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Intraoral Findings, Soft Palate Dimensions, and Body Mass Index in PSG-Confirmed versus Self-Reported Bruxism: A Comparative Study

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Research Article

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ABSTRACT

Objectives: To determine the distribution of intraoral clinical findings in patients with PSG-confirmed sleep bruxism, and compare their frequency, along with soft palate dimensions and BMI, to those in self-reported bruxism patients.
Materials and Methods: This retrospective study included 98 patients (49 PSG-confirmed and 49 self-reported bruxism patients) presenting to the Department of Oral and Maxillofacial Surgery, Uşak University, between 2021 and 2023. Intraoral findings (tooth wear, linea alba, tongue scalloping, masseter pain, TMJ pain), soft palate dimensions on cephalometric radiographs, and BMI were recorded and compared between groups, with $p < 0.05$ accepted as statistically significant.
Results: Linea alba (75.5% vs. 42.9%; p = 0.001), tongue scalloping (65.3% vs. 34.7%; p = 0.002), TMJ pain (57.1% vs. 34.7%; p = 0.026), and soft palate length (39.12 ± 1.50 vs. 37.42 ± 1.84 mm; p = 0.001) were significantly greater in the PSG-confirmed group, while tooth wear was significantly more prevalent in the self-reported group (57.1% vs. 20.4%; p = 0.001). Masseter pain and soft palate thickness did not differ significantly between the groups. BMI correlated positively with soft palate length (r = 0.391) and positively more strongly with thickness (r = 0.789; both p = 0.001). After adjusting for sex, age, and BMI, associations of diagnostic group with linea alba, tongue scalloping, and TMJ pain remained significant, whereas its association with tooth wear did not.
Conclusions: In conclusion, self-reported bruxism captured only part of the clinical profile identified in PSG-confirmed sleep bruxism, with lower frequencies of linea alba, tongue scalloping, and TMJ pain, and a stronger association with tooth wear. Clinicians should be cautious when relying solely on patient-reported bruxism symptoms, particularly when planning treatments that assume equivalence between diagnostic approaches.

Keywords: Body mass index, polysomnography, self report, Sleep bruxism, tooth wear

PSG ile Doğrulanmış Uyku Bruksizminde İntraoral Bulgular ve Özbildirimli Bruksizm ile Karşılaştırma

Araştırma Makalesi

Süreç

Geliş: 21/07/2026
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ÖZ

Amaç: PSG ile doğrulanmış uyku bruksizmi hastalarındaki intraoral klinik bulguların dağılımını belirlemek ve bu bulguların sıklığını, yumuşak damak boyutları ve VKİ ile birlikte, özbildirimli bruksist hastaların bulguları ile karşılaştırmaktır.
Gereç ve Yöntemler: Bu retrospektif çalışmaya, 2021–2023 yılları arasında Uşak Üniversitesi Diş Hekimliği Fakültesi Ağız, Diş ve Çene Cerrahisi Anabilim Dalı'na başvuran 98 hasta (49 PSG ile doğrulanmış, 49 özbildirimli bruksist hastalar) dahil edildi. İntraoral bulgular (diş aşınması, linea alba, dilde diş izi, çiğneme kası ağrısı, TME ağrısı), sefalometrik radyografilarda yumuşak damak boyutları ve VKİ kaydedilerek gruplar arasında karşılaştırıldı; istatistiksel anlamlılık düzeyi $p < 0,05$ olarak kabul edildi.
Bulgular: Linea alba (%75,5 vs. %42,9; p = 0,001), dilde diş izi (%65,3 vs. %34,7; p = 0,002), TME ağrısı (%57,1 vs. %34,7; p = 0,026) ve yumuşak damak uzunluğu (39,12 ± 1,50 vs. 37,42 ± 1,84 mm; p = 0,001) PSG ile doğrulanmış grupta anlamlı derecede daha yüksekti; diş aşınması ise özbildirimli grupta anlamlı derecede daha yaygındı (%57,1 vs. %20,4; p = 0,001). Çiğneme kası ağrısı ve yumuşak damak kalınlığı gruplar arasında anlamlı farklılık göstermedi. VKİ; yumuşak damak uzunluğu (r = 0,391) ve daha güçlü şekilde yumuşak damak kalınlığı (r = 0,789) ile pozitif korelasyon gösterdi (her ikisi p = 0,001). Cinsiyet, yaş ve VKİ kontrol edildikten sonra, linea alba, dilde diş izi ve TME ağrısı ile ilişkiler anlamlı kalırken, diş aşınması ile ilişki anlamlılığını kaybetti.
Sonuçlar: Sonuç olarak, özbildirimli bruksizm, PSG ile doğrulanmış uyku bruksizminde tanımlanan klinik profilin yalnızca bir kısmını yakalamıştır; linea alba, dilde diş izi ve TME ağrısında daha düşük sıklıklar ve diş aşınması ile daha güçlü bir ilişki görülmüştür. Klinisyenler, özellikle tanı yaklaşımları arasında eşdeğerlik varsayan tedaviler planlarken, yalnızca hasta bildirimine dayanan bruksizm semptomlarına güvenirken dikkatli olmalıdır.

Anahtar Kelimeler: Vücut kitle indeksi, polisomnografi, öz bildirim, uyku bruksizmi, diş aşınması

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Introduction

Bruxism is a repeated activity of masticatory muscles characterized by tooth clenching or grinding and/or mandibular bracing or thrusting.[1] This 2025 definition represents the latest step in a terminological evolution that traces back to a 2013 expert consensus, when the field first agreed on a shared working definition and distinguished

the sleep-related and awake presentations of the behaviour.[2] This 2025 definition further clarifies that bruxism is not a disorder, but instead, it is a motor behavior that could act as a risk factor, a protective factor, or a neutral factor depending on the health outcome considered.[1] Two distinct circadian manifestations of bruxism are recognized: sleep bruxism, which occurs during sleep, and awake bruxism, which happens while awake.[1]

Beyond its dental implications, bruxism has been associated with clinical findings that may affect the quality of life of patients, including tooth wear, masseter muscle hypertrophy, soft-tissue trauma, and orofacial pain.[3] These clinical consequences, together with the broader physiological mechanisms underlying bruxism, have been extensively reviewed elsewhere.[4,5] These five findings were selected for evaluation based on their established associations with bruxism in the clinical literature, including tooth wear, linea alba, and tongue scalloping as core components of standardized non-instrumental bruxism assessment tools, and temporomandibular joint (TMJ) and masticatory muscle pain as frequently reported bruxism-associated symptoms. These findings are thought to arise from the repetitive occlusal loading characteristic of bruxism. Linea alba develops as a result of chronic frictional trauma to the buccal mucosa against the occlusal plane, while tongue scalloping reflects habitual pressure of the tongue against the dentition, and masseter pain and TMJ pain are attributed to the cumulative mechanical overload placed on the masticatory system during clenching and grinding episodes. Clinical studies evaluating patients with bruxism have consistently reported these findings, with tooth wear, tongue indentations, and masticatory muscle pain among the most frequently observed clinical signs.[6]

Current consensus organizes the diagnosis of bruxism into three increasingly rigorous tiers. At the lowest tier, a patient's own account of grinding or clenching is enough to label the behavior "possible." Adding a clinician's examination findings to this account moves the diagnosis to "probable." Only when an instrumental method such as polysomnography (PSG) is used, with or without supporting history or examination, does the diagnosis become "definite."[3,7] PSG, particularly when combined with audio and video recordings, allows an objective and quantitative assessment of oromandibular activity during sleep and is therefore accepted as the gold standard for diagnosing sleep bruxism.[8,9] However, its cost, the time required, the need for the habituation of the patient to the laboratory environment, and the well-documented night-to-night variability of bruxism activity limit its routine use in every patient.[8]

For this reason, self-reported bruxism, which would be based on the patient's own awareness or on reports from a bed partner or roommate who notices tooth-grinding sounds, remains widely used in clinical practice. The International Classification of Sleep Disorders, Third Edition (ICSD-3) criteria also rely on this approach, defining sleep bruxism on the basis of an account of frequent or regular sounds of teeth grinding combined with at least one supporting clinical sign, such as transient morning jaw-muscle pain or fatigue, or abnormal tooth wear patterns.[8] Nevertheless, the rate of agreement between self-reported diagnosis and PSG-confirmed diagnosis has been reported to be only fair to moderate.[8] The apparent link between bruxism and temporomandibular disorders (TMD) also seems to hinge on the diagnostic method. Reports based on history or clinical examination tend to find a connection, while that connection weakens and becomes far less reproducible once bruxism is confirmed instrumentally.[10,11]

So far, there have been few studies in the literature to compare the intraoral findings of PSG-confirmed bruxism patients to those of self-reported bruxism patients in a way that could contribute to a consensus on their shared or distinct clinical characteristics. Even for tooth wear, which is by far the most frequently studied clinical sign of bruxism, a recent scoping review showed that the evidence remains inconclusive, with most studies assessing bruxism and tooth wear separately, using either self-report or instrumental tools, but rarely both in the same comparative design, and reporting inconsistent associations between the two.[12] This inconsistency echoes a broader narrative overview of the links of tooth wear with dental sleep disorders, which similarly cautioned against inferring bruxism activity from tooth wear alone.[13] For other intraoral and clinical findings, such as linea alba, tongue indentations, masseter muscle pain, and TMJ region pain, comparative data between PSG-confirmed and self-reported bruxism patients are even more limited. Furthermore, BMI has been associated with upper-airway soft tissue dimensions, including the soft palate, in the sleep medicine literature,[14] although its relationship with soft palate length and thickness has not been explored in the context of PSG-confirmed versus self-reported bruxism. As bruxism patients may present with a wide range of BMI values regardless of PSG-confirmed or self-reported status, examining soft palate dimensions alongside BMI in this population may help clarify the extent to which structural findings reflect body composition rather than bruxism itself, a distinction that has not previously been explored in the context of PSG-confirmed versus self-reported bruxism.

The aim of this study was to determine the distribution of intraoral and clinical findings, including tooth wear, linea alba, tongue indentations, masseter muscle pain, and TMJ region pain, in patients with PSG-confirmed sleep bruxism, and to compare the frequency of these findings to those observed in patients with self-reported bruxism. This approach was intended to assess the extent to which self-reported bruxism and its associated clinical findings reflect a clinical profile comparable to that identified in PSG-confirmed sleep bruxism. As the two groups consisted of different patients rather than the same individuals evaluated by both methods, this study was designed to compare clinical profiles between groups rather than to assess diagnostic agreement at the individual level. As PSG is not routinely available or feasible for every patient due to its cost, time requirements, and the need for laboratory-based monitoring, and as it currently represents the definitive diagnostic tier for bruxism while self-report alone corresponds only to the possible tier, clarifying which

clinical findings of self-reported bruxism most closely reflect the PSG-confirmed profile may help clinicians better approximate the true bruxism status of a patient in the absence of instrumental confirmation.

Accordingly, the Following Hypothesis was Tested

Self-reported bruxism would demonstrate a clinical profile that is only partially consistent with the profile identified in PSG-confirmed sleep bruxism.

Materials and Methods

The protocol of the study was approved by the Non-Invasive Clinical Research Ethics Committee of Uşak University (Decision Date: 09.07.26 and No: 1342-1342-27).

This retrospective study was conducted using the existing records of patients who presented to the Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Uşak University, between 2021 and 2023, with self-reported and/or PSG-confirmed bruxism.

All patients were referred to our department from other departments within the institution. Among these, patients diagnosed with bruxism via PSG were referred to our faculty by the sleep laboratory using a referral form. The self-reported group consisted of patients presenting with a self-reported complaint of tooth clenching/grinding, consistent with the 'possible' bruxism diagnostic tier described above.

Cephalometric radiographs were not additionally requested for the purposes of this study. When patients were internally referred to our Department of Oral and Maxillofacial Surgery, their cephalometric radiographs had already been requested and obtained at the referring clinic. Accordingly, these radiographs were obtained under the standard consent form of our faculty.

Patient Data Were Collected Under Three Main Categories

(1) intraoral findings recorded during clinical examination and anamnesis, including tooth wear, tongue scalloping, linea alba, TMJ pain, and masseter muscle tenderness; (2) soft palate length and thickness measured on available cephalometric radiographs, and (3) BMI. Demographic data (age, weight, height, sex) and information on systemic health status and smoking, alcohol, or substance use were obtained from patient history records.

Tooth wear on occlusal/incisal surfaces was recorded as present or absent based on clinical examination. Linea alba was defined as a mucosal thickening on the buccal mucosa. Tongue scalloping was defined as indentations along the lateral tongue borders at the occlusal plane level. TMJ and masseter muscle pain were recorded as pain elicited on palpation. All of the findings above were recorded dichotomously (present/absent). All clinical examinations and intraoral findings described above were performed by a single examiner, thus eliminating inter-examiner variability.

All lateral cephalometric radiographs were obtained under standardized conditions using the Vatech Digital X-ray Imaging System PCH-2500 (Vatech, Seoul, Korea), with patients positioned according to the Frankfort horizontal plane parallel to the floor and their teeth in centric occlusion (exposure parameters: 72 kVp, 10 mA, 8 s). Cephalometric measurements were performed using the Dolphin Imaging software (version 11.95 premium; Dolphin Imaging & Management Solutions, Chatsworth, CA, USA), with each radiograph digitally calibrated using a 5-mm reference ruler prior to analysis. Soft palate length was identified as the linear distance between the tip of the soft palate (palatine velum) and the point where the posterior pharyngeal wall meets the pterygomaxillary fissure. Soft palate thickness was the greatest anteroposterior width of the uvula, measured perpendicularly to the long axis of the soft palate at its widest point (Figure 1). All soft palate measurements were performed by a single radiologist and repeated at two separate time points to assess measurement reliability.

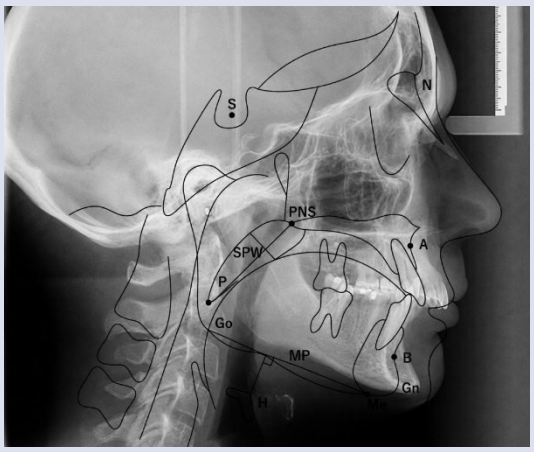


Figure 1. Representative lateral cephalometric radiograph with standard cephalometric landmarks, illustrating the reference points used to determine soft palate dimensions. PNS-P represents soft palate length, and SPW represents soft palate thickness. Other landmarks shown are part of the routine cephalometric tracing and were not analyzed in this study.

Sample Size Calculation

The primary comparison variable of this study was the frequency of intraoral findings between PSG-confirmed and self-reported bruxism patients. Based on a prior study by Aristizabal-Hoyos et al.[15] which reported TMJ sounds in 35% of PSG-confirmed bruxism patients versus 5% of controls (effect size w = 0.375), a more conservative medium effect size was adopted for this study. Using G*Power 3.1 for a chi-square test with an effect size of w = 0.30, α = 0.05, and power = 0.80, a minimum total sample size of 88 individuals was required. To account for potential missing data, the target sample size was increased by approximately 10%, aiming for a minimum of 49 individuals per group (98 in total). Following the application of inclusion and exclusion criteria, the final sample consisted of 49 PSG-confirmed and 49 self-reported bruxism patients.

BMI was calculated using the formula weight (kg)/height² (m²) based on records obtained at the time of data collection.

Inclusion Criteria

Age ≥18 years, sleep bruxism diagnosed by PSG in the PSG-confirmed group or self-reported tooth clenching/grinding during sleep in the self-reported group, availability of adequate history records, a completed clinical intraoral examination, height/weight data, and an appropriate radiographic record for soft palate measurements.

Exclusion Criteria

Craniofacial syndromes, history of orthognathic surgery, active malignancy, severe neurological disease, intraoral findings not assessable due to advanced periodontal breakdown, extensive tooth loss, use of medications that could affect sleep muscle activity, and insufficient radiographic or BMI records. Patients with missing clinical data, inadequate image quality, unmeasurable soft palate records, or inconsistent PSG/self-report information were also excluded from the study.

Statistical Analysis

SPSS version 27 (IBM Corp., Armonk, NY, USA) was employed to conduct the statistical analyses. Quantitative variables are presented with mean, standard deviation, median, minimum, and maximum values, whereas qualitative variables are presented with frequencies and percentages. The normality of the distribution of the data was assessed with the Shapiro–Wilk test, skewness/kurtosis values, and box plots. Student's t-tests were conducted to compare two groups of normally distributed quantitative variables, and the Mann–Whitney U test was used for the same purpose with non-normally distributed variables. Relationships between variables were analyzed using the Spearman's correlation analysis. Pearson's chi-square tests were performed to compare qualitative variables. Results were interpreted in a 95% confidence interval, and the threshold for statistical significance was taken as $p < 0.05$.

Results

A total of 98 patients (49 PSG-confirmed and 49 self-reported bruxism patients; 48 female [49.0%], 50 male [51.0%]) were enrolled in the study, and they had a mean age of 31.60 ± 5.92 years (range 20–46) and a mean BMI of 22.92 ± 1.14 kg/m² (Table 1).

Table 1. Descriptive characteristics

Variable	Category	n (%)/Mean ± SD
Sex	Female	48 (49.0)
	Male	50 (51.0)
Age (years)	Mean ± SD	31.60 ± 5.92
	Median (Min–Max)	32 (20–46)
BMI (kg/m²)	Mean ± SD	22.92 ± 1.14
	Median (Min–Max)	23.1 (20.9–24.7)
Diagnostic group	PSG-confirmed	49 (50.0)
	Self-reported	49 (50.0)

*[a]Pearson's chi-square test. [b]Student's t-test. [c]Mann–Whitney U test. r: Spearman's correlation coefficient. *p < 0.05, **p < 0.01.*

Tooth wear was present in 38.8% of the patients, linea alba was present in 59.2%, tongue scalloping was present in 50.0%, masseter pain was present in 53.1%, and TMJ pain was present in 45.9%. The mean soft palate length was 38.28 ± 1.87 mm, and the mean soft palate thickness was 7.08 ± 1.05 mm (Table 2).

In the comparisons by diagnostic group, the proportion of male patients was found to be significantly lower in the self-reported group (p = 0.043), and PSG-confirmed patients were determined to be significantly older (p = 0.025) and have significantly higher BMI (p = 0.001) than self-reported patients (Table 3).

In the PSG-confirmed group, linea alba was present in 75.5% of the patients, tongue scalloping was present in 65.3%, TMJ pain was present in 57.1%, and tooth wear was present in 20.4%. Linea alba (42.9%; p = 0.001), tongue scalloping (34.7%; p = 0.002), and TMJ pain (34.7%; p = 0.026) were significantly less frequent in the self-reported group. Tooth wear was significantly more frequent in the self-reported group (57.1%) than in the PSG-confirmed group (20.4%; p = 0.001). Masseter pain frequency did not differ significantly between the two groups (p = 0.686; Table 4) (Figure 2). As the two groups comprised different patients, these findings reflect intergroup profile differences rather than individual-level diagnostic agreement.

Table 2. Disease-related characteristics

Variable	Category	n (%)/Mean ± SD
Tooth wear	Present	38 (38.8)
	Absent	60 (61.2)
Linea alba	Present	58 (59.2)
	Absent	40 (40.8)
Tongue scalloping	Present	49 (50.0)
	Absent	49 (50.0)
Masseter pain	Present	52 (53.1)
	Absent	46 (46.9)
TMJ pain	Present	45 (45.9)
	Absent	53 (54.1)
Soft palate length (mm)	Mean ± SD	38.28 ± 1.87
	Median (Min–Max)	39 (35–41)
Soft palate thickness (mm)	Mean ± SD	7.08 ± 1.05
	Median (Min–Max)	7.5 (5.5–8.8)

*[a]Pearson's chi-square test. [b]Student's t-test. [c]Mann–Whitney U test. r: Spearman's correlation coefficient. *p < 0.05, **p < 0.01.*

Table 3. Comparison of descriptive characteristics by diagnostic group

Variable	Category	PSG-confirmed (n = 49)	Self-reported (n = 49)	p
Sex	Female	19 (38.8)	29 (59.2)	0.043[a]*
	Male	30 (61.2)	20 (40.8)	
Age (years)	Mean ± SD	32.94 ± 6.40	30.27 ± 5.11	0.025[b]*
	Median (Min–Max)	34 (20–46)	30 (20–42)	
BMI (kg/m²)	Mean ± SD	23.33 ± 1.00	22.50 ± 1.13	0.001[b]**
	Median (Min–Max)	23.7 (21.4–24.7)	22.3 (20.9–24.3)	

*[a]Pearson's chi-square test. [b]Student's t-test. [c]Mann–Whitney U test. r: Spearman's correlation coefficient. *p < 0.05, **p < 0.01.*

Table 4. Students' preferences for rubber-dam usage at different stages of endodontic treatment (n, class percentage)

Variable	Category	PSG-confirmed (n = 49)	Self-reported (n = 49)	p
Tooth wear	Present	10 (20.4)	28 (57.1)	0.001[a]**
	Absent	39 (79.6)	21 (42.9)	
Linea alba	Present	37 (75.5)	21 (42.9)	0.001[a]**
	Absent	12 (24.5)	28 (57.1)	
Tongue scalloping	Present	32 (65.3)	17 (34.7)	0.002[a]**
	Absent	17 (34.7)	32 (65.3)	
Masseter pain	Present	25 (51.0)	27 (55.1)	0.686[a]
	Absent	24 (49.0)	22 (44.9)	
TMJ pain	Present	28 (57.1)	17 (34.7)	0.026[a]*
	Absent	21 (42.9)	32 (65.3)	
Soft palate length (mm)	Mean ± SD	39.12 ± 1.50	37.42 ± 1.84	0.001[c]**
	Median (Min–Max)	39.8 (35.7–41)	37 (35–40.5)	
Soft palate thickness (mm)	Mean ± SD	7.23 ± 1.04	6.93 ± 1.05	0.290[c]
	Median (Min–Max)	7.8 (5.5–8.8)	6.3 (5.5–8.6)	

*[a]Pearson's chi-square test. [b]Student's t-test. [c]Mann–Whitney U test. r: Spearman's correlation coefficient. *p < 0.05, **p < 0.01.*

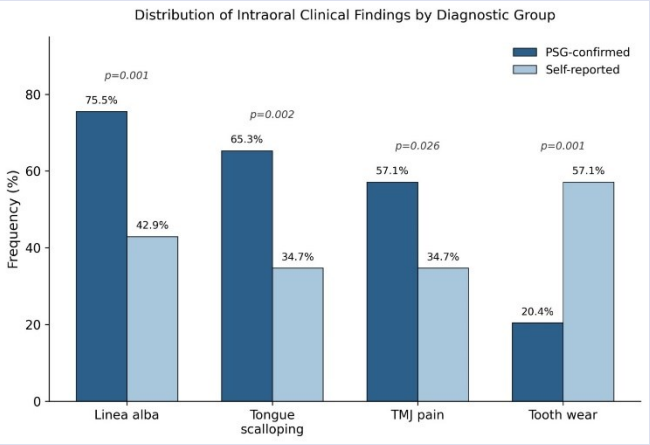


Figure 2. Distribution of intraoral clinical findings by diagnostic group. Bars represent the frequency (%) of each finding in the PSG-confirmed group (dark blue) and the self-reported group (light blue). p-Values indicate the results of Pearson's chi-square test comparing groups for each finding.

As a secondary descriptive finding, soft palate length was significantly greater in the PSG-confirmed group than in the self-reported group (39.12 ± 1.50 mm vs. 37.42 ± 1.84 mm; p = 0.001), whereas soft palate thickness did not differ significantly between the two groups (p = 0.290; Table 4).

Multivariate logistic regression analyses adjusting for sex, age, and BMI showed that the association between tooth wear and diagnostic group lost statistical significance (p > 0.05). The associations of linea alba (adjusted OR = 5.957; 95% CI: 1.986–17.874; p = 0.001), tongue scalloping (adjusted OR = 6.174; 95% CI: 1.927–19.782; p = 0.002), and TMJ pain (adjusted OR = 3.557; 95% CI: 1.274–9.933; p = 0.015) with the PSG-confirmed diagnostic group remained significant after adjustment. Age did not emerge as an independent significant contributor in any of the models (Table 5).

Table 5. Multivariate logistic regression analysis of clinical findings associated with PSG-confirmed diagnosis, adjusted for sex, age, and BMI

Clinical finding	Adjusted OR[a]	95% CI	p
Tooth wear	—	—	>0.05
Linea alba	5.957	1.986–17.874	0.001**
Tongue scalloping	6.174	1.927–19.782	0.002**
TMJ pain	3.557	1.274–9.933	0.015*

*[a]Adjusted for sex, age, and BMI using multivariable logistic regression; dependent variable: diagnostic group (PSG-confirmed vs. self-reported). Age did not emerge as an independent significant contributor in any of the four models. **p < 0.01 *p < 0.05.*

When the patients were stratified by the presence of tooth wear, both soft palate length (36.11 ± 0.70 mm vs. 39.67 ± 0.67 mm; p = 0.001) and thickness (6.58 ± 0.92 mm vs. 7.39 ± 1.02 mm; p = 0.001) values were significantly smaller among those with tooth wear than among those without (Table 6).

BMI showed a weak, positive, and significant correlation with soft palate length (r = 0.391; p = 0.001) and a strong, positive, and significant correlation with soft palate thickness (r = 0.789; p = 0.001; Table 7).

Table 6. Comparison of soft palate dimensions by tooth wear status

Variable		Tooth wear present (n = 38)	Tooth wear absent (n = 60)	p
Soft palate length (mm)	Mean ± SD	36.11 ± 0.70	39.67 ± 0.67	0.001[c]**
	Median (Min–Max)	36 (35–37.3)	39.8 (37.8–41)	
Soft palate thickness (mm)	Mean ± SD	6.58 ± 0.92	7.39 ± 1.02	0.001[c]**
	Median (Min–Max)	6.2 (5.5–8.3)	7.9 (5.5–8.8)	

*[a]Pearson's chi-square test. [b]Student's t-test. [c]Mann–Whitney U test. r: Spearman's correlation coefficient. *p < 0.05, **p < 0.01.*

Table 7. Correlations between BMI and soft palate dimensions

Variable	r	p
Soft palate length × BMI	0.391	0.001**
Soft palate thickness × BMI	0.789	0.001**

*[a]Pearson's chi-square test. [b]Student's t-test. [c]Mann–Whitney U test. r: Spearman's correlation coefficient. *p < 0.05, **p < 0.01.*

Discussion

This study characterized intraoral clinical findings and soft palate dimensions in patients with PSG-confirmed sleep bruxism and compared them to those observed in patients with self-reported bruxism. As the two groups consisted of different patients rather than the same individuals assessed by both methods, the findings reflect differences in the clinical profiles of two distinct patient populations identified through different assessment approaches, rather than the diagnostic accuracy or agreement of self-report relative to PSG.

Several intraoral findings were significantly more frequent in the PSG-confirmed group, including the presence of linea alba, tongue scalloping, and greater soft palate length. These signs are commonly evaluated as clinical findings in bruxism patients in the literature. The Standardised Tool for Assessment of Bruxism (STAB) includes linea alba and tongue scalloping among the clinical signs relevant to a comprehensive bruxism evaluation,[16] and studies examining clinical findings in bruxism patients have similarly reported linea alba and tongue indentations among the commonly observed signs.[6] Validated non-instrumental assessment tools, including structured clinical sign inventories, have shown reasonable but imperfect validity compared to instrumental methods, underscoring the value of considering multiple signs jointly rather than relying on any single finding.[17] Notably, other clinical markers proposed in the bruxism literature, such as palatal and mandibular tori, have shown a weaker and less consistent association with bruxism signs and symptoms.[18] This further highlights the view that not all clinical findings carry equal diagnostic weight. The greater prevalence of these intraoral findings in the PSG-confirmed group was, therefore, consistent with the expectation that objectively confirmed bruxism activity leaves more consistent physical traces than a diagnosis based on patient recall alone.

The findings of this study regarding orofacial pain were more heterogeneous. No significant difference in terms of masseter pain was identified between the PSG-confirmed and self-reported groups (p = 0.686), broadly in line with prior PSG-based studies. Similarly, Bartolucci et al.[19] found no significant difference in muscle-related TMD findings between PSG-confirmed sleep bruxers and non-bruxers, and Smardz et al.[20] reported no significant correlation

between PSG-derived bruxism episode index and TMD Pain Screener scores (rs = 0.08; p = 0.55). These results were in contrast with self-report-based evidence. In a large Finnish student sample, Huhtela et al.[21] observed self-reported bruxism to be strongly associated with TMD pain (OR = 5.71) and TMJ pain on jaw movement (OR = 4.49). The relevant literature suggests that pain-related outcomes are associated more strongly with self-reported bruxism than with PSG-confirmed activity, a pattern our masseter-related findings fit.

On the other hand, in this study, TMJ pain characteristics followed the opposite direction, being significantly more prevalent in the PSG-confirmed group (57.1% vs. 34.7%; p = 0.026). This diverged from the pattern above and warranted caution. Since the PSG-confirmed group was also significantly older, and TMD symptoms are known to vary with age, part of this difference may reflect age imbalance rather than diagnostic method, underscoring the need for age adjustment in future analyses.

In this study, tooth wear followed a clearly inverse pattern, being significantly more prevalent in the self-reported group (57.1% vs. 20.4%; p = 0.001). Albeit counterintuitive, this mirrors a broader pattern in the literature. In a scoping review of 30 studies, Bronkhorst et al. found tooth wear–bruxism associations to be reported more often with self-report than with instrumental methods. Among eleven instrumental studies, ten found no association or inconclusive results, including Kapagiannidou et al., who examined PSG-based bruxism parameters against attrition-type wear.[12,22] Bronkhorst et al. also noted that patients with visible wear were often previously told by a dentist that they could be bruxers, which could have inflated self-reported associations.[12] Tooth wear is also cumulative, whereas bruxism activity fluctuates. A single-night PSG captures only a cross-sectional snapshot, which may explain why PSG status tracks less closely with wear than self-report does.

Stratifying by tooth wear rather than diagnostic group in this study showed that both soft palate length and thickness values were significantly smaller among patients with wear (p = 0.001 for both), independent of the diagnostic method. This indicated that tooth wear itself, rather than the diagnostic method for bruxism, was a more direct correlate of soft palate dimensions here. The mechanism underlying this association could not be established from the present data. A shared underlying factor, such as age, cannot be excluded, but this relationship was not directly assessed and remains speculative.

A further layer of complexity concerns BMI. No significant difference was seen in terms of soft palate thickness values between the groups (p = 0.290), yet these values correlated strongly with BMI individually (r = 0.789), while length, which did differ between the groups, correlated more weakly with BMI (r = 0.391). BMI itself differed between the groups (23.33 vs. 22.50 kg/m²; p = 0.001), though modestly, with overlapping ranges. This result was compatible with evidence that BMI and adiposity are strong, largely independent determinants of soft palate and parapharyngeal dimensions. Molnár et al. found significant correlations of midsagittal neck, parapharyngeal, and tongue fat with BMI.[23] Thus, it is plausible that the individual-level influence of BMI on thickness was strong enough to be detected by correlation, while the modest, overlapping intergroup BMI difference was insufficient to yield a significant group-level difference. This is a distinction worth keeping in mind when attributing structural findings to diagnostic method versus body composition assessments.

As the PSG-confirmed and self-reported groups consisted of different patients rather than the same individuals assessed by both methods, this study does not permit an evaluation of diagnostic agreement between self-report and PSG at the individual level. Rather, it allows only a comparison of the clinical profiles of two groups identified through different assessment methods, and this distinction should be kept in mind when interpreting the reported associations. These differences were addressed through multivariable logistic regression analyses adjusting for sex, age, and BMI, which showed that the difference in tooth wear lost significance, whereas the differences in linea alba, tongue scalloping, and TMJ pain remained significant independently of these variables (Table 5). Further limitations of this study include the significant age, sex, and BMI differences between the two groups despite no matching, raising the possibility of residual confounding, particularly for TMJ pain and soft palate length. The cross-sectional design of this study prevents the identification of causal effects, and tooth wear reflects cumulative history rather than current activity, consistent with concerns raised throughout the broader body of literature.[12] The sample size, while adequate to detect the moderate-to-large effects reported here, may have been underpowered for smaller effects such as the BMI–soft palate length correlation, and the single-center design limits generalizability to other populations with different demographic and BMI distributions. Larger, multicenter, and multivariate-adjusted studies are needed to isolate the independent contribution of diagnostic methods from these correlated patient characteristics. Future studies incorporating age-adjusted analyses may also help clarify the mechanism underlying the association between tooth wear and soft palate dimensions observed in this study. Future studies could also benefit from comparing findings across different populations, as self-reported bruxism patterns and their associated sleep-related outcomes have been shown to vary even within health-professional cohorts such as dental students.[24]

Nevertheless, the results of this study carry practical consequences for clinical assessment. Where PSG is unavailable, the presence of linea alba and tongue scalloping may offer more specific clues to underlying bruxism activity than tooth wear alone, which appears more sensitive to self-reported status and cumulative history than to objectively confirmed activity. The observed difference in soft palate length between the

groups is reported as an exploratory finding. Given the absence of airway or BMI-matched reference data, the soft palate length should not be interpreted as a diagnostic marker of bruxism or bruxism assessment method. Conversely, soft palate thickness should be interpreted with reference to BMI rather than treated as an independent marker of bruxism-related tissue change, given its strong individual-level dependence on body composition. Hence, clinicians relying on self-report or clinical examination alone should be cautious about equating visible tooth wear with active bruxism, consistent with recommendations elsewhere in the literature that bruxism activity not be inferred from wear in isolation.[12]

Conclusions

Within the limits of the cross-sectional design of this study, the clinical profile associated with PSG-confirmed sleep bruxism was characterized by a high frequency of linea alba, tongue scalloping, and TMJ pain, together with a greater soft palate length. The self-reported group captured this profile only partially. Here, linea alba and tongue scalloping were less frequently observed, and soft palate length was lower, whereas tooth wear was more strongly associated with self-reported status than with PSG confirmation, mirroring the broader literature on self-report versus instrumental diagnosis comparisons. Masseter pain did not differ significantly between the two diagnostic groups, which was consistent with prior PSG-based studies, while the higher prevalence of TMJ pain in the PSG-confirmed group warrants cautious interpretation given the age imbalance between the groups. Soft palate thickness appeared more strongly related to BMI than to diagnostic method, highlighting the need to account for body composition in future bruxism research. The findings of this study partially supported the hypothesis of the study. Accordingly, while linea alba, tongue scalloping, and TMJ pain were less frequently observed in the self-reported group, consistent with only partial overlap with the PSG-confirmed profile, tooth wear showed an inverse pattern, being more prevalent in the self-reported group. Taken together, these findings suggest that self-reported bruxism does not fully reproduce the clinical profile identified through PSG confirmation, and the method of bruxism assessment should be explicitly considered when interpreting intraoral and soft tissue findings.

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Conflicts of Interest Statement

The authors declared no conflict of interest.

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