade de São Paulo (USP). Assistente do Curso de Fonoaudiologia do Departamento de Fisioterapia, Fonoaudiologia e Terapia Ocupacional da Faculdade de Medicina (FM) da USP. Endereço para correspondência: R. Cipotânea, 51 - São Paulo - SP - CEP 05360-160 (marciasz@usp.br).

**Fonoaudióloga. Doutora em Linguística pela Faculdade de Filosofia, Letras e Ciências Humanas da USP. Docente do Curso de Fonoaudiologia do Departamento de Fisioterapia, Fonoaudiologia e Terapia Ocupacional da FMUSP.

***Trabalho Realizado no Laboratório de Investigação Fonoaudiológica em Promoção da Saúde - Programa Creche do Curso de Fonoaudiologia do Departamento de Fisioterapia, Fonoaudiologia e Terapia Ocupacional da FMUSP.

Artigo Original de Pesquisa

Artigo Submetido a Avaliação por Pares

Conflito de Interesse: não

Recebido em 26.02.2010.
Revisado em 12.11.2010.
Aceito para Publicação em 19.11.2010.

Abstract
Background: bruxism has brought losses for the life quality of people. Its implications in the orofacial motricity and speech of children are still not well known. Aim: to investigate bruxism occurrence and associated factors concerning oral habits, orofacial motricity and functions of chewing, breathing and swallowing in children from 4 to 6 years. Method: 141 children from the referred age group who attend three education centers in São Paulo took part in the study. Parents filled in an investigation protocol on bruxism and the children were submitted to an orofacial motricity assessment. The research group was composed by children whose parents indicated habits of teeth clenching or grinding, during sleep or not. For the statistical analysis the Analysis of Variance, the Two-Proportion Equality Test and the Odds Ratio calculation were used, with a significance level of 5%. Results: a high occurrence of bruxism among the children (55.3%) was observed. The identified associated factors were: sialorrhea during sleep, pacifier use, habit of lip and fingernails biting, altered cheek tonus and bite, besides the participation of the perioral muscles during liquid swallowing. There was a high occurrence of children from both groups complaining about frequent headaches (76%) and who slept less hours than what is recommended for their age (35%). Conclusion: the findings corroborated the relationship among bruxism, oral habits and altered aspects of orofacial motricity in children from the studied age group, reinforcing the necessity of speech therapy actions next to the institutions and families.

Key Words: Bruxism, Speech, Child, Health Promotion.

Resumo
Tema: o bruxismo tem trazido prejuízos para a qualidade de vida das pessoas. Suas implicações para a motricidade orofacial e fala em crianças ainda não estão bem estabelecidas. Objetivo: investigar a ocorrência do bruxismo e fatores associados relativos aos hábitos orais, motricidade orofacial e funções de mastigação, respiração e deglutição em crianças de 4 a 6 anos. Método: participaram 141 crianças da referida faixa etária que frequentam três centros de educação infantil paulistas. Os pais preencheram protocolo de investigação sobre bruxismo e as crianças passaram por avaliação da motricidade orofacial. O grupo pesquisa foi composto pelas crianças cujos pais indicaram qualquer frequência de ranger ou apertamento de dentes, durante o sono ou não. Para análise estatística utilizou-se Análise de Variância, Teste de Igualdade de Duas Proporções e cálculo da *Odds Ratio*, nível de significância de 5%. Resultados: observou-se elevada ocorrência de bruxismo entre as crianças (55,3%). Foram fatores associados a esta ocorrência: sialorreia durante o sono, uso de chupeta, hábito de morder lábios e roer unhas, tônus de bochechas e tipo de mordida alterados, além da participação da musculatura perioral durante deglutição de líquidos. Houve alta ocorrência de crianças dos dois grupos com queixa de dor de cabeça frequente (76%) e que dormem menos do que o recomendado para a idade (35%). Conclusão: os achados comprovaram relação entre bruxismo, hábitos orais e aspectos alterados da motricidade orofacial das crianças da faixa etária estudada reforçando a necessidade de ações fonoaudiológicas junto às instituições e famílias.

Palavras-Chave: Bruxismo; Fala; Criança; Promoção da Saúde.

Referenciar este material como:
Simões-Zenari M, Bitar ML. Factors associated to bruxism in children from 4 - 6 years (original title: Fatores associados ao bruxismo em crianças de 4 a 6 anos). Pró-Fono Revista de Atualização Científica. 2010 out-dez;22(4):465-72.

Introduction

Bruxism in children has become an increasing concern in recent years due to its negative impact on the life quality and also for being considered an important risk factor for temporomandibular disfunctions1-3. It may cause wear in teeth and, in more severe cases, dental traumas4. Recent researches have indicated a relation between bruxism and respiratory alterations5-7. Other implications for orofacial motricity and speech are still not well established.

It is believed that sleep bruxism is more common at the childhood, although it is not uncommon in adults and presents a reduced occurrence in aged persons3. Due to methodological differences among the papers, the prevalence of this disorder is not precisely established4. In children it is observed a variation of 6% to 35%3-4,7-10. According to a revision by Aloé et al3, longitudinal papers have indicated that between 35 and 90% of the children with this disorder develop symptoms of it at adult age.

Functional, structural and psychological factors may be involved with the presence bruxism9,11-12. It is considered the parafunctional activity most harmful for stomatognathic system4 and it is directly related to the bad quality of sleep3. It hardly provokes important dental wear in children1.

The treatment may involve orientating parents on behavioral aspects, like odontological and psychological follow-up and indication of medications3,13. The speech therapy role next to these cases is still not frequent.

With this survey, the intention is investigating the occurrence of bruxism at the early childhood and being familiar with associated factors related to oral habits, aspects of the orofacial motricity and functions of chewing, breathing and swallowing. These data shall make it possible a greater referral of speech therapy actions.

Method

The present paper was approved by Ethics Commission of the origin institution (protocol 085/10). All the responsible persons have signed the Term of Free and Informed Consent, agreeing with the children participation on the survey and with the disclosure of the results.

On this research of control-case took part children who attend three education centers located at West region in the city of São Paulo, Brazil. From the total of children, 71 (50,4%) were male and 70 (49,6%) were female, whose ages varied between 4:4 years and 6:4 years, with an average of 5:4 years.

In order to compose the sample, at first, it was handed in to all parents of children between 4 and 6 years from the referred instituitions, an investigation protocol of aspects related to the presence of bruxism. Since it was not found in literature any validated instrument that could answer to the paper necessities, the protocol was developed for this survey. It presents questions about oral habits like bruxism, nail biting, lips biting, finger or pacifier sucking, use of nursing bottle, mouth breathing or presenting sialorrhea during sleep. It makes it possible indicating the frequency on which each aspect occurs (if 'always', 'sometimes', 'rarely', 'never' or whether 'it has already occurred, but doesn't occur anymore'). Besides this, it investigates whether the child sleep is tranquil or agitated, the average number of hours he/she sleeps, the frequency with which the child complains about headache and what the parents think about their personality (whether it is agitated, anxious, nervous, tense, sad, agressive, shy).

It was required that the parents fulfilled and returned it in a week, at the most. From the 287 protocols sent there was a devolution rate of 228 (79,4%).

All the children whose parents returned the protocols were indicated for orofacial motricity assessment aspects. From those, it was possible evaluating 141 (61,8%), since most of them stopped attending institutions from one year to another.

The assessment was accomplished at the institutions and it consisted in: verification of lips, tongue and cheeks tonus, the aspect of the tonsils, of the bite, of the hard palate and of lingual restraint, posture of lips and tongue rest and, yet, verification of breathing, chewing and swalling patterns. All these aspects were classified in adequate or altered.

After this procedure the research and control groups were composed with all the 141 children who had both the protocols returned and the orofacial motricity assessment. In order that the child would be included on the research group, with bruxism complaint (BG), the parents should have marked any occurrence of diurnal or nightly teeth grinding on the investigation protocol. On the control group, without bruxism complaint (NBG), entered the children whose parents indicated absence of this behavior. This criterion was adopted in conformity with the literature about the subject for being a matter of a simple and objective method that requires the parents participation4-5,7,9,14-16.

The statistical data analysis used the tests: Analysis of Variance (ANOVA) for verifying the groups homogeneity on what concerns age and gender so that they could be compared as for other aspects of interest; Test of Equality of Two Proportions and calculation of the Odds Ratio (OR) for the comparison

of both groups as for all the data analysed on the paper. It was considered a significance level of 5%.

Results

BG was composed by 78 (55,3%) children and NBG by 63 (44,7%). It was tested and verified homogeneity of the groups in relation to gender (p=0,925) and age (p=0,3510).

It was observed a high occurrence (55,3%) of bruxism reported by the parents, without any difference between boys and girls.

When the groups were compared in relation to oral habits various aspects were observed with a larger occurrence on BG (Table 1): sialorrhea during sleep (p=0,036), use of pacifier (p=0,036), lips biting (p<0,001) and nail biting (p=0,028). In the case of pacifier, it was found a 7,16 OR, children with this habit presented a bruxism risk seven times enlarged. For the children with lips bitings habit this risk was five times enlarged. On both groups it was observed a high occurrence of oral breathing (85%), sialorrhea during sleep (77%), biting objects (51%) and nail biting (46%).

No difference was found regarding the personality characteristics between groups. On the other hand, on both groups it was observed a high number of children considered shy (66%), agitated (50%), anxious (47%) or nervous (31%).

In relation to oral miofunctional aspects, it was observed a larger occurrence of cheek tonus (p=0,032) and type of bite (p=0,057) with alteration on BG (Table 1). Besides this, several children from both groups presented alteration on rest posture of tongue (82 %) and of lips (55%), on the type of bite (53%), on the tonsils aspect (47%) and on the hard palate (43%), besides on inferior lip tonus (34%), of tongue (32%), of superior lip (28%) and of the cheeks (23%).

As for sleep and headache, it was observed that the insuficient number of sleep hours recomended for the age was associated to the presence of bruxism, with an enlarged risk of approximately five times (Table 2). It was observed a high number (77%), on both groups of children with frequent headache.

On chewing, swallowing and breathing functions, it was verified that the perioral musculature participation during swallowing of liquids (p=0,006) occurred more on BG (Table 3).

TABLE 1. Comparison of groups with and without bruxism as for oral habits and oral miofunctional aspects.

assessed parameters		groups				p-value	odds ratio
		without bruxism		with bruxism			
hábitos orais		**n**	**%**	**n**	**%**		
sialorrhea during sleep	no	19	30	13	17	**0,036***	**2,23**
	yes	42	67	64	82		
use of pacifier	no	60	95	67	86	**0,036***	**7,16**
	yes	1	2	8	10		
digital suction	no	50	80	66	85	0,213	0,57
	yes	12	19	9	12		
use of nursing bottle	no	50	80	60	77	0,744	1,17
	yes	10	16	14	18		
lips biting	no	52	83	41	53	**< 0,001***	**4,93**
	yes	9	14	35	45		
objects biting	no	36	57	31	40	0,040*	1,97
	yes	26	41	44	56		
oral breathing during sleep	no	10	16	11	14	0,937	1,13
	yes	53	84	66	85		
nail biting	no	40	64	35	45	**0,028***	**2,04**
	yes	23	37	41	53		
oral miofunctional aspects							
lingual frenulum	adequate	62	98	76	97	0,689	1,63
	altered	1	2	2	3		
cheeks tonus	adequate	54	86	55	71	**0,032***	**2,51**
	altered	9	14	23	30		
inferior lip tonus	adequate	45	71	48	62	0,218	1,56
	altered	18	29	30	38		
superior lip tonus	adequate	45	71	57	73	0,828	0,92
	altered	18	29	21	27		
tongue tonus	adequate	46	73	48	62	0,151	1,74
	altered	16	26	29	37		
tongue posture	adequate	14	22	12	15	0,298	1,57
	altered	49	78	66	85		
lips posture	adequate	29	46	34	44	0,772	1,10
	altered	34	54	44	56		
bite	adequate	34	54	31	40	**0,057***	**1,87**
	altered	27	43	46	60		
hard palate shape	adequate	35	56	45	58	0,799	0,92
	altered	28	44	33	42		
tonsils	adequate	35	56	36	46	0,267	1,73
	altered	23	37	41	53		

* statistically significant

TABLE 2. Comparison of the groups with and without bruxism as for the presence of headache and aspects related to sleep.

assessed parameters		groups: without bruxism n	without bruxism %	with bruxism n	with bruxism %	p-value	odds ratio
frequent headache	no	16	25	15	19	0,132	1,53
	yes	44	70	63	81		
awakening at night	no	16	25	16	21	0,491	1,32
	yes	47	75	62	80		
hours of sleep	adequate	51	81	39	50	**< 0,001***	**5,10**
	altered	10	16	39	50		

statistically significant

Table 3. Comparison of the groups with and without bruxism as for breathing, chewing and swallowing functions.

aspects of the oral functions assessment		groups: without bruxism n	without bruxism %	with bruxism n	with bruxism %	p-value	odds ratio
deglutição de líquidos							
head moviment	absent	58	92	66	85	0,177	3,52
	present	2	3	8	10		
tongue posture	adequate	12	19	21	27	0,272	0,63
	altered	45	71	50	64		
perioral musculature participation	absent	31	49	21	27	**0,006***	**2,65**
	present	29	46	52	67		
solids swallowing							
head moviment	absent	59	94	69	86	0,290	4,28
	present	1	2	5	6		
tongue posture	adequate	13	21	22	28	0,301	0,63
	altered	46	73	49	63		
perioral musculature participation	absent	19	30	20	26	0,551	1,25
	present	41	65	54	69		
food waste	absent	34	54	33	42	0,168	1,59
	present	26	41	40	51		
chewing							
lateralization	present	31	49	32	41	0,331	1,34
	absent	29	46	40	51		
lips posture	adequate	12	19	20	26	0,353	0,68
	altered	48	76	54	69		
moving jaw	adequate	40	64	49	63	0,935	0,94
	altered	20	32	23	30		
rhythm	adequate	42	67	59	76	0,240	0,59
	altered	18	29	15	19		
breathing							
pattern	adequate	26	41	33	42	0,901	0,96
	altered	37	59	45	58		

* statistically significant

Discussion

It was found a high occurrence of bruxism in children from 4 to 6 years (55,3%). Other surveys envolved more ample age groups and different methodologies, difficulting a comparison(3,4,7-10,16). Only a paper presented a similar occurrence15, probably for also considering as bruxism the diurnal or nocturnal teeth grinding, from occasional to constant. The choice for this classification considered that, although the teeth grinding during sleep differentiates in several aspects from dental tightening during vigil, both are frequent in children with a negative impact on the development3.

It was decided using the questionnaire aplyed next to parents, like suggested by literature4-5,7,9,12,14, due to the option for simple and objective methods for children assessment, once they are not mature enough to report signals and symptoms in a precise way9. The palpation method could be employed, but its use is still controverse, as it is a complex test and difficult to be analyzed for the low reliability of the answers9. Electromiography was not considered like in other papers12,17 as it implies into additional costs. Besides this, the focus was assessing children on the first infancy and electromiography maybe wouldn't be well accepted, though it is not an invasive method. As literature mentions the habit of pressing or grinding teeth as a sign found in papers about bruxism18, it is considered that the survey of this signal is enough.

The same distribution of bruxism was observed between boys and girls, agreeing with literature6,16, what indicates that there is no necessity of specific actions related to gender.

As for oral habits (Table 1), it was observed an association between bruxism and sialorrhea during sleep, use of pacifier, lips biting and nail biting.

Other papers have also found an association between bruxism and lips biting6 and nail biting6,10.

It is believed that the association with sialorrhea results from relations presently discussed at the literature between respiratory alterations and bruxism, once sialorrhea may be an indicator of nocturne oral breathing. On this paper it was not found an association between oral breathing during sleep and the presence of bruxism, probably for the high frequency of children from both groups with an altered nocturne oral breathing pattern (85%). The speech therapy assessmet contemplated only the diurnal breathing pattern and found 58% of the children from both groups with an altered pattern.

The breathing pattern needs to be better investigated in future papers, mainly during sleep, since obstructive sleep apnea has been considered as a high risk factor for sleep disorders19, among them, bruxism20, with a significant improvement of this after adenotonsillectomy5,7. Children with sleep apnea awake frequently, what increases the parafunctional activity, and can lead, among others, to bruxism, which is associated with fragmented sleep5. There is, yet, the agravant that children with obstruction of airways tend to throw lower jawbone ahead in order to improve the air passage, what can stimulate superior airways receptors for intensiying the airways tonus, also leading to bruxism5.

The same way, the use of pacifier, associated to bruxism on this paper, may signalize the presence of nocturnal oral breathing, as long as, when sleeping, the child tends to let go the pacifier and staying with the mouth open. The children who use pacifier presented a larger risk of bruxism in approximately seven times. Other papers haven't found that relation5-6, not even between the use of pacifier and temporomandibular alterations10. As, in general, many children use the pacifier on this age, and it becomes difficult the possibility of correlating this habit with other factors8-9, what hasn't occurred on this paper, where only 6% from the total of children use pacifier.

As were high the occurrences of oral habits like objects biting (50%), nail biting (45%), lips biting (31%), use of nursing bottle (17%) and finger sucking (15%) it may be occurring a substitution of a habit for another, many times in consequence of an abrupt interruption of the pacifier use. Biting the fingernails has been related to signals and symptoms of temporomandibular disfuntion (TMD) in teenagers21, indicating attention for this habit at childhood due to its future effects.

Children with lips biting habit have presented a five times enlarged risk for bruxism. As well as in other paper, it wasn't observed an association between bruxism and the use of nursing bottle5 or digital suction5-6,16.

It was either observed an association with characteristics on the children personality (Table 1), probably because this data was obtained by means of a direct question to parents, such as it occurred in another paper6 and not with more specific protocols for assessing personality and behavior features14,22. Altough these papers are also considered limited, it seems being a tendency

that the children with bruxism are tenser and more anxious16,22.

It was found a high number (76%) of children with a complaint of frequent headache (Table 2), much above the 23% observed in another paper9. This factor should be better investigated and considered on future actions next to the families and institutions. Headache has been mentioned as one of the complaints from children with bruxism9,21,23, an association that was not found on this survey, probably, for the high frequency of alteration.

Number of sleep hours beneath the recomended one by World Health Organization was associated to bruxism (Table 2), with an enlarged risk of 5 times. Children from 4 to 6 are required to sleep between 10 and 11 hours per night, on average, and, less than that, may lead to hiperactivity and impulsive behaviors, jeopardizing the hability to learn and the academical performance; it may also relate with excess of weight/obesity (3 times more risk) and influencing do appetite regulating hormones24. The sleep pattern is influenced by culture, socioeconomical level and familiar structure24-25. Parents and teachers should get acquainted with the implications of sleep disorders in order to be apt to identify precociously their symptoms and restrain its consequences, assuring the children well-being24-25. Sleeping problems underrated at childhood may develop for psychiatric problems in adults25.

Cheeks tonus and altered bite (Table 1) occurred more frequently on children with bruxism. A paper with children from 5 to 12 years has found 56% with open bite and 39% with crossed bite, but with any association to bruxism or DTM9. Another paper has found a bruxism reduction after adenotonsillectomy, without being any change on the occlusion5. These data indicate that these alterations might be associated, without being any relation of causality between both.

The participation of perioral musculature during the swallowing of liquids (Table 3) has occurred more on the children with bruxism, which might indicate an excessive contraction of this musculature when unnecessary, maybe due to the existing dental tightening. Pain when opening the mouth or chewing was more present in children with bruxism in a paper accomplished with children between 8 and 12 years22. Hypertrophy of chewing muscles has been observed in cases of bruxism12,26 and the unilateral chewing pattern may be related with DTM2. A paper with children between 2 and 13 years with nasal obstrution hasn't observed any difference as for the presence of pain for chewing on those with bruxism, but they consider the possibility of bruxism episodes being occasional and mild in children and that the symptoms can manifest later should the bruxism persists as an aggressive factor against the system stomatognathic6.

The results indicate the necessity of actions next to the parents and the institutions. The occurrency of bruxism among the children should be valued, and efficacious interventions should be developed. Observing symptoms in the children may prevent future disfunctions like pain and discomfort10.

Both the occurrence of bruxism and the smoking habit should be surveyed among the families. Heredity feature is an important indicator3,16 and smokers have the risk for bruxism enlarged twice3.

Presently, the treatment for bruxism tends to be multiprofessional12, involving behavioral aspects - control of anxiety and improvement of sleeping and odontological habits - mainly occlusal adjustments and use of plates, psychological help and indication of medicines - muscular relaxants, antidepressives and others3,13.

The speech therapy assessment has shown very important for the possibility of verifying the impact of bruxism on the orofacial motricity, alimentary functions and breathing, and for making it possible delineating actions on this area.

Conclusion

It was found a high occurrence of bruxism and important aspects have been presented associated to this disorder, factors that justify the development of speech therapy actions next to children, families and instituitions.

References

1. Gusson DGD. Bruxismo em crianças. J. Bras. Odontopediatr. Odontol. Bebe. 1998; 1(2):75-97.

2. Merighi LBM, Silva MMA, Ferreira AT, Genaro KF, Berretin-Felix G. Ocorrência de disfunção temporomandibular (DTM) e sua relação com hábitos orais deletérios em crianças do município de Monte Negro - RO. Rev. Cefac. 2007; 9(4):497-503.

3. Aloé F, Gonçalves LR, Azevedo A, Barbosa RC. Bruxismo durante o sono. Rev. Neurociências. 2003;11(1):4-17.

4. Koyano K, Tsukiyama Y, Ichiki R, Kuwata T. Assessment of bruxism in the clinic. J Oral Rehabil. 2008;35:495-508.

5. DiFrancesco RC, Junqueira PAS, Trezza PM, Faria MEJ, Frizzarini R, Zerati FE. Improvement of bruxism after T & A surgery. Int J Pediatr Otorhinolaryngol. 2004;68: 441-5.

6. Grechi TH, Trawitzki LVV, Felicio CM, Valera FCP, Anselmo-Lima WT. Bruxism in children with nasal obstruction. Int J Pediatr Otorhinolaryngol. 2008;72:391-6.

7. Eftekharian A, Raad N, Gholami-Ghasri N. Bruxism and adenotonsillectomy. Int J Pediatr Otorhinolaryngol. 2008;72:509-11.

8. Galvão ACUR, Menezes SFL, Nemr K. Correlação de hábitos orais deletérios entre crianças de 4 a 6 anos de escola pública e escola particular da cidade de Manaus - AM. Rev CEFAC. 2006;8(3):328-36.

9. Santos ECA, Bertoz FA, Pignatta LMB, Arantes FM. Avaliação clínica de sinais e sintomas da disfunção temporomandibular em crianças. R Dental Press Ortodon Ortop Facial. 2006;11(2):29-34.

10. Tosato JP, Biasotto-Gonzalez DA. Symptomatology of the temporomandibular dysfunction related to parafunctional habits in children. Braz J Oral Sci. 2005;4 (14):787-90.

11. Seraidarian P, Seraidarian PI, Cavalcanti BN, Marchini L, Neves ACC. Urinary levels of catecholamines among individuals with and without sleep bruxism. Sleep breath 2009;13:85-8.

12. Barbosa TS, Miyakoda LS, Pocztaruk RL, Rocha CP, Gavião MBD. Temporomandibular disorders and bruxism in childhood and adolescence: review of the literature. Int J Pediatr Otorhinolaryngol. 2008;72:299-314.

13. Lobbezoo F, Van der Zaag J, Van Selms MKA, Hamburguer HL. Principles for the management of bruxism. J Oral Rehabil. 2008;35:509-23.

14. Ghanizadeh A. ADHD, bruxismo and psychiatric disorders: does bruxism increase the chance of a comorbid psychiatric disorder in children with ADHD and their parents? Sleep breath. 2008;12:375-80.

15. Moore M, Allison D, Rosen CL. A review of pediatric nonrespiratory sleep disorders. Chest. 2006;130(4):1252-62.

16. Cheifetz AT, Osganian SK, Allred EN, Needleman HL. Prevalence of bruxism and associated correlates in children as reported by parents. J Dent Child. 2005;72(2):67-73.

17. Lavigne GJ, Khoury S, Abe S, Yamaguchi T, Raphael K. Bruxism physiology and pathology: an overview for clinicians. J Oral Rehabil. 2008;35:476-94.

18. Martins RJ, Garcia AR, Garbin CAS, Sundefeld MLMM. Associação entre classe econômica e estresse na ocorrência da disfunção temporomandibular. Rev. Bras. Epidemiol. 2007;10(2):215-22.

19. Carneiro LEP, Neto GCR, Camera MG. Efeito da adenotonsilectomia sobre a qualidade de vida de crianças com hiperplasia adenotonsilar. Arq. Int. Otorrinolaringol. 2009;13 (3):270-6.

20. Ohayon MM, Li KK, Guilleminault C. Risk factors for sleep bruxism in the general population. Chest. 2001;119(1):53-61.

21. Feteih RM. Signs and symptons of temporomandibular disorders and oral parafunctions in urban Saudi arabian adolescents: a research report. Head & Face Medicine. 2006;2:25.

22. Restrepo CC, Vásquez LM, Alvarez M, Valencia I. Personality traits and temporomandibular disorders in a group of children with bruxing behaviour. J Oral Rehabil. 2008;35:585-93.

23. Gorayeb MAM, Gorayeb R. Cefaléia associada a indicadores de transtornos de ansiedade em uma amostra de escolares de Ribeirão Preto, SP. Arq Neuropsiquiatr. 2002,60(3-B):764-8.

24. Touchette E, Petit D, Tremblay RE, Montplaisir JY. Risk factors and consequences of early childhood dyssomnias: new perspectives. Sleep Medicine Reviews. 2009;13:355-61.

25. Klein JM, Gonçalves A. Problemas de sono-vigilia em crianças: um estudo da prevalência. Psico-USF. 2008;13(1):51-8.

26. Díaz-Serrano KV, Silva CBA, Albuquerque S, Saraiva MCP, Nelson-Filho P. Is there na association between bruxism and intestinal parasitic infestation in children? J Dent Child. 2008;75(3):276-9.