

Design and validation of an instrument to assess awake bruxism in adults

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ABSTRACT

The definition of bruxism has evolved over the past few years. Currently, two clinical presentations are recognized: Sleep Bruxism (SB) and Awake Bruxism (AB). Although various bruxism assessment strategies have been developed to guide clinical practice, no specific, valid, reliable tool has been designed specifically for patients with AB. **Aim:** To design and validate a questionnaire to assess the presence, severity and symptomatology of AB. Secondary objectives included exploring the clinical and psychiatric manifestations of AB. **Materials and Method:** A prospective case-control study was conducted on 14 AB cases and 20 healthy controls. The presence or absence of the condition was confirmed by electromyographic study. A specific questionnaire for AB (AB-Q) was developed, and AB psychometric properties were evaluated. The AB-Q consists of 24 items grouped into four domains. The reliability, sensitivity and specificity of the AB-Q were assessed. **Results:** Significant differences were observed between groups: EMG-confirmed bruxism episodes were recorded in all 14 AB patients and none of the controls. The AB-Q showed high internal consistency (Cronbach's alpha: 0.924) and strong discriminative capacity, with a sensitivity of 100% and a specificity of 90%. A significant association was found between bruxism and the presence of anxiety and depressive disorders, as well as obsessive-compulsive traits. **Conclusion:** The AB-Q questionnaire proved to be a useful tool with acceptable clinimetric properties for assessing the presence and severity of bruxism.

Keywords: bruxism - diagnosis - validation - questionnaire

Diseño y validación de un cuestionario para evaluar el bruxismo en vigilia en adultos.

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RESUMEN

La definición de bruxismo ha evolucionado en los últimos años. Actualmente se reconocen dos presentaciones clínicas: Bruxismo del Sueño (BS) y Bruxismo en vigilia (BV). Si bien se han desarrollado estrategias de evaluación del bruxismo que guían la práctica clínica, no existen herramientas específicas, válidas y fiables desarrolladas para pacientes con AB. **Objetivos:** Diseñar y validar un cuestionario para evaluar la presencia, gravedad y sintomatología del BV. Los objetivos secundarios fueron explorar las manifestaciones clínicas y psiquiátricas del BV. **Materiales y Método:** Se realizó un estudio prospectivo sobre 14 casos de AB y 20 controles sanos. La presencia o no de enfermedad fue confirmada mediante estudio electromiográfico. Se desarrolló un cuestionario específico de BV (BV-Q) y se determinaron sus características psicométricas. El BV-Q contiene 24 ítems agrupados en 4 dominios. Se determinaron la fiabilidad, la sensibilidad y la especificidad del BV-Q. **Resultados:** Se encontraron diferencias significativas entre los grupos: se registraron episodios de bruxismo confirmados mediante EMG en 14 pacientes del grupo de BV y en ninguno de los controles. El cuestionario BV-Q mostró una alta consistencia interna (alfa de Cronbach: 0,924) y una sólida capacidad discriminativa, con una sensibilidad del 100 % y una especificidad del 90 %. Se observó una asociación significativa entre el bruxismo de Vigilia y la presencia de trastornos de ansiedad y depresión, así como de rasgos de (TOC). **Conclusión:** El cuestionario BV-Q demostró ser una herramienta útil con propiedades clinimétricas aceptables para evaluar la presencia y la gravedad del bruxismo. **Palabras clave:** bruxismo - diagnóstico - cuestionario - validación.



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INTRODUCTION

The term bruxism has been used for decades to identify mandibular activities associated with tooth grinding sounds that occur during sleep¹. However, this conception has changed, and two clinical presentations are currently recognized: Sleep Bruxism (SB) and Awake Bruxism (AB)². The paradigm shift proposing that bruxism has two distinct clinical presentations (AB/SB) requires a thorough review of the accumulated knowledge regarding the conception of a single entity. In support of this idea, a consensus of experts in 2018 recommended separate definitions for the two entities (SB and AB)³.

Identification methods for SB have been further developed⁴, while the assessment and measurement of AB still pose a challenge. Multimodal assessment strategies with a comprehensive approach to guide clinical practice⁵ have been published, providing a major contribution to the assessment of bruxism⁶. However, the instruments included for the assessment of AB were neither specifically designed to measure it nor tested in patient series. There is still a lack of precision in the assessment guidelines, which directly affects their clinical management.

Dental correlates of bruxism range from muscular and joint symptoms (fatigue and/or pain in the masticatory muscles and temporomandibular joint) to conditions of the dental tissue (tooth wear) and the soft tissues in the oral cavity, with negative health consequences⁷. Nevertheless, some authors suggest that bruxism could have a positive effect on the health of patients with sleep apnea, as it restores upper airway permeability⁸.

Various psychological traits have been described in association with AB⁹⁻¹⁰, while SB is described as a complex activity with multiple neurological implications¹¹⁻¹³. However, the overlap of symptoms in the two conditions has not been thoroughly studied.

The international consensus on the assessment of bruxism emphasized the need to improve self-assessment, based on the validity and reliability of the methods used for this purpose. Therefore, the primary objective of this study was to design and validate an AB questionnaire (AB-Q) to assess the presence and severity of AB and its symptoms. Secondary objectives included evaluating the clinical and psychiatric characteristics associated with awake bruxism.

MATERIALS AND METHOD

We conducted a prospective case-control study, divided into two parts: the development of a questionnaire to detect subjects with AB, followed by the validation of the tool through statistical analysis of the responses of cases and controls.

The study patients were selected from the Emergency Department and Patient Counseling at the School of Dentistry, University of Buenos Aires (FOUBA). The study was conducted at the Department of Oral and Maxillofacial Surgery at FOUBA, and at the Movement Disorders and Clinical Neurophysiology Sections of the Raúl Carrea Neurological Research Institute (FLENI). The study was approved by the Ethics Committees of both institutions. After receiving a full explanation of the study methodology, all participants provided written informed consent. The study initially included 34 patients: 17 clinical AB cases and 17 controls, randomly selected, with similar sex and age as the cases. Only subjects who met the following demographic criteria were selected to participate in the study: 1) adults between 18 and 80 years of age of either sex; 2) complete, stable dental occlusion; 3) individuals with permanent dentition and correct alignment of the dental arches; 4) capable of providing written consent to participate in the study. Exclusion criteria were: 1) patients diagnosed with sleep bruxism according to the criteria of the International Classification of Sleep Disorders III (2014)¹⁴ (since the aim of the study was to evaluate the effectiveness of the questionnaire for detecting AB, the SB item was added to ensure the exclusion of cases of nocturnal bruxism); 2) patients undergoing orthodontic treatment; 3) patients with periodontal disease; 4) patients with cerebral or cardiac pacemakers.

To obtain two characterized groups for this initial validation phase, sample AB consisted of patients with a presumptive diagnosis of bruxism. The definitive diagnosis was reached through electromyographic studies. Clinical preselection was based on the recommendations of the International Consensus on the Evaluation of Bruxism²: a) self-perceived awake bruxism described as repetitive or sustained dental contact and/or bracing or thrusting of the jaw during wakefulness³, with “frequent” being defined as occurring 3 to 5 times per week; and b) presence of lingual indentations and/or linea alba, and/or jaw muscle pain and/or fatigue during the day. These specific features were considered signs

of active AB. The questionnaire also considered mandibular muscle pain and/or fatigue during the day, characterized by spontaneous muscular pain that increases with masticatory function, primarily located in the masseter and temporal regions; fatigue described as secondary discomfort typically manifested during masticatory function, affecting masticatory muscles¹⁵.

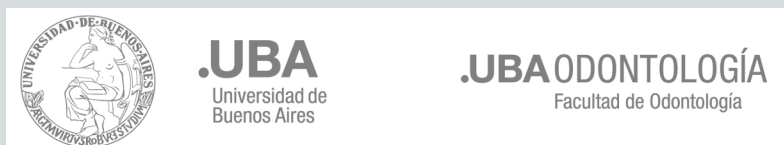
Questionnaire development

Consensus meetings were held with experts in dentistry, neurology and movement disorders to define the format and general structure of the questionnaire to assess self-perceived AB and its clinical characteristics. Item selection was based on clinical experience and literature review. The following were defined: the period for self-perception of bruxism, the methodology for reporting symptoms, the items to be assessed, and their grouping into different sections of the questionnaire. A pilot questionnaire containing 27 items was developed and administered to case-control patients. Participants rated the frequency of symptom occurrence for each question using a 7-point Likert scale, from 0 ("No") to 7 ("Always, every day of the week"). The collected data were analyzed, and the questionnaire was reformulated based on the 24 items with the highest internal validity and reliability, as determined by Cronbach's alpha ($r > 0.90$). The final version of the questionnaire consists of 4 domains: 1) Self-perceived bruxism, with 9 questions assessing self-perceived bruxism, premonitory aura, and sleep bruxism in the past 3 weeks. Higher scores indicate more severe levels of bruxism. 2) Symptomatology domain, including 6 items assessing the severity of pain/fatigue, functional limitation of the masticatory muscles, tension-type headache, and sustained mandibular activity without dental contact (bracing or thrusting). Higher scores indicate greater symptom severity. 3) Comorbidity domain, with two items that identify the presence and severity of body-focused repetitive behaviors (BFRBs) such as lip, cheek, and tongue biting. Higher scores indicate more severe levels of BFRBs. 4) Concentration task domain, consisting of 6 items that identify daily activities that may induce bruxism (e.g., driving, reading, using a computer or watching television, physical activity, social interactions, or work-related stressors). The total scores from sections 1, 2 and 3 of the questionnaire were used

to calculate reliability and validity. The new scale is called the "Awake Bruxism Questionnaire" and consists of 24 items (Table 1).

Electromyographic studies

A standardized working protocol was developed following the recommendations of Shiffman¹⁶. The assessment protocol was administered over a period of 90 to 110 minutes, during which participants remained alone, connected to the recording equipment (Fig. 1), while they received instructions from a prerecorded voice. The standardized task protocol was divided into 4 blocks: (a) baseline registration and administration of Beck Anxiety Inventory (BAI)¹⁷, Beck Depression Inventory (BDI)¹⁸ Premonitory Urgency Tic Scale (PUTS)¹⁹, and Revised Repetitive Behavior Scale (RBS-R)²⁰ and Yale-Brown Obsessive-Compulsive Scale (Y-BOCS)²¹; b) video viewing on tablet – two 10-minute videos on current events were pre-selected; c) playing Candy Crush; d) free use of cell phone. Each block was separated by 5 minutes of inactivity. Chewing gum or candies was not allowed during the protocol execution. Continuous electromyographic (EMG) monitoring was performed using monopolar surface electrodes with digital bipolar conversion, placed on the masticatory muscles (bilateral masseter and temporal muscles) and a muscle involved in mouth opening (digastric muscle). Electromyographic activity was sampled at 640 Hz and later analyzed offline. Before starting the recording, a maximum voluntary contraction was obtained, and its activity was used as a parameter for comparing the electromyographic intensity of the episodes recorded during the study. Additionally, the patient was instructed to perform different functional activities (yawning, smiling, and swallowing saliva) to compare the activation patterns observed during the study with those of specific activities, facilitated by simultaneous video analysis. Root mean square (RMS) was calculated for every EMG burst, as a measure of signal intensity. Every masticatory muscular activity with RMS exceeding 20% of the maximum voluntary contraction was considered as a possible bruxism episode from an EMG point of view. These episodes were later correlated with the video recordings, to determine whether they were indeed episodes of bruxism, or a reflection of other types of oromandibular activity (such as yawning, swallowing, etc.). The electromyographic tracings

Table 1. Awake Bruxism Questionnaire

Full name:

Date:

Evaluator:

The following questions are about sensations and symptoms you may have perceived in relation to your jaw function in daily life during the past two weeks. Please circle the number of the best answer to each question.

1. Do you clench your teeth when you sleep? If so, how often?

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

2. Has anyone observed or told you that you clench your teeth while asleep? If so, how often?

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

3. Do you grind or clench your teeth when you sleep? If so, how often?

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

4. Has anyone heard you grinding or clenching your teeth while asleep? If so, how often?

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

5. Do you clench your teeth while awake? If so, how often?

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

6. Has anyone observed or told you that you clench your teeth while awake? If so, how often?

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.

Table 1. (cont.)

- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

7. Do you grind your teeth while awake? If so, how often?

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

8. Has anyone heard you grinding or clenching your teeth while awake? If so, how often?

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

9. Do you feel the need to clench/grind your teeth? If so, how often?

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

10. Do you hold or tense your jaw muscles without tooth contact while awake? If so, how often?

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

11. Do you feel pain in your facial/jaw muscles during the day? If so, how often?

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

12. Do you feel fatigue/muscle tiredness when chewing? If so, how often?

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

13. Do you feel fatigue in your facial/jaw muscles at the end of the day? If so, how often?

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

Table 1. (cont.)**14. Do you press your tongue hard against your teeth while awake? If so, how often?**

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

15. Do you chew or bite your cheeks, tongue, or lips? If so, how often?

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

16. Do you feel your teeth are rougher or sharper? If so, how often?

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

17. Do you experience headaches during the day? If so, how often?

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

Please mark any of the following situations in which you have found yourself clenching/grinding your teeth while awake:

18. While driving? If so, how often?

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

19. While reading? If so, how often?

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

20. While using the computer or watching TV? If so, how often?

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

Table 1. (cont.)**21. While performing physical activity? If so, how often?**

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

22. During a social activity? If so, how often?

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

23. During stressful work activities? If so, how often?

- 0. No.
- 1. I don't know.
- 2. I have done it, but I don't do it now.
- 3. 1 to 3 days a month.
- 4. Sometimes (1 or 2 times per week).
- 5. Frequently (3 to 5 times per week).
- 6. Always (every day of the week).

24. In any other situation, please describe:

.....

.....

Total score:

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were classified based on their characteristics and duration as: a) Continuous EMG activity, with a duration longer than 2 seconds. b) Repetitive EMG activity, with a duration between 0.25 and 2 seconds. c) Combined or Mixed EMG activity (combinations of both).

Statistical Analysis

Statistical analysis was performed using IBM SPSS Statistics version 28.0 and Amos structural equation modeling package. Frequencies and percentages were calculated for item analysis and group comparisons, using binomial proportion tests and Bonferroni post hoc tests. Scores were compared using medians and interquartile ranges from the

25th to 75th percentiles. The Mann-Whitney U test was applied for statistical analysis. The assignment of items to each section was validated using exploratory factor analysis with principal component extraction (PCA) and subsequent Varimax rotation. The internal consistency of the instrument and each section was evaluated using Cronbach's alpha coefficient. The discriminatory ability of the groups and the instrument was evaluated using ROC curves, and the area under the curve was contrasted using Hanley & McNeil's approximation method. The identified cutoff points were also evaluated by calculating sensitivity and specificity with a 95% confidence interval. A significance level of $p < 0.05$ was selected.

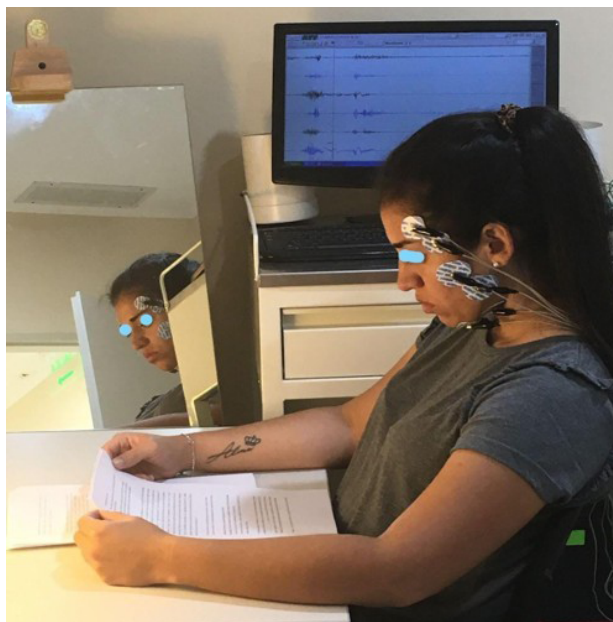


Fig. 1: Electromyographic evaluation. Throughout the study, the patient was seated in a chair at a desk. The equipment was placed 10 cm away from the patient, on a rolling module. A mirror was positioned at an angle of 45 degrees to the right of the patient, to reflect facial actions, which were captured by a camera located in the room.

RESULTS

Following electromyographic evaluation, participants were reclassified according to the EMG findings. The final study groups consisted of 14 participants with EMG-confirmed awake bruxism (50% men- median age 34 years; interquartile range: 28-45 years), and 20 participants without EMG evidence of awake bruxism. (45% men - median age 35 years; interquartile range: 27-45 years) (Table 2).

Psychometric characteristics of the questionnaire

The questionnaire showed high internal consistency (Cronbach's alpha = 0.924). The analysis of the self-perceived bruxism and symptomatology domains showed high reliability values in each section (Table 3).

Questionnaire responses and clinical correlates

Bruxism episodes, confirmed by EMG and video analysis, were identified in all 14 patients in the bruxism group. These findings were not present in any of the healthy controls. Mandibular activities consistent with bruxism episodes involving dental contact, but without audible grinding sounds, were observed in 82.4% of bruxism cases. The average duration of these events was 4.8 seconds.

Table 2. Clinical and demographic findings.

	AB (n = 14)	Controls (n = 20)	p Value
Men (%)	7 (50%)	9 (45%)	0.7
Age (y)	34.6 ± 2.8	35.7 ± 3.0	0.5
IAB	5.5 ± 1.6	1.5 ± 0.6	0.03
Anxiety	5 (35.7%)	0 (0%)	0.04
IDB	7.0 ± 1.4	2.9 ± 0.8	0.02
Depression	3 (21.4%)	0 (0%)	0.2
PUTS	9.8 ± 0.8	9.0 ± 0.0	0.3
Tics	1 (5.9%)	0 (0%)	1.0
Y-BOCS	12 (85.7%)	5(25%)	0.02
RBS-R-I	0.2 ± 0.9	0.2 ± 0.9	1.0
RBS-R-II	0.1 ± 0.1	0 (0%)	0.3
RBS-R-III	0.7 ± 0.3	0.8 ± 0.3	0.8
RBS-R-IV	0.3 ± .01	0.5 ± 0.3	0.5
RBS-R-V	0.7 ± 0.3	0.6 ± 0.3	0.8
RBS-R-VI	0.2 ± 0.1	0.1 ± 0.1	0.4
RBS-R-Total	2.1 ± 0.8	1.8 ± 0.6	0.7
Stereotypes	0 (0%)	0 (0%)	1.0

Abbreviations: AB= Awake Bruxism. IAB=Beck's Inv. Anxiety Disorder; IDB=Beck's Inv. Depression Disorder; PUTS=Premonitory Urge for Tic Scale; Y-BOCS=Yale-Brown Obsessive Compulsive Scale; RBS-R=Repetitive Behavior Scale-Revised.

According to the questionnaire scores, 10 patients (58.8%) experienced facial/jaw muscle pain at the end of the day ($p < 0.001$), 11 patients (64.7%) experienced muscle fatigue upon mastication ($p < 0.001$), and 10 patients (58.8%) ($p < 0.001$) maintained a tense jaw without tooth contact and pressed their tongue firmly against their teeth while awake. The activities most frequently associated with bruxism episodes were stressful work-related tasks (88.2%) ($p < 0.001$), reading (70.6%) ($p < 0.001$), and computer use (58.8%) ($p < 0.001$).

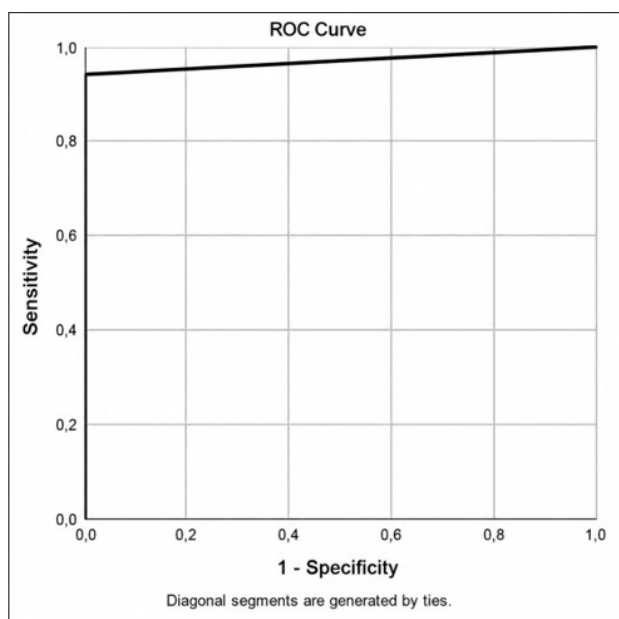
Based on the BAI and BDI evaluations, 5 patients (35.7%) had anxiety ($p=0.03$), and 3 patients (21.4%) had depression ($p=0.03$). Twelve patients (85.5%) exhibited OCB traits (Table 2).

Discriminant Validity of the Questionnaire

A ROC curve was constructed using the scores. The AUC of the ROC curve, which assesses the ability of the total score of the scale to discriminate between Bruxism and healthy controls, was 94.12% (95% CI). The established cutoff value of 2 showed a sensitivity of 100% and a specificity of 90% in discriminating Bruxism from controls (Fig. 2).

Table 3. Psychometric properties for the AB-Q total score and domains.

	AB-Q Total score	AB-Q domain Self-reported	AB-Q domain Symptoms	AB-Q domain Comorbidities	AB-Q domain Tasks Concentration
Internal consistency (Cronbach's alpha).	0.924	0.849	0.924	0.920	0.720

*Fig. 2: ROC curve total scale score.*

DISCUSSION

Awake bruxism was formally recognized in 2013 as one of the clinical manifestations of bruxism. Five years later, Lobbezoo et al.³ consolidated the differences between SB and AB and proposed separate definitions. AB is defined as: “a masticatory muscle activity during wakefulness that is characterized by repetitive or sustained tooth contact and/or by bracing or thrusting of the mandible and is not a movement disorder”³. The results of the present study confirm that AB is a type of repetitive activity that can be voluntarily suppressed and may share similarities with other body-focused repetitive behaviors (BFRBs), such as onychophagia, dermatophagia, and dermatillomania, which cause physical damage and have been reported to be associated with stress, anxiety and frustration. These behaviors can be considered a spectrum ranging from common habits to pathological states that can significantly impact quality of life. BFRBs are currently classified within the broader category of obsessive-compulsive disorders (ODC)²⁶. Interestingly, OCD is also a commonly reported

comorbidity in tic patients, particularly those with Tourette syndrome (TS) and Leg Stereotypy Syndrome (LLS)²⁷. From a phenomenological perspective, we consider that the observed similarities between Tics, BFRBs, LLS and AB suggest the existence of shared pathophysiological processes. Further studies are needed to confirm these possible sensory associations.

The AB-Q we developed demonstrated strong psychometric properties, including high internal consistency, good acceptability and validity, high discriminative capacity, and diagnostic accuracy. Furthermore, during its development, we were able to identify specific activities related to concentration tasks associated with bruxism episodes. Among the limitations of our study, we should note that the sample consisted of a small group of patients with bruxism and may not be representative of bruxism in the general population. At the time of recruitment, electrophysiological confirmation was not available. Therefore, the initial selection of participants was based on the available clinical criteria derived from the literature and expert clinical judgment. Electromyography was subsequently used, which confirmed the clinical selection criteria in 82.4% of cases.

CONCLUSIONS

This study provided an initial approach to validating the developed questionnaire. The selection of AB cases was intentionally used to analyze the relationships between responses and clinical and electromyographic manifestations in two well-characterized groups. Future studies should evaluate the questionnaire in unselected populations representative of routine clinical practice.

The AB-Q is an assessment tool designed for self-administration (non-instrumental assessment). It is quick to answer and easy to use, making it a useful instrument for assessing AB in adults, both in clinical and research settings, as there are currently no tailored questionnaires specifically designed for the assessment of AB.

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CONFLICT OF INTEREST

The authors declare no potential conflicts of interest regarding the research, authorship, and/or publication of this article.

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