

Tooth wear due to dental attrition among 12-year-old adolescents

Ivana Meyer Prado¹  | Mirian Fernandes Castro-Braga¹  | Karen Simon Rezende da Silveira¹ 
Saul Martins Paiva¹ | Sheyla Marcia Auad¹  | Lucas Guimarães Abreu¹  Junia Maria Serra-Negra¹ 

¹ Faculdade de Odontologia, Universidade Federal de Minas Gerais, Belo Horizonte, Minas Gerais, Brasil

Aim: To evaluate the prevalence and distribution of tooth wear due to dental attrition among 12-year-old adolescents according to their gender, reports of tooth grinding during sleep/while awake (bruxism), and sleep features related to sleep-disordered breathing.

Methods: A cross-sectional study was conducted with 172 adolescents from southeast Brazil. Parents/caregivers answered questions about sociodemographic characteristics; reports of adolescents' tooth grinding during sleep, and sleep features (e.g. sleep duration and position, snoring, drooling on the pillow) in the previous two weeks. Adolescents self-reported the occurrence of tooth clenching/grinding while awake in the previous two weeks. Tooth wear due to dental attrition was assessed by a previously calibrated researcher, using a validated 5-point analogical ordinal occlusal/incisal tooth wear grading scale, with scores ranging from 0 (no wear) to 4 (loss of crown height $\geq 2/3$), depending on tooth wear severity. Descriptive statistics and the Mann-Whitney test ($p < 0.05$) were performed to identify differences in tooth wear due to the distribution of dental attrition, according to adolescents' characteristics.

Results: Most adolescents were female (58.0%) and 81.6% of the participants presented tooth wear due to dental attrition within the enamel. Adolescents who snored had a higher number of incisors with tooth wear due to dental attrition ($p = 0.035$). Females showed a higher number of canines with tooth wear due to dental attrition ($p = 0.020$). Adolescents whose parents reported tooth grinding during sleep presented a higher number of bicuspid with tooth wear due to dental attrition ($p = 0.001$).

Conclusion: Tooth wear due to dental attrition within the enamel was observed in most adolescents. The distribution, depending on specific groups of teeth, was higher among female adolescents, adolescents' whose parents reported tooth grinding, and adolescents who snored during sleep.

Uniterms: Tooth attrition. Tooth wear. Adolescent. Sleep apnea syndromes. Bruxism. Sleep.

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INTRODUCTION

Tooth wear is a multifactorial condition, which can be physiological as an inevitable consequence of tooth functions, such as chewing, crushing, and mastication, or pathological as a clinical consequence of oral conditions, such as bruxism^{1,2}. It can be classified as mechanical wear (dental attrition and dental abrasion) or chemical wear (dental erosion), both intrinsic and extrinsic¹. The assessment and diagnosis of tooth wear are based on a reliable evaluation

system, which classifies tooth wear considering its distribution (i.e. localized or generalized), severity (i.e. mild, moderate, severe, or extreme) and origin (i.e. mechanical, chemical, intrinsic, or extrinsic)¹. The prevalence of tooth wear in young individuals' permanent dentition, considering all types of wear, ranges between 0% and 54%,³ and the prevalence of pathological tooth wear is known to increase with age⁴.

Tooth wear due to dental attrition is caused by tooth-to-tooth contact during oral function and/or tooth grinding/clenching,

Autor Correspondente:

Ivana Meyer Prado

R. Prof. Moacir Gomes de Freitas, 688 - Pampulha, Belo Horizonte, Minas Gerais. CEP: 31.270-901. Telefone: +55 31 3409-2400.

E-mail: imyprado@gmail.com

creating wear facets upon tooth surfaces that are involved in occlusion and articulation^{1,2}. Clinical consequences of tooth wear are shorter facial height dimension⁵ and temporomandibular disorders in adults⁶, but those associations have not been found in children and adolescents so far⁷. Tooth hypersensitivity, together with its negative effects on appearance, is also one of the negative consequences of tooth wear⁴.

Sleep bruxism (SB) is a rhythmic or non-rhythmic muscle activity, which occurs during sleep, while awake bruxism (AB) is a muscle activity that takes place when awake, characterized by repetitive or sustained tooth contact and/or by bracing or thrusting off the mandible⁸. Excessive mastication muscle activity due to bruxism may increase the risk of severe dental attrition⁹. Saliva plays a key role in the protection of hard dental tissue by means of its flow rate, electrolyte capacity, and protein composition⁴. The occurrence of SB associated with sleep-disordered breathing, such as mouth breathing, sleep apnea, and snoring¹⁰⁻¹³, can influence the severity and location of wear due to dental attrition.

A large body of evidence on chemical (erosive) tooth wear already exists in the literature^{14,15}. However, knowledge regarding dental attrition, in particular among young individuals, has yet to be gained. At the age of twelve, the permanent dentition has just been completed for both boys and girls, with the exception of third molars¹⁶⁻¹⁸. Therefore, the evaluation of tooth wear due to dental attrition at this age may contribute to the understanding of its progress, as well as help to prevent more severe conditions and negative clinical consequences at a later stage. It is also important to understand exactly which teeth are the most affected and why. This knowledge can clarify how the condition progresses with age, as well as which and how many cases progress to severe conditions, questions still unknown in the literature.

Based on the aforementioned statements, the aim of this study was twofold: to assess the prevalence and to evaluate the distribution of tooth wear due to dental attrition considering the adolescent's gender, self-report of tooth grinding during sleep, self-report of tooth grinding/clenching while awake, and sleep features related to sleep-disordered breathing among young adolescents. The null hypothesis was that there are no differences in the distribution of tooth wear due to dental attrition considering the adolescent's gender, his/her self-report of tooth grinding while sleeping, his/her self-report of

tooth grinding/clenching while awake, and sleep features related to sleep-disordered breathing.

MATERIALS AND METHODS

ETHICAL ASPECTS

For this study, ethical approval was obtained from the Human Research Ethics Committee of the Federal University of Minas Gerais (protocol #54989816.3.0000.5142). All adolescents and parents/caregivers signed a free and informed consent form prior to their inclusion in the study.

STUDY DESIGN AND SETTING

This cross-sectional study was conducted with 12-year-old adolescents from Brumadinho, southeast Brazil, between August and December 2016. At the time of data collection, 408 12-year-old adolescents were enrolled in the 7th grade in fourteen public and two private schools from the city of Brumadinho. The participants of the study were randomly selected from those sixteen schools.

PARTICIPANTS

To be included in this study, participants should be 12 years of age, be enrolled in schools from Brumadinho, be literate to Brazilian Portuguese, be in the permanent dentition stage, and present no cognitive disorders or syndromes¹⁹. Information on adolescent's health was provided by their parents/caregivers, and adolescents literacy was confirmed by their teachers at school. Adolescents who weren't at school on the day of clinical examination and whose parents/caregivers did not fulfill all information from the questionnaire were excluded from the sample. Twelve-year-olds were selected because this age all permanent teeth, with the exception of the third molars, had probably erupted²⁰. Also, the age of 12 is considered as the global indicator age group for international comparison and surveillance of disease trends among adolescents, according to the World Health Organization²⁰.

VARIABLES, DATA SOURCES/MEASUREMENT

Prior to data collection, two dentists underwent a two-phase calibration process, coordinated by a researcher with clinical expertise in the field. Phase one consisted of the analysis of photographs used to discuss

the criteria to identify tooth wear due to dental attrition (intrinsic mechanical tooth wear) and the clinical differences of this outcome compared to tooth wear by dental abrasion (extrinsic mechanical tooth wear) and dental erosion (intrinsic and extrinsic chemical tooth wear), in other words, the qualification of the existing tooth wear. Clinical signs of tooth wear due to dental attrition are shiny facets, enamel, and dentin wear at the same rate, and matching wear on tooth surfaces of opposing teeth^{1,21}. Clinical signs of dental erosion are occlusal cupping, incisal grooving, cratering, rounding of cusps and grooves, raised restorations, and increased incisal translucency^{1,21}. In phase two, seven adolescents from the pediatric dental clinic of the Universidade Federal de Minas Gerais were clinically examined for the identification of tooth wear due to dental attrition to determine the inter-examiner agreement. Tooth wear due to dental attrition was evaluated based on a 5-point ordinal occlusal/incisal grading scale (0 = no wear; 1 = visible wear within the enamel; 2 = visible wear with dentin exposure and loss of clinical crown height of $\leq 1/3$; 3 = loss of crown height $> 1/3$ but $< 2/3$; and 4 = loss of crown height $\geq 2/3$)²². The same adolescents were re-examined two weeks later for the confirmation of intraexaminer agreement. The kappa coefficient values showed substantial agreement for the identification of tooth wear due to dental attrition (> 0.750)²³.

PARENT'S/CAREGIVER'S QUESTIONNAIRE

For data collection, the adolescents' parents/caregivers received a questionnaire sent by the researchers in the schools. The questionnaire provided details of the family's sociodemographic status and adolescents' medical history. Information regarding the adolescents' sleep features were also asked, based on the Brazilian version of Sleep Behavior Questionnaire (SBQ)²⁴. The questions were developed by the authors in order to evaluate the adolescents' sleep duration, most frequent sleeping position, and history of drooling and snoring in the last two weeks by means of a parental report. Parents/caregivers also answered a question about adolescents' tooth grinding during sleep in the last two weeks, based on the study of Paesani et al. (2013)²⁵: "Are you aware of the fact that your son/daughter grinds his/her teeth during sleep in the past two weeks?". The question could be answered with "yes" or "no".

ADOLESCENT'S QUESTIONNAIRE

In schools, the adolescents filled in a questionnaire providing their personal information and reported tooth clenching/grinding while awake in the last two weeks. The question about tooth clenching/grinding while awake was also based on the study of Paesani et al. (2013)²⁵: "Did you clench or grind your teeth while awake in the past two weeks?". The question could be answered with "yes" or "no".

CLINICAL EXAMINATION

After answering the questionnaire, all adolescents underwent an intraoral examination to identify tooth wear due to dental attrition, which was scored based on a 5-point ordinal occlusal/incisal grading scale, ranging from 0 (no wear) to 4 (loss of crown height $\geq 2/3$) on a tooth-by-tooth basis²². After the establishment of the scoring system on a tooth-by-tooth basis, tooth wear due to dental attrition was assessed per group of teeth. These were examined by the two previously calibrated dentists. During clinical examination, the examiners used appropriate equipment for individual protection, mouth mirrors (Prisma®, PRISMA Instrumentos Odontológicos Ltda., São Paulo, SP, Brazil), dental gauze, and a headlamp (PETZL, PETZL Technical Institute, Salt Lake City, UT, USA). Adolescents were examined in a private room in the school, sitting facing one examiner, while the other wrote down the scale scores.

STUDY SIZE

A sample size calculation was performed considering a 29.2% prevalence of tooth wear due to dental attrition among adolescents from a previous study with 14 to 16-year-olds²⁶, a 95% confidence interval, a 5% error, and a population size of 408 individuals. A minimum sample size of 179 adolescents was found. A 20% increase was applied in the sample due to possible losses; hence, 213 adolescents were invited to participate in the study.

PILOT STUDY

A pilot study was performed with twenty 12-year-old adolescents (approximately 10% of the final sample) at a private school from the city of Belo Horizonte, Minas Gerais. The pilot study aimed to evaluate the proposed methodology, such as the adolescent's understanding of the

questions from the questionnaire, developed by authors, and how long clinical examination would be necessary. After the pilot study, we concluded that no methodological changes were necessary in the proposed questionnaire and clinical examination. The participants of the pilot study were not included in the main study's sample.

STATISTICAL METHODS

Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS for Windows, version 21.0, SPSS Inc., Chicago, Illinois, United States). Descriptive analysis was performed, followed by a nonparametric comparative analysis. Mann-Whitney test was performed to compare the number of teeth with tooth wear due to dental attrition and its severity between female and male adolescents, adolescents with and without a parental-report of tooth grinding, adolescents with and without self-reports of tooth grinding/clenching, and adolescents with and without the parental-report of snoring and drooling on the pillow in the last two weeks. After this analysis, the Mann-Whitney test was performed to compare the number of teeth with tooth wear due to dental attrition according to each group of teeth (incisors, canines, bicuspids, and molars) between female and male adolescents, adolescents with and without parental-report of tooth grinding, adolescents with and without

self-report of tooth grinding/clenching, and adolescents with and without parental-reports of snoring and drooling on the pillow in the last two weeks. Statistical significance level was set at 5% ($p < 0.05$).

RESULTS

A total of 172 adolescents were eligible for this study (80.7%). Twenty-eight adolescents (13.1%) were excluded because they were in the mixed dentition stage, and thirteen (6.2%) were excluded due to unanswered questions from the parents'/caregivers' questionnaire. Most participants were female individuals (58.0%). Parents/caregivers' mean age was 40.7 (SD = 8.3). Most questionnaires were answered by adolescents' mothers (79.2%), followed by fathers (13.3%) and individuals with other ties of kinship with the adolescents (7.5%). Descriptive analysis of adolescents' sleep features, the parental report of tooth grinding while sleeping, adolescents' report of tooth grinding/clenching when awake and tooth wear due to dental attrition is presented in Table 1. Tooth wear due to dental attrition within the enamel (mild tooth wear; score = 1) was present in 81.6% of the adolescents. None of the adolescents had a score higher than 1 based on the tooth-to-tooth 5-point ordinal occlusal/incisal grading scale¹⁷. Therefore, all adolescents who had tooth wear due to dental attrition presented mild wear (score = 1).

Table 1. Descriptive analysis of adolescents' sleep features, report of tooth grinding/clenching during sleep and while awake, and dental attrition.

(continues)

Variables	Frequency (%)
Adolescents' sleep duration per night	
Less than 8 hours	40 (23.0)
More than 8 hours	134 (77.0)
Adolescents' most frequent sleep position	
Lateral	84 (48.8)
Prone	29 (16.9)
Supine	09 (05.2)
Various positions / agitated sleep	50 (29.1)
Adolescent snores during sleep	
Yes	62 (36.3)
No	109 (63.7)

Adolescent drools on the pillow during sleep	
Yes	76 (43.9)
No	97 (56.1)
Parental report of tooth grinding during sleep in the previous two weeks	
Yes	31 (18.0)
No	141 (82.0)
Adolescents' report of tooth grinding/clenching while awake in the previous two weeks	
Yes	48 (27.6)
No	126 (72.4)
Group of teeth affected by level 1 tooth due to dental attrition	
Incisors	125 (88.0)
Canines	87 (61.3)
Pre-molars	17 (12.0)
Molars	09 (06.3)
Number of teeth affected by tooth wear due to dental attrition	
Mean [SD]	3.4 [2.8]
Median [Minimum – Maximum]	3.0 [0 – 12]
Number of incisors affected by tooth wear due to dental attrition	
Mean [SD]	2.5 [1.8]
Median [Minimum – Maximum]	2.0 [0 – 8]
Number of canines affected by tooth wear due to dental attrition	
Mean [SD]	1.3 [1.3]
Median [Minimum – Maximum]	1.0 [0 – 4]
Number of pre-molars affected by tooth wear due to dental attrition	
Mean [SD]	0.1 [0.5]
Median [Minimum – Maximum]	0.0 [0 – 4]
Number of molars affected by tooth wear due to dental attrition	
Mean [SD]	0.1 [0.4]
Median [Minimum – Maximum]	0.0 [0 – 3]
SD = standard deviation.	

Table 2 displays the results of the Mann-Whitney test, comparing the number of teeth with tooth wear due to dental attrition between female and male adolescents, between adolescents with and without parental-reports of tooth grinding, adolescents with and without self-report of tooth grinding/

clenching, and adolescents with and without parental-report of snoring and drooling

on the pillow in the last two weeks. The Mann-Whitney test showed that adolescents whose parents reported tooth grinding during sleep in the past two weeks presented a significantly higher number of teeth, with tooth wear due to dental attrition, in comparison to adolescents whose parents did not report tooth grinding ($p = 0.007$).

When analyzing the number of teeth with tooth wear due to dental attrition, according to

each group of teeth (incisors, canines, bicuspid, and molars), the results showed that adolescents whose parents reported snoring during sleep presented a significantly higher number of incisors with tooth wear due to dental attrition when compared to adolescents whose parents did not report snoring ($p = 0.035$). Female adolescents presented a significantly higher

number of canines with tooth wear due to dental attrition in comparison to male adolescents ($p = 0.020$). Adolescents whose parents reported tooth grinding during sleep presented a significantly higher number of bicuspid affected by tooth wear due to dental attrition in comparison to adolescents whose parents did not report tooth grinding during sleep ($p = 0.001$).

Table 2. Bivariate analysis evaluating the association between the number and type of teeth with dental attrition and independent variables.

Variables	Teeth with tooth wear due to dental attrition within the enamel (level 1)			Incisors with tooth wear due to dental attrition within the enamel (level 1)			Canines with tooth wear due to dental attrition within the enamel (level 1)			Bicuspid with tooth wear due to dental attrition within the enamel (level 1)			Molars with tooth wear due to dental attrition within the enamel (level 1)		
	Median [Min – Max]	Mean (SD)	p^*	Median [Min – Max]	Mean (SD)	p^*	Median [Min – Max]	Mean (SD)	p^*	Median [Min – Max]	Mean (SD)	p^*	Median [Min – Max]	Mean (SD)	p^*
Sex															
Male	3.0 [0 – 12]	3.15 (2.96)	.190	2.0 [0 – 7]	2.80 (2.06)	.303	0.5 [0 – 4]	1.00 (1.25)	.020	0.0 [0 – 3]	0.09 (0.43)	.609	0.0 [0 – 2]	0.21 (0.45)	.069
Female	3.0 [0 – 11]	3.57 (2.73)		2.0 [0 – 8]	2.38 (1.72)		1.0 [0 – 4]	1.50 (1.34)		0.0 [0 – 4]	0.14 (0.59)		0.0 [0 – 3]	0.14 (0.51)	
Parental-reported tooth grinding/clenching during sleep in the previous two weeks															
Yes	4.0 [0 – 12]	4.74 (3.28)	.007	2.5 [0 – 8]	3.07 (1.96)	.088	1.5 [0 – 4]	1.68 (1.44)	.106	0.0 [0 – 4]	0.46 (1.10)	.001	0.0 [0 – 1]	0.04 (0.18)	.113
No	3.0 [0 – 10]	3.11 (2.64)		2.0 [0 – 8]	2.42 (1.84)		1.0 [0 – 4]	1.20 (1.29)		0.0 [0 – 1]	0.03 (0.16)		0.0 [0 – 3]	0.20 (0.53)	
Self-reported tooth grinding/clenching during wakefulness in the previous two weeks															
Yes	4.0 [0 – 10]	3.94 (2.99)	.122	2.0 [0 – 8]	2.90 (2.02)	.237	1.0 [0 – 4]	1.34 (1.38)	.925	0.0 [0 – 3]	0.17 (0.58)	.390	0.0 [0 – 2]	0.17 (0.49)	.951
No	3.0 [0 – 12]	3.19 (2.75)		2.0 [0 – 7]	2.41 (1.79)		1.0 [0 – 4]	1.29 (1.30)		0.0 [0 – 4]	0.10 (0.52)		0.0 [0 – 3]	0.17 (0.49)	
Adolescent snores during sleep															
Yes	3.5 [0 – 12]	4.06 (3.23)	.064	3.0 [0 – 8]	3.02 (2.05)	.035	1.0 [0 – 4]	1.36 (1.38)	.764	0.0 [0 – 4]	0.21 (0.79)	.495	0.0 [0 – 2]	0.03 (0.45)	.926
No	3.0 [0 – 10]	3.05 (2.52)		2.0 [0 – 8]	2.29 (1.71)		1.0 [0 – 4]	1.28 (1.30)		0.0 [0 – 2]	0.07 (0.29)		0.0 [0 – 3]	0.16 (0.47)	
Adolescent drools on the pillow during sleep															
Yes	3.0 [0 – 12]	3.36 (2.86)	.810	2.0 [0 – 7]	2.46 (1.93)	.598	1.0 [0 – 4]	1.33 (1.34)	.819	0.0 [0 – 3]	0.14 (0.59)	.872	0.0 [0 – 2]	0.10 (0.34)	.108
No	3.0 [0 – 11]	3.40 (2.82)		2.0 [0 – 8]	2.59 (1.81)		1.0 [0 – 4]	1.28 (1.32)		0.0 [0 – 4]	0.10 (0.49)		0.0 [0 – 3]	0.23 (0.57)	

Bold values represent statistically significant association.
 Min = minimum; Max = maximum; SD = standard deviation, p = probability value; * = Mann-Whitney test.

DISCUSSION

Compared to other oral health issues, such as periodontal disease and dental caries, tooth wear is a relatively new concern among oral healthcare providers³. The prevalence of tooth wear within the enamel or with dentin exposure in the permanent dentition of children and adolescents varies in the literature, ranging from 0% to 54%.³ However, the prevalence of tooth wear due to dental attrition (being part of the whole tooth wear spectrum) among adolescents in the permanent dentition is still unclear. The prevalence found in the present study (81.6%) was higher than the prevalence of tooth wear due to dental attrition (29.2%) reported in a pilot study with 14 to 19-year-old adolescents in Mexico²⁶. The studies used a different grading system, both evaluating wear in enamel and dentin, but the Mexican study²⁶ considered only the two most severely affected teeth for statistical analysis, which may have underestimated the prevalence of tooth wear due to dental attrition. These differences in methodologies, such as the number of teeth assessed, the type of wear evaluated, diagnosis criteria, and participants' age make the comparison among studies and the accuracy in the estimate of the prevalence for each type of tooth wear difficult.

Upon assessing the prevalence of dental attrition for each group of teeth, our results were similar to the findings of a Brazilian study evaluating tooth wear among 12-year-old individuals. In both evaluations, incisors and canines were the most affected teeth¹⁴. Incisors are the first group of permanent teeth, along with the first molars, to emerge in the oral cavity, between 6 and 7 years of age¹⁶⁻¹⁸. Therefore, at the age of 12, they have been exposed longer to tooth-to-tooth contact, as compared to other groups of permanent teeth. Canines erupt later, between 10 and 12 years of age¹⁶⁻¹⁸, but due to their key role in occlusion, they most likely present more tooth wear due to dental attrition. Studies commonly evaluate tooth wear only in specific groups of teeth or regions³, making it difficult to investigate the sequence of eruption, occlusion, and tooth wear due to dental attrition among adolescents.

The number of canines with dental attrition were higher among female adolescents when compared to male adolescents. This might be explained by the fact that permanent teeth tend to erupt earlier in female individuals¹⁶⁻¹⁸. Therefore, girl's canines begin to perform their role in occlusion earlier, with a longer exposure to tooth-

to-tooth contact. Female children tend to show more internalizing emotions, such as sadness and anxiety, than do boys, with contextual factors influencing these gender differences²⁷. Since bruxism is strongly associated with emotional factors in children and adolescents²⁸, it is possible that female adolescents will present higher numbers of teeth with dental attrition wear due to bruxism, although the relationship between bruxism and sex in children and adolescents is still controversial²⁸. Future studies should evaluate tooth wear in young individuals, including an evaluation of emotional factors to clarify the paths of association.

The present study found that adolescents whose parents reported tooth grinding during sleep in the past two weeks presented a higher number of teeth with tooth wear due to dental attrition. Even though some groups of teeth (i.e. canines, pre-molars, and second molars) have recently erupted¹⁶⁻¹⁸, it seems that excessive activity of the mastication muscles may increase the risk for adverse oral health outcomes, such as mechanical tooth wear^{8,9,29}.

Parental reports of tooth grinding during sleep in the previous two weeks was also associated with a higher number of bicuspid teeth with tooth wear due to dental attrition. Maxillary canines complete their eruption after the bicuspid teeth, almost at the age of 12¹⁶⁻¹⁸, but it is likely that between the period of the exfoliation of primary canines and the emergence of permanent canines, bicuspid teeth play the occlusion role of canines. This temporary function, along with the excessive muscle activity of tooth grinding, might increase dental tissues' mechanical loss. The presence of tooth wear due to dental attrition in bicuspid teeth at the age of 12, even within the enamel surface, could be an indicator of the occurrence of tooth grinding during sleep.

No association was found between tooth wear due to dental attrition and reports of tooth grinding/clenching while awake. This result corroborates findings of other studies, which suggested that SB and AB are both muscle activities, but might be different conditions with different mechanisms and clinical consequences⁸. AB may not only involve tooth contact, but also muscular activity, such as bracing and thrusting of the mandible⁴, and in those cases, mechanical tooth wear may not occur. To better understand those differences, it is important to evaluate both conditions separately, since the literature is still limited in evaluations of AB in comparison to SB²⁹.

Adolescents whose parents reported snoring presented a higher number of incisors

with tooth wear due to dental attrition. Nasal obstruction is a cause for mouth breathing, predisposing the individual to sleep disordered breathing³⁰, manifested as habitual snoring in children³¹. SB has been associated with sleep-disordered breathing^{10,13} and recent studies suggest that tooth grinding/clenching may well have a positive impact on the oral health function⁸, by means of changes in the position of the tongue and the jaw, which ultimately restore airway patency during sleep^{32,33}. Saliva might work as a protective factor for tooth wear due to dental attrition, as mucins and other salivary components may reduce the frictional forces by covering tooth surfaces³⁴. Mouth opening while snoring during sleep may lead to the reduction of saliva in the mouth, predisposing the anterior teeth to mechanical wear.

The present study has some limitations that should be taken into account. The cross-sectional design precludes any inference of causality from our findings. Only univariate analysis was performed, and the results of this study should be interpreted carefully. The use of instrumental approaches for the assessment of SB are highly acknowledged in the literature⁸, but it has a high cost and limited availability for studies with larger samples³⁵. We encourage future research with an alternative design investigating tooth wear due to dental attrition at different dentition stages, considering the occurrence of tooth grinding during sleep, its clinical consequences, the occurrence of sleep-disordered breathing, and the role of saliva as a protective factor.

At the age of 12, the permanent dentition has recently been established¹⁶⁻¹⁸, but our findings demonstrate that even the most recent erupted teeth presented tooth wear due to dental attrition within the enamel surface. We believe that at such a young age there was not enough time for the development of a severe condition, involving dentin exposure, but the results raise the concern among oral healthcare providers during the anticipatory guidance of adolescents and their parents/caregivers regarding the consequences of tooth wear. Future research assessing this outcome among adolescents is also warranted. Clinicians are strongly encouraged to stay alert and to keep young individuals with mild wear facets under surveillance, given that the identification of enamel wear at a young age and its determinant factors may indeed contribute to the prevention of a more severe condition in the future³.

CONCLUSION

Tooth wear due to dental attrition in enamel was observed in 81.6% of the 12-year-old adolescents, with incisors (88.0%) and canines (61.3%) being the most affected group of teeth. Female adolescents, adolescents who snored during sleep, and those who reported teeth grinding during sleep presented a higher number of teeth with tooth wear due to dental attrition, depending on the group of teeth evaluated.

CONFLICTS OF INTEREST


None.


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ORCID

Ivana Meyer Prado  <https://orcid.org/0000-0002-3233-5927>

Mirian Fernandes Castro-Braga  <https://orcid.org/0000-0002-6872-9987>

Karen Simon Rezende da Silveira  <https://orcid.org/0000-0001-8412-7137>

Saul Martins Paiva  <https://orcid.org/0000-0002-3968-1638>

Sheyla Marcia Auad  <https://orcid.org/0000-0002-4572-6425>

Lucas Guimarães Abreu  <https://orcid.org/0000-0003-2258-8071>

Junia Maria Serra-Negra  <https://orcid.org/0000-0001-6098-3027>

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Desgaste dentário por atrição entre adolescentes de 12 anos de idade

Objetivos: Avaliar a prevalência e distribuição de DDA entre adolescentes de 12 anos de acordo com o sexo, relato de ranger de dentes durante o sono e vigília (bruxismo) e características relacionadas a distúrbios respiratórios do sono.

Método: Desenvolveu-se um estudo transversal com 172 adolescentes do sudeste do Brasil. Seus pais/responsáveis responderam um questionário contendo informações sociodemográficas, relato sobre os filhos rangerem os dentes durante o sono e hábitos do sono dos filhos (duração do sono, posição que dorme, roncar, babar no travesseiro) nas duas últimas semanas. Adolescentes relataram ocorrência de ranger/apertar de dentes durante a vigília nas duas últimas semanas. DDA foi avaliado por um pesquisador previamente calibrado através de uma escala analógica ordinal de cinco pontos de desgaste dentário para faces oclusal/incisal previamente validada, com escores variando de 0 (sem desgaste) a 4 (perda da coroa em altura $\geq 2/3$), dependendo da gravidade do desgaste. Análises descritivas e teste de Mann-Whitney ($p < 0,05$) foram realizados para identificar as diferenças na distribuição de DDA de acordo com as características dos adolescentes.

Resultados: A maioria dos adolescentes eram meninas (58,0%) e 81,6% dos participantes apresentaram DDA em esmalte em algum elemento dentário. Adolescentes que roçavam apresentavam mais incisivos com DDA ($p = 0.035$). Meninas apresentaram maior número de caninos com DDA ($p = 0.020$). Adolescentes que rangiam os dentes durante a noite apresentaram maior número de pré-molares com DDA ($p = 0.001$).

Conclusão: Desgaste dentário por atrição em esmalte foi observado na maioria dos adolescentes. A distribuição, dependendo de grupos de dentes específicos, foi maior entre meninas, adolescentes que roçavam durante o sono e que rangiam os dentes durante o sono.

Descritores: Atrito dentário. Desgaste dos dentes. Adolescente. Síndromes da apneia do sono. Bruxismo. Bruxismo do sono.