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Let's Start Using the BruxScreen to Perform the Still-Needed Psychometric Tests

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Dear Editor,

With great interest, we have read the Commentary 'Letter to the editor regarding the bruxism screener questionnaire (BruxScreen)' by Grossi & Filho [1]. The authors comment on the 5-point verbal scale that we proposed to score the self-report items in the first part of the BruxScreen, the BruxScreen-Q [2]. More specifically, their concerns are related to the first question with six bruxism items, and most specifically to the items that deal with sleep bruxism (SB). According to Grossi & Filho, the response options of these items (i.e., never, sometimes, regularly, often, always and don't know) may give rise to misinterpretation [1]. They state that response options that identify a specific time relation (e.g., the number of bruxism occurrences per week or month) should be used instead. They argue that such an approach would better match the criteria that have been used by Lavigne et al. [3] and Rompré et al. [4] to select the patients for their studies establishing polysomnographically (PSG-)based cut-off criteria for SB diagnosis.

Although their reasoning is clear, some issues need to be pointed out. First, Lavigne et al. [3] and Rompré et al. [4] did not intend to develop true diagnostic cut-off criteria, and certainly not a 'one size fits all' application of their criteria to be used for all patients with SB, regardless of their specific phenotypes. Rather, Lavigne et al. [3] proposed their finding to be used for research purposes, whereas Rompré et al. [4] looked for a distinction between SB subgroups with different risks of pain. In line with this, Manfredini et al. discussed the need to abandon the use of cut-off criteria for establishing the presence or absence of bruxism [5]. Instead, they suggested to consider all relevant measures and values for the characterisation of the various types of bruxism. An important reason for this is that it is impossible to pinpoint which amount and type of bruxism are associated with which potential negative (e.g., temporomandibular disorders, mechanical tooth wear and failure of dental restorations) or positive (e.g., opening a collapsed upper airway in patients with obstructive sleep apnoea and exerting a positive effect on cognitive function) health outcome, if any [6]. In case of multiple health outcomes, the situation is even more complex. Thus, using cut-off values as a 'one size fits all' approach to establishing the presence or absence of bruxism is no longer appropriate.

Second, the reasoning by Grossi & Filho [1], that scoring bruxism on a scale that consists of response options with a specific time relation fits better with the work of Lavigne et al. [3] and Rompré et al. [4], suffers from circular reasoning. The PSG-based cut-off criteria of Lavigne et al. [3] and Rompré et al. [4] were set in a population that was selected by using self-reported SB frequencies, but these frequencies themselves lacked validity. Nevertheless, the resulting PSG cut-off criteria were widely adopted as the gold standard approach to SB. But does this mean that the self-reported SB frequencies used to select the study participants were valid?

Third, Grossi & Filho state that PSG is the gold standard for SB diagnosis [1]. Progress of insight, however, states that as bruxism

is to be considered a motor behaviour rather than a disorder, one does not diagnose bruxism. Instead, one assesses its characteristics as a risk or protective factor for one or more potential negative or positive health outcomes. In addition, there is growing consensus that self-report and PSG evaluate different aspects of SB [7]. This suggests that both approaches yield different yet valuable information on bruxism, needed for a comprehensive assessment of the jaw–muscle activity.

Fourth, Grossi & Filho [1] make a valid point that the Standardized Tool for the Assessment of Bruxism (STAB) [8] used different outcome measures and response options than the BruxScreen, even though they were developed by the same research group. It is important to understand that the STAB and the BruxScreen serve different purposes. The STAB is a comprehensive tool with multiple validated and extended questions, whereas the BruxScreen is designed as a screening instrument, requiring fewer questions.

This brings us to the response options that we proposed for the first question of the BruxScreen-Q. As indicated in our publication, the scale was derived from the Oral Parafunctions Questionnaire [9]—a widely accepted, brief bruxism questionnaire that has also been included in the 7th edition of the major reference work *Principles and Practice of Sleep Medicine* [10]. The scale provides an impression of the self-reported frequency of bruxism activities—not in terms of occurrences per week or month, but rather as a self-perceived frequency, based on qualifications like 'never', 'sometimes' and 'often'. In the absence of any research that demonstrated the superiority of this scale over the response options preferred by Grossi & Filho [1], or vice versa, we consider them as having equal face validity, with the addition that in our experience, patients hardly ever know what to answer when asked about specific occurrences of bruxism per week or month. In contrast, they are usually well able to provide an answer using the response options that we have proposed for the BruxScreen-Q. True, the validity of this scale has not been tested yet, but neither is that of the suggested scale with a specific time relation. Importantly, cross-correlating data collected with two different strategies (i.e., using the BruxScreen and the STAB) might help to make future decisions on the best ways to quantify our outcome measures.

We do hope that we have better explained the reasons for our choice of response options in the BruxScreen-Q. We would like to finalise by repeating the conclusion of Lobbezoo et al. [2]: 'Based on the outcomes of the pilot testing and the face validity assessment, we have successfully developed a Bruxism Screener (BruxScreen). The instrument is now considered ready for more profound psychometric testing in the general dental setting'. Thus, we would like to urge Grossi & Filho [1], along with all bruxism researchers worldwide, to perform the still-needed additional psychometric tests for the BruxScreen [11]. Only then, evidence-based decisions can be made regarding possibly necessary modifications of the BruxScreen.

Author Contributions

All authors contributed substantially to the conception of this work. F.L. and M.C.V. drafted the manuscript. J.A., L.N. and D.M. critically revised the manuscript. All authors have approved the final version for publication and are fully accountable for all aspects of the work.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The authors have nothing to report.

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