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Bruxism, Lifestyle, Anxiety, and Sleep Impairment in Dental Students

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Abstract

The aim of this study was to verify the correlation of self-reported sleep and awake bruxism with demographic characteristics, oral behaviors, anxiety, temporomandibular disorder (TMD) signs and symptoms, sleep quality, and orthodontic treatment history in dental students. A total of 104 students of Dentistry located in Paraná (South Brazilian State) answered the following self-administered questionnaires: Oral Behavior Checklist, State Anxiety Inventory, TMD signs and symptoms questionnaire, and the Pittsburgh Sleep Quality Index. Associations between possible awake bruxism (AB) and sleep bruxism (SB) with sleep quality, anxiety, and TMD were analyzed by Poisson Regression with robust variance. The significance level adopted was 5%. The frequency of AB and SB was 76% and 55.8%, respectively. A statistically higher frequency of AB was observed in students who had the following conditions: use of psychotropic medication, physical activity practitioners, moderate or high level of anxiety, more oral behaviors, sleep disorders, and sleep bruxism. Sleep bruxism was diagnosed more frequently in students who presented moderate or high levels of anxiety, oral behaviors, and sleep disorders. The frequency of TMD reported was higher in students with SB, as well as in those with AB. In conclusion, lifestyle, moderate and high anxiety levels, and sleep disorders are associated with a higher prevalence of AB and SB. Furthermore, AB and SB are associated with a higher frequency of TMD reporting.

Keywords
- anxiety
- bruxism
- sleep bruxism
- sleep wake disorders
- dental students
- lifestyle

Introduction

Bruxism is considered a repetitive or not repetitive masticatory muscle activity, characterized by clenching, or grinding the teeth and/or bracing or thrusting the mandible occurring within two distinct circadian manifestations: sleep bruxism (SB) and awake bruxism (AB). The AB is a masticatory muscle activity during wakefulness characterized by repetitive or sustained tooth contact and/or by mandible's bracing or thrusting and is not considered a movement disorder in otherwise healthy individuals. The SB is a masticatory muscle activity during sleep characterized as rhythmic (phasic) or non-rhythmic (tonic) and is not a movement disorder or a sleep disorder in otherwise healthy individuals.[1] There is

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a consensus in the literature for the diagnosis of SB or AB, in which possible SB or AB is based only on self-report; probable SB or AB, self-reported or not, plus positive clinical inspection; definitive SB is based on self-report, clinical inspection, and polysomnography (preferably with audio/video recordings). Definitive AB is based on self-report, clinical inspection, electromyography, and, preferably, with ecological momentary assessment.[2]

The prevalence of bruxism varies according to the age group.[3] A research with children and adolescents between 7 and 17 years-old showed a prevalence of SB of 15% and AB of 12.4%.[4] In 2019, Wetselaar et al. demonstrated that the prevalence of bruxism decreases as the age of the patients increases, in adults within the 25 to 74 years old age range. Thus, the group with the highest prevalence was the one between 25 and 44 years old, and the lowest was the one between 45 and 74 years old.[3] In some studies investigating possible AB, the prevalence of adults with this condition was 22.1%.[5] Other studies considering probable AB showed a higher percentage, reaching as much as 52.5%.[6] There is not much information available about the prevalence of AB, which demonstrates the necessity of more research focused on this area.

The pathophysiology of AB is not entirely understood; however, emotional problems, anxiety, and stress can be risk factors for this condition.[7] Student's lifestyle is full of pressures and demands, which can result in stress and is thus a period of greater risk for bruxism, since this behavior can release tension.[8] Another study has shown that anxiety was four times more prevalent in students who had bruxism compared with those who did not, regardless of gender and student's course, demonstrating that the association between anxiety and bruxism was statistically significant.[9] A cross-sectional study of 278 undergraduate students evidenced that the ones who did not practice regular physical activity had higher levels of stress and of AB. The same was true to those who consumed alcohol. On the other hand, those who smoked cigarettes had a lower level of stress and AB.[10]

Two factors can be examined based on self-report: the possible presence of SB or AB and the frequency of this behavior. However, the intensity and duration of masticatory muscle activity cannot be easily quantified through self-report. To evaluate self-report SB, there are more options than just the patient record, but also the bed partner or, in the case of children, the parents or caregivers.[1]

The aim of this study was to verify the correlation of self-reported SB and AB with demographic and lifestyle characteristics, oral behaviors, anxiety, temporomandibular disorder (TMD) signs and symptoms, sleep quality, use of psychotropic medications, and orthodontic treatment history in dental students.

Materials and Methods

Ethical Aspects

This cross-sectional epidemiological study was approved by the ethics committee of Universidade Federal do Paraná under protocol #3,421,963. The study was conducted in accordance with the Declaration of Helsinki, and the participants were invited to participate through social media announcements. This study is reported according to the srengthening the reporting of observational studies in epidemiology (STROBE) guidelines.[11]

Sample

For this study, 450 individuals were selected according to the following inclusion criteria[1]: both sexes,[2] age between 18 and 35 years,[3] undergraduate, resident, or postgraduate students of Dental programs at 5 universities (Universidade Federal do Paraná, Universidade Tuiuti do Paraná, Faculdade Guairacá, Universidade Positivo, and Universidade Estadual de Ponta Grossa). Participants who did not agree to participate in the study were not included. Participants who did not answer all the questions from the Google Forms questionnaires were excluded.

Data Collection

The participants were invited to answer an online form through the Google Forms (Google LLC, Menlo Park, CA, USA) platform. It contained an informed consent form briefly explaining the objectives, types of questions, and the risks and benefits of the study.

After agreement, personal demographic data (age, gender, program, grade, and marital status) was collected. In addition, the following questionnaires were applied: the Oral Behavior Checklist (OBC)[12]; the State-Trait Anxiety Inventory (STAI)[13]; signs and symptoms of TMD according to the American Academy of Orofacial Pain (AAOP) questionnaire,[14] and the Pittsburgh Sleep Quality Index (PSQI).

I. Temporomandibular Disorder (TMD) Screening Questionnaire proposed by the AAOP: This questionnaire consists of 10 objective questions aimed at evaluating the following items: pain and/or limited mouth opening; joint sounds; pain in the temples, cheeks, or periauricular region; headaches; neck pain; toothache; a history of head, neck, or jaw/mandible trauma; a history of recent occlusion changes; a history of recent joint locking. The TMD screening questionnaire was used to ascertain the presence of TMD signs and symptoms. If the participant answers "yes" to at least one of the questions, it is already an indication for specialist evaluation.[14]

II. Oral Behaviors Checklist: Comprising 21 objective questions, the first two related to nocturnal activities: clenching and any kind of mandible pressure. The remaining questions pertain to activities during wakefulness: clenching and/or grinding of the teeth; non-functional teeth contact; muscular tension; mandibular projection; tongue pressure against teeth; oral parafunctional habits involving tongue, cheeks, and lips; maintaining a tense mandible; parafunctional habits involving objects; chewing gum habit; use of wind instruments; jaw support over the hand; unilateral mastication; eating between meals; extended talking periods; singing; yawning; the method of supporting the phone over the shoulder. This questionnaire was administered to assess these oral behaviors in

participants. The total score can vary from 0 to 84 and is obtained by summing the scores for the responses. Each answer option corresponds to a score from 0 to 4, as follows: the first option *no time* = 0; the second, *a small part of the time* = 1; the third, *some part of the time* = 2; the fourth, *most of the time* = 3, and the fifth option, *all the time* = 4. The higher the total score, the greater the occurrence of oral behaviors.

III. State-Trait Anxiety Inventory (STAI): It comprises a two-part self-administered questionnaire. The first part assesses the anxious *state*, and the second assesses the *trait* of anxiety in the participant. This questionnaire was created[11] and validated for Brazilian Portuguese.[12] In this study, only the first part of the questionnaire was administered, providing an anxious *state* score. There were 20 affirmation items, with answers corresponding to a score ranging from 0 to 80. The answer choices were: *no* = 1, *a little* = 2, *quite* = 3, or *totally* = 4. The higher the score obtained, the greater the level of the patient's anxiety. The weights of the items are equal to the scored points (from 1–4) marked by the patient, and the items in which high scores indicate high anxiety levels maintain these same weights. However, for items in which high scores indicate low anxiety levels, their weights are inverted to prevent response bias.

IV. Pittsburgh Sleep Quality Index (PSQI-BR): Comprising objective questions, this questionnaire aims to evaluate sleep quality. The sleep-related components assessed include subjective sleep quality; time taken to fall asleep; sleep duration; habitual sleep efficiency; sleep disorders; use of sleeping medication; and daytime dysfunction. Each component receives a score ranging from 0 to 3. All scores are then summed up, resulting in a total score ranging from 0 to 21. The general population's score reaches a maximum of 5. Scores higher than 5 indicate poorer sleep quality.[15]

Self-report of AB and SB was recorded.[1] For the diagnosis of possible SB, the answer *yes* was computed for the question: "Do you clench or grind your teeth during sleep, based on any information you may have?". While for possible AB, the answer *yes* was computed by answering the question: "Do you clench your teeth while you are awake?" and "Do you grind your teeth during the time you are awake?". Those questions are from the OBC instrument.[12] Lifestyle was evaluated through the practice or not of physical activity and the use or not of psychotropic medication.

Statistical Analysis

The data were processed with the software IBM SPSS Statistics for Windows, version 20.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to summarize the sample. For this cross-sectional study, the dependent variables were the report of SB and of AB. The SB and AB were dichotomized into present (from small part of the time to all the time) and absent (no time).

The independent variables were analyzed according to the following categories: gender (female and male), university, course (undergraduate and graduate), and marital status (single and married). The STAI was categorized as no anxiety (0–20 points), mild anxiety (21–40 points), moderate anxiety (40–60 points), and severe (above 60 points).[15] Pittsburgh sleep quality scores were categorized as without sleep disorder (0–4 score) or with sleep disorder (score above 5). For statistical analysis, TMD signs and symptoms were dichotomized at present (questions 01–08 > 1) or absent (questions 01–08 = 0). The OBC was computed as a quantitative variable.

To analyze the factors associated with the presence of possible SB or AB, which were the dependent variables, univariate Poisson regression analysis with robust variance was adopted for each possibility considering the independent variables above described, estimating the crude prevalence ratio (RP_b) and 95% confidence interval (95% CI) with a significance level of 5%.

Results

Of the 450 sent forms, 103 returned completed. About 74.8% of the participants were female, with the majority being undergraduate students (96%). A high percentage of the participants were from UFPR (76.6), with a mean age of 22 years old. The prevalence of possible AB was 76% and possible SB was 55.8%. ►**Table 1** shows the demographic data of the study population.

►**Table 2** shows the descriptive analysis of the factors evaluated for oral behavior, anxiety, TMD signs and symptoms, and sleep quality. It was observed that the presence of SB was statistically significantly associated with anxiety, oral behaviors, and sleep disorders (►**Table 3**). Students with a high anxiety level had a 129% higher prevalence of SB than students with low anxiety level (PRb = 2.29; 95% CI 1.18–4.43). Students with higher scores of oral behaviors also presented a higher prevalence of SB (PRb = 1.04; 95% CI 1.03–1.06). So, with the addition of one point in the score of oral behaviors, the prevalence of SB increases by 4% (PRb = 1.04; 95% CI). This justifies AB to be significantly associated with SB. Students

Table 1 Demographic data of the study sample.

Characteristics	Categories	N (%)
Gender	Female Male	77 (74.8) 26 (25.2)
Program	Undergraduate Graduate	99 (96.1) 4 (3.9)
University	UFPR Universidade Positivo Faculdade Guairacá UEPG	59 (76.6) 13 (16.9) 4 (5.2) 1 (1.3)
Marital status	Single Married	99 (96.1) 4 (3.9)
Mean age	Min–max	22.34 (3.35) 18–35

Abbreviations: UEPG, Universidade Estadual de Ponta Grossa; UFPR, Universidade Federal do Paraná.

Table 2 Descriptive analysis of instruments measuring oral behaviors, sleep quality, anxiety, and temporomandibular disorders signs and symptoms.

	N	Minimum	Maximum	Average	Standard deviation
Oral behaviors	104	5.00	44.00	22.2788	7.71388
Sleep quality	104	2.00	15.00	8.1346	2.85595
Anxiety	104	29.00	70.00	49.2788	9.99947
TMDs signs and symptoms	104	.00	8.00	2.3558	2.01893

Abbreviation: TMDs, temporomandibular disorders.

Table 3 Analysis of association between possible sleep bruxism and other characteristics.

CHARACTERISTICS		SB			PR_b (95% CI)	*p*
		YES n (%)	NO n (%)	TOTAL N (%)		
Gender	Female	48(62.3)	29 (37.7)	77	1.62 (0.96–2.71)	0.067
	Male	10 (38.5)	16 (61.5)	26	1.00	
Marital status	Married	2 (50.0)	2 (50.0)	4	1.13 (0.41–3.06)	0.808
	Single	56 (56.6)	43 (43.4)	99	1.00	
Age	Average (min- max)	21.9 (18–33)	22.8 (18–35)		0.96 (0.96–1.02)	0.242
Use of medications	Yes	6 (66.7)	3 (33.3)	9	1.22 (0.73–2.04)	0.436
	No	37 (54.4)	31 (45.6)	68	1.00	
Physical exercise	Yes	28 (66.7)	14 (33.3)	42	1.37 (0.98–1.92)	0.060
	No	30 (48.4)	32 (51.6)	62	1.00	
Program	Postgraduate	3 (75.0)	1 (25.0)	4	1.35 (0.74–2.44)	0.321
	Graduate	55 (55.6)	44 (44.4)	99	1.00	
Anxiety	High	13 (76.5)	4 (23.5)	17	2.29 (1.18–4.43)	0.021*
	Moderate	38 (57.6)	28 (42.4)	66	1.72 (0.91–3.27)	0.094
	Low	7 (33.3)	14 (66.7)	21	1.00	
Oral behaviors	Average (min- max)	25.5 (11–44)	18.5 (5–38)		1.04 (1.03–1.06)	< 0.001*
Sleep quality	With	19 (86.4)	3 (13.6)	22	1.81 (1.37–2.40)	< 0.001*
	Without	39 (47.6)	43 (52.4)	82	1.00	
Awake bruxism	Yes	51 (54.6)	28 (35.4)	79	2.30 (1.20–4.41) 1,00	0.012*
	No	7 (28.0)	18 (72.0)	25		
TMDs signs and symptoms	Yes	53 (65.4)	28 (34.6)	81	3.01 (1.36–6.64) 1.00	0.006*
	No	5 (21.7)	18 (78.3)	23		
Orthodontic treatment history	Yes	46 (79.3)	28 (60.9)	74	1.55 (0.96–2.49)	0.068
	No	12 (20.7)	18 (39.1)	30	1.00	

Abbreviations: *p*, *p*-value; PRb, prevalence ratio; SB, sleep bruxism; TMDs, temporomandibular disorders.
*indicates statistically significant difference calculated using Poisson regression analysis with robust variance.

with AB also have a higher prevalence of SB (PRb = 2.30; 95% CI 1.20–4.41).

Students with sleep disorders, measured by the PSQI, had an 81% higher prevalence of SB than students without sleep disorders (PRb = 1.81; 95% CI 1.37–2.40). Also, students with SB presented a statistically significantly higher chance of reporting signs and symptoms of TMD (PRb = 3.01, 95% CI 1.36–6.64) (►**Table 3**).

Students with orthodontic treatment history had a prevalence of SB 55% higher than students without orthodontic treatment history (PRb = 1.55; 95% CI 0.96–2.49). However, it was not statistically different ($p = 0.068$) (►**Table 3**).

►**Table 4** shows the results regarding the presence of SB. There was an association of AB with the use of psychotropic medication, physical activity, the period of the course, anxious state, oral behaviors, sleep quality index and SB. It is noted that students who use psychotropic medication showed 30% more chance of showing AB than students who did not use it (PRb = 1.30; 95% CI 1.14–1.49). Participants who performed physical activity were 23% more likely

Table 4 Analysis of association between possible awake bruxism and other characteristics.

CHARACTERISTICS		AB			PR_b (95% CI)	*p*-value
		Yes N (%)	No n (%)	Total N (%)		
Gender	Female	59 (76.6)	18 (23.4)	77	1.04 (0.80–1.36)	0.725
	Male	19 (73.1)	7 (26.9)	26	1.00	
Marital status	Married	2 (50.0)	2 (50.0)	4	0.88 (0.32–2.39)	0.808
	Single	76 (76.8)	23 (23.2)	99	1.00	
Age	Average (min– max)	22.2 (18–33)	22.6 (18–35)		0.99 (0.95–1.02)	0.647
Use of medication	Yes	9 (100.0)	0	9	1.30 (1.14–1.49)	< 0.001*
	No	52 (76.5)	16 (23.5)	68	1.00	
Physical exercise	Yes	36 (85.7)	6 (14.3)	42	1.23 (1.01–1.51)	0.044*
	No	43 (69.4)	19 (30.6)	62	1.00	
Program	Postgraduation	4 (100.0)	0	4	1.33 (1.19–1.50)	< 0.001*
	Graduation	74 (74.7)	25 (25.3)	99	1.00	
Anxiety	High	15 (88.2)	2 (11.8)	17	1.68 (1.08–2.62)	0.049*
	Moderate	53 (80.3)	13 (19.7)	66	1.53 (1.01–2.34)	0.021*
	Low	11 (52.4)	10 (47.6)	21	1.00	
Oral behaviors	Average (min–max)	24.0 (11–44)	16.8 (5–38)		1.02 (1.01–1.04)	< 0.001
Sleep quality	With	20 (90.9)	2 (9.1)	22	1.26 (1.04–1.52)	0.015*
	Without	59 (72.0)	23 (28.0)	82	1.00	
Sleep bruxism	Yes	51 (87.9)	7 (12.1)	58	1.44 (1.12–1.85)	0.004*
	No	28 (60.9)	18 (39.1)	46	1.00	
TMDs signs and symptoms	Yes	66 (81.5)	15 (18.5)	81	1.44 (1.01–2.09)	0.055
	No	13 (56.5)	10 (43.5)	23	1.00	
Orthodontic treatment history	Yes	57 (72.2)	17 (68.0)	74	1.05 (0.81–1.34)	0.699
	No	22 (27.8)	8 (32.0)	30	1.00	

Abbreviations: AB, awake bruxism; *p*, *p*-value; PRb, prevalence ratio; TMDs, temporomandibular disorders.
*indicates statistically significant difference calculated using Poisson regression analysis with robust variance.

to develop AB than those who did not practice physical activity (PRb = 1.23; 95% CI 1.01–1.51). Participants who are in postgraduate studies showed a 33% higher prevalence of AB (PRb = 1.33; 95% CI 1.19–1.50).

Students with higher scores of oral behaviors had a higher frequency of AB, where each unit in the score of oral behavior represented an increase the frequency of AB by 2% (PRb = 1.02; 95% CI 1.01–1.04). Anxiety was also a relevant variable, where participants who presented high and moderate anxiety were 68% and 53% more likely, respectively, to present AB compared to those who presented mild anxiety (PRb = 1.68; 95% CI 1.08–2.62 and PRb = 1.53; 95% CI 1.01–2.34 respectively).

Students with sleep disorders, measured by the PSQI, showed 26% more risk to have AB than students without sleep disorders (PRb = 1.26; 95% CI 1.04–1.52). Sleep bruxism demonstrated a 44% higher prevalence of AB for those who indicated this condition (PRb = 1.44; 95% CI 1.12–1.85). Students with AB also presented a higher frequency of reporting signs and symptoms of TMD (PRb = 1.44, 95% CI 1.01–2.09).

Students with orthodontic treatment history had a prevalence of AB 5% higher than students without orthodontic treatment history (PRb = 1.05; 95% CI 0.81–1.34). However, there was not a statistically significant difference between students who had or did not have SB in relation with orthodontic treatment history (*p*-value = 0.69) (►**Table 4**).

Discussion

This cross-sectional study observed an SB rate of 55.8% and an AB rate of 76% in dental students. The diagnosis is considered a possible bruxism because these values were obtained through the participant's self-report. Several associated factors were investigated, including demographic characteristics, oral anxiety behaviors, the presence of TMD signs and symptoms, sleep quality, and orthodontic treatment history.

According to the results of this study, no relevant associations were found between SB and AB related to the participants' gender. Age was also not one of the variables that

significantly interfered in the prevalence of these two conditions. In 2019, Wetselaar et al. demonstrated in a population of similar age to the one selected in the present study that AB and SB tend to decrease with advancing age. In addition, these authors also found an association between AB and SB with gender. Both AB and SB were reported more frequently by women than men.[3]

The use of psychotropic medication was relevant in this sample and was associated with ab, but not with SB. In a systematic review of the literature, Melo et al. showed that some psychotropic medications increased the chances of the SB.[16] In contrast, Hermesh et al. did not find any association between the chronic use of a specific psychotropic medication (selective serotonin reuptake inhibitors) and AB or SB.[17] There is still controversy in the literature regarding this topic. In this study, the characteristics of the medications were not collected, so it is not possible to assess the relationship between the medication and SB or AB. Therefore, longitudinal studies are necessary to clarify the association between bruxism and the use of medications.

Awake bruxism was associated with SB and vice versa in this study. This information is in agreement with the study by Winocur et al., which demonstrated that AB increases the chance of SB by 5 times (and vice versa).[18] According to Lobbezoo et al., the association of AB and SB can be explained by the difficulty of distinguishing these two conditions, using only the self-report.[1] Although they have different pathogens, the individuals understand it as a single condition, which can explain the association between them in the present study.

Oral behaviors, as assessed by the oral behavior checklist (OBC), displayed a robust association with AB and SB. The OBC was also employed to collect self-reported data on AB and SB, revealing positive correlations with oral behaviors. However, it is noteworthy to mention the potential for controversy, as the data relied solely on subjective patient reports and were not complemented by clinical examinations.[19] Hilgenberg-Sydney et al. (2022) demonstrated a higher prevalence of oral behaviors directly impacting the likelihood of developing AB. This finding aligns with the results of the present study.[20]

Signs and symptoms of TMD may be present as clinical consequences of AB or SB. In this study, it was observed that the presence of AB or SB was strongly associated with TMD reporting. This result agrees with those of Bayar et al., 2012., who demonstrated that bruxism is a risk factor for TMD.[21] Manfredini et al., 2010, also confirmed this association by a systematic literature review that TMD and bruxism have a positive association through self-report or clinical diagnosis. However, diagnoses by polysomnography and electromyography demonstrate a low association of TMD with SB.[22] Paesani et al., 2013, obtained different results in the same patients when performing the self-report at first and the clinical inspection afterwards, characterizing it as probable bruxism. The results evidenced association of TMD-related and possible bruxism. Therefore, a limitation of this study is that the clinical examination was not performed in order to confirm the TMD report.[6]

Sleep quality is another crucial factor to consider as it influences the occurrence of bruxism, both during wakefulness and sleep. In this study, the PSQI (Pittsburgh Sleep Quality Index) instrument was employed for this assessment. Among the findings, it was evident that students with sleep disorders exhibited a higher prevalence of both conditions, ABand SB. This correlation aligns with the research conducted by Serra-Negra et al., who identified a positive association between poor sleep quality and the presence of AB and SB among dentistry students within the same age group.[8] Additionally, the impact of sleep quality on bruxism underscores the multifaceted nature of this condition, influenced by various factors encompassing oral behaviors, psychological aspects, and sleep disturbances. Sleep disorders play a pivotal role in exacerbating bruxism, affecting both the sleep and awake aspects of the condition. Poor sleep quality can contribute to heightened arousal during sleep, potentially triggering episodes of SB.[23] Conversely, it may lead to increased stress and anxiety during wakefulness, further intensifying AB. Therefore, the influence of sleep disturbances on bruxism underscores the multifaceted nature of this condition, influenced by various factors encompassing oral behaviors, psychological aspects, and sleep disturbances.[2] Further research in this domain could provide valuable insights for comprehensive bruxism management.

According to the results of this study, there was no statistically significant difference between students, regarding the presence of SB and AB in relation with orthodontic treatment history; however, students who used orthodontic appliance had higher prevalence to developed SB and AB than students who did not. Pereira et al., 2021, demonstrated that the type of orthodontic appliance (orthodontic aligners or conventional fixed appliances) did not influence the frequency of AB during orthodontic treatment.[24] Concerning SB, Castroflorio et al., 2018, reported a tendency to increase SB after the 1st and 3rd months of orthodontic treatment.[25] However, Castroflorio, et al., 2017, obtained different results, which demonstrated that after the 1st month of orthodontic treatment, the patients showed a significant reduction in the number of SB episodes and, after 3 months, the values returned to baseline levels.[26]

The present study had limitations such as a lower number of participants than expected, which compromises the external validity of the findings. In addition, it is important to consider that the present study was based only on self-reported data, and the information has not been clinically verified; therefore, the reliability of the findings, although significant, should be evaluated with caution. The study confirmed some of the findings in the literature, but further research in this area is still needed.

Conclusion

The presence of AB in dental students was associated with the use of psychotropic medications and physical activity. The presence of both AB and SB was significantly associated with a higher score of oral behaviors and moderate-to-high anxiety level. It was also concluded that there is an association between bruxism (AB and SB) and higher frequency of TMD signs and symptoms in dentistry students.

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Conflict of Interests
The authors have no conflict of interests to declare.

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