

Temporomandibular disorders and bruxism – up-to-date assessment and screening tools the general dentist should be aware of

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The recently proposed shortened screening tools for temporomandibular disorders (TMD) and bruxism should enable a better assessment of these conditions by the general dentist.

Temporomandibular disorders (TMD) are a group of conditions that cause pain and dysfunction of the masticatory muscles, the temporomandibular joints (TMJs) and associated structures.¹ The prevalence of TMD ranges from 10% to 15%,² and therefore can present a significant public health burden. Bruxism is repetitive jaw muscle activity characterized by the clenching or grinding of the teeth and/or bracing or thrusting of the mandible.³ It is widely accepted that bruxism is not a disorder, but rather a behavior that may be a risk factor for certain adverse clinical syndromes, such as excessive tooth wear, muscle pain, oral mucosa damage, and others.³ According to their circadian appearance, 2 forms of bruxism are acknowledged, including bruxism during wakefulness (awake bruxism (AB)), with an estimated prevalence rate of 20–31%, and bruxism during sleep (sleep bruxism (SB)), with an estimated prevalence rate of 5.5–12.5%.⁴ There is some controversy about the relationship between TMD and bruxism.^{5,6} Nonetheless, it is generally accepted that extreme bruxing activity may lead to a breakdown in the stomatognathic system, orofacial pain and TMD.^{7–9}

The relatively high TMD and bruxism prevalence, as well as their common risk factors and comorbidities, raise the need for reliable and validated screening tools, and structured clinical examinations. Several such tools have been developed and used in recent decades.

Temporomandibular disorders

The importance of incorporating the biopsychosocial model of chronic pain as an essential part of evaluating TMD patients was initially suggested in the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) published in 1992.¹⁰ The tool was used mostly for research purposes. In 2014, the RDC/TMD Axis II protocols were modified to create the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) (<http://rdc-tmdinternational.org>).¹¹ The purpose of introducing DC/TMD was

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to enable their use not only in research, but also in clinical settings. Axis II of DC/TMD includes a shorter and more feasible tool to assess subjects' levels of anxiety and depression (the Primary Care Evaluation of Mental Disorders (PRIME-MD) questionnaire), which is a well-validated instrument.¹¹ Despite the vast knowledge collected through the use of DC/TMD, the tool is less feasible for the general dentist, and is mostly used in clinics specializing in TMD and by orofacial pain specialists.

A recent preprint publication by Durham et al. (published online in August 2023) suggests shortening DC/TMD to a more brief version (brief DC/TMD (bDC/TMD)) for use in non-specialist settings.¹² The bDC/TMD substantially reduce and simplify the examination items and decision trees. Axis I of bDC/TMD refers basically to 2 groups of diagnoses – painful TMD (including secondary headache) and joint-related TMD with functional implications, while the psychosocial assessment (Axis II) is based on 11 items only (Fig. 1). A recent publication regarding the long-term adverse implications of the coronavirus disease 2019 (COVID-19) pandemic in terms of TMD has already used the abovementioned binary Axis I classification (painful and non-painful TMD).¹³

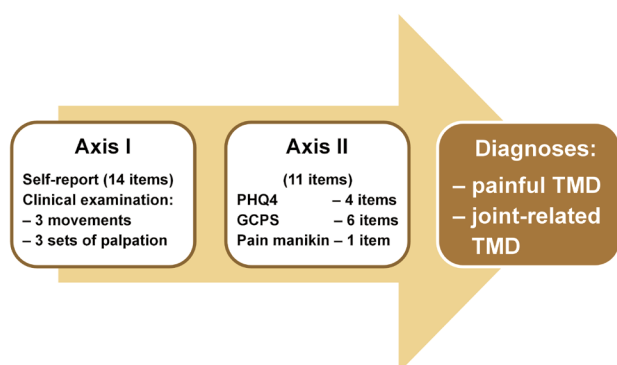


Fig. 1. Schematic representation of the brief Diagnostic Criteria for Temporomandibular Disorders (bDC/TMD) evaluation tool

PHQ4 – Patient Health Questionnaire-4; GCPS – Graded Chronic Pain Scale.

Bruxism

In 2018, an international consensus on the assessment of bruxism proposed 3 levels of bruxism evaluation: (i) “possible bruxism” – when the diagnosis is based merely on a subject’s self-report; (ii) “probable bruxism” – when the clinical signs (such as masticatory muscle hypertrophy, linea alba and scalloped tongue) support the presence of bruxing behaviour; and (iii) “definite bruxism”, which has to involve instrumental evaluation.³

The evaluation of definite SB must include a polysomnographic recording with electromyography (EMG) and a simultaneous audio-video recording.³ Such a gold standard for a definite SB diagnosis is difficult to reach due to high expenses and complexity. Therefore, the most

commonly used assessment grade in cross-sectional population studies is probable SB.^{3,14}

Making a definite AB diagnosis is also complex due to the need to make continuous EMG recordings during daytime activities. Self-reporting and clinical assessment are insufficient in determining the intensity and duration of specific muscle activity, and its fluctuations over time.¹⁵ Ecological momentary assessment (EMA) is one of the new semi-instrumental ways suggested for AB assessment, with the mode relying on a designated smartphone application that enables multiple-point, real-time, subjective reporting on masticatory muscle activity during wakefulness.¹⁶ Combining self-reporting and EMA facilitates AB assessment,¹⁷ and enhances the ability to define the psychosocial and behavioral phenotype of subjects with AB.¹⁸

Recently, the Standardised Tool for the Assessment of Bruxism (STAB) has been presented as a good strategy for defining the status, comorbidities, etiology, and consequences of bruxism.¹⁹ The STAB is based on 2 axes; Axis A encompasses subject-based reporting (AB, SB and patient complaints), clinical reporting (the clinical findings regarding joints, muscles, intra- and extraoral tissues, the teeth, and restorations) and instrumental assessment (the information gathered using technological devices), while Axis B refers to psychosocial assessment, concurrent sleep-related and non-sleep-related conditions, the prescribed medications, substance use, and additional factors.¹⁹

While STAB aims to serve as a comprehensive tool for bruxism assessment, it is possibly too complex and time-consuming to be routinely used by the general dentist. An additional tool, the Bruxism Screener (BruxScreen), has been suggested for use in epidemiological research projects and general dental practices.²⁰ The BruxScreen includes a patient self-reporting questionnaire and clinical assessment by the dentist (Fig. 2). Hopefully, the BruxScreen will find its place as an efficient assessment tool for bruxism in clinical settings.

One of the main advantages of introducing TMD and bruxism assessment tools is global standardization,

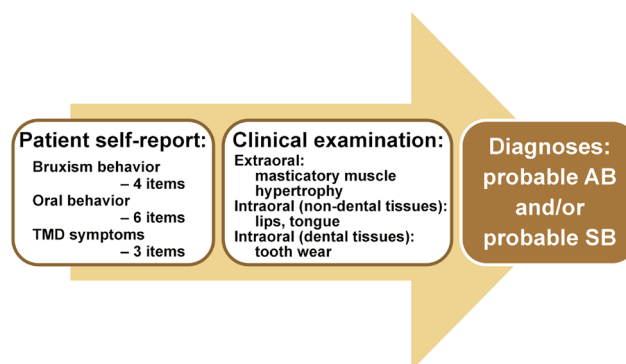


Fig. 2. Schematic representation of the Bruxism Screener (BruxScreen) tool
TMD – temporomandibular disorders; AB – awake bruxism; SB – sleep bruxism.

initially for research purposes. The relatively high TMD and bruxism prevalence among the general population raises the need for available standard screening and assessment tools for non-specialist settings. Such tools should be relatively short, rely on ordinary language and be easy to implement. Due to the multifactorial etiology of TMD and bruxism, two-axis evaluation is essential despite its possible complexity. Moreover, efforts to shorten and adapt the evaluation systems to make them more feasible for the general clinician are praiseworthy. Future research is needed to develop these tools further, and report their reliability and validity. At this time, it is crucial that every clinician becomes familiar with the recently proposed TMD and bruxism assessment tools, and incorporates them into their practice.

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