

## COMMENTARY

# Sleep Bruxism: A “Bridge” Between Dental and Sleep Medicine

Commentary on Prado et al. Study of associated factors with probable sleep bruxism among adolescents. *J Clin Sleep Med*. 2018;14(8):1369–1376 and Miettinen et al. Home polysomnography reveals a first night effect in patients with low sleep bruxism activity. *J Clin Sleep Med*. 2018;14(8):1377–1386.

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We have been invited to write a commentary related to two interesting papers on sleep bruxism (SB) in this current issue of the *Journal of Clinical Sleep Medicine*. In order to help readers understand where these papers fit in current sleep medicine; we divided our commentary in 3 sections: (1) difference on the definition of SB in sleep medicine and dentistry; (2) significance of the Prado et al. paper,<sup>1</sup> a prevalence survey and clinical examination in adolescents; and (3) relevance of the Miettinen et al. paper,<sup>2</sup> a home study over three consecutive nights to assess the first night effect on SB.

### SLEEP BRUXISM DIFFERS BETWEEN SLEEP MEDICINE AND DENTISTRY: A “BRIDGE” IS NEEDED

SB, in its most simple definition, is a repetitive motor activity associated with tooth clenching and/or grinding. Due to its clinical presentation and symptomatology, the diagnosis and management of this condition is mostly approached by sleep doctors and dentists. However, the definitions, diagnostic tools, and management options often differ between these two fields, creating confusion and lack of clarity around SB and making the collaborations between them more difficult.

In sleep medicine, SB was initially classified as a parasomnia, but, since 2005, resulting from a consensus of sleep experts, it is now considered a movement disorder.<sup>3</sup> A common interpretation of the International Classification of Sleep Disorders (ICSD) is to consider all SB cases as a disorder. For a sleep motor behavior to be classified as a disorder, the following needs to be met: “Nocturnal sleep disturbance or complaints of daytime sleepiness or fatigue are prerequisites for a diagnosis of a sleep related movement disorder.” It is clear that ICSD criteria were developed for the medical environment where sleep recordings are frequently used for diagnosis in complex cases, as SB is known to be associated with headaches, sleep breathing disorders, rapid eye movement (REM) sleep behavior disorders or sleep epilepsy.<sup>4–9</sup> Although, ICSD criteria are sometimes used in clinical dentistry, where recording is limited to one-channel devices that have the main objective of screening and/or monitoring

cases.<sup>10</sup> The criteria cannot simply be “copied and pasted” without validation in different age populations: children, adolescents, and adults.<sup>11–14</sup>

In the dental field, SB was considered as a parafunction, an activity occurring in parallel to masticatory function. A very recent consensus, updating the one published in 2013, suggested that “sleep and awake bruxism are masticatory muscle activities...in otherwise healthy individuals, bruxism should not be considered as a disorder, but rather as a behaviour...” and “bruxism-related masticatory muscle activities should be assessed in the behaviour’s continuum.”<sup>11,15</sup> Dentists usually make SB diagnosis taking into account its presence during wakefulness, tooth damage, and complaints of annoying sounds. However, they also acknowledge a possible association to headaches, temporomandibular joint pain, snoring/sleep-disordered breathing, gastroesophageal reflux, or concomitant neurological conditions.<sup>5,8,9,16</sup> Dentists have always been preoccupied by the destructive nature of bruxism activity,<sup>17</sup> and a multipart challenge arises when the above comorbidities are suspected: medical diagnosis and dental rehabilitation planning. In that way, a medical request for diagnosis and sleep recording is needed.

Despite the fact that the roles and visions of SB differ between physicians and dentists, a medical-dental collaboration is necessary to get optimal management when sleep breathing conditions or neurological disorders are suspected in children, adolescents or adults.<sup>6</sup>

### SIGNIFICANCE OF THE PRADO ET AL. PAPER

In a prevalence study, done in a Brazilian population over 12 years, it was found that around 17% of the studied population reported SB (awareness of clenching, audible tooth grinding sounds). The adolescents who reported snoring and wearing fixed orthodontic appliance were more likely to be classified as having “probable” SB based on the 2013 dental consensus classification (prevalence ratio around 3).<sup>15</sup> The merit of such findings is to confirm the prevalence range of SB in adolescent, and, to point out the association of “probable” SB with

snoring and with presence of orthodontic treatment (only 13.4% of the sample).<sup>18–20</sup>

Although self-reports and clinical examination findings are of interest in assessing risk factors, they cannot explain causes. It remains to be demonstrated that SB in adolescents is caused by anomalies of upper airway anatomy (eg, dominant retrognathia or other factors associated with concomitant snoring or loud breathing). Snoring may be associated with sleep-disordered breathing, and then collaboration between dentistry and medicine is again important.

Among issues to be resolved in future studies following the publication of the Prado et al. paper, we highlight three relevant questions. (1) What is the role of oropharyngeal and facial growth on SB risk? (2) Are the adolescents with SB and snoring at risk of having sleep breathing problems in adulthood? (3) Why is snoring considered the primary risk factor for the development of sleep breathing problems? SB may also predispose to snoring, making this relationship fluctuate in the opposite direction or in a reciprocal manner depending if certain factors are identified. For example, in middle-aged subjects with concomitant SB and sleep apnea, due to high prevalence of both condition (intersecting prevalence), it was shown that SB-related muscle activity preceded sleep apnea in about 20% of events and the opposite in about 55%.<sup>21</sup>

## RELEVANCE OF THE MIETTINEN ET AL. PAPER

Currently, for SB patients who present risk of having neurological disorders or unexplained exacerbation of sleep or other pain conditions, polysomnography recording of masseter and/or temporal muscles is becoming a standard procedure. The time to time variability with low frequency muscle episodes, named rhythmic masticatory muscle activity (RMMA), can be a major challenge, mainly when the frequency of RMMA is low. It is unclear how many nights are essential to capture the presence of RMMA and to avoid the first night effect.<sup>22–24</sup>

The study by Miettinen et al. confirms that home full polysomnography, recording at least 3 nights, can help to better capture the oral behavior in a more natural environment<sup>10,23,24</sup>; especially in subjects with low frequency RMMA. Furthermore, the authors suggest that a “dummy” night with home testing montage, as seen in their Figure 2, can help reduce the adaptation period and improve tolerance to the unusual face montage. It is then clear that dentists can screen and monitor RMMA during sleep using a one-channel, type 4 recording device, but if findings are associated with risk of sleep disorders such as apnea or other conditions listed above, referral to a sleep medicine specialist is warranted.

## CONCLUSIONS

The studies by Prado et al. and Miettinen et al. highlight that interdisciplinary collaborations are important when investigating an overlapping medical and dental condition like SB.

## CITATION

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## SUBMISSION & CORRESPONDENCE INFORMATION

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## DISCLOSURE STATEMENT

The authors report no conflicts of interest.