

Guest Editorial

Sleep-Related Disorders and Its Relevance in Dental Practice

Approximately 50–70 million people in the United States are chronic sufferers from sleep-related disorders (SRDs), which affects their health and daily functioning.^[1] A study done on the Indian population found SRDs in nearly one-fifth of an apparently healthy, productive age group of the Indian population.^[2]

The International Classification of Sleep Disorders (ICSD3)^[3] organizes sleep disorders into 6 main categories: (1) insomnia, (2) sleep-related breathing disorders, (3) central disorders of hypersomnolence, (4) circadian rhythm sleep-wake disorders, (5) parasomnias, and (6) sleep-related movement disorders.

Sleep-related breathing disorders such as obstructive sleep apnea (OSA) and sleep-related movement disorders such as sleep-related bruxism (SRB) are of particular significance to the dental surgeon. Most often, they could be the first health professional to recognize this potential hazard in the patient because of the high frequency of contact intervals and the regular observation of the oropharyngeal structures. Approximately 28% of temporomandibular disorder (TMD) patients experience sleep apnea.^[4] Although no relationship was found between pain and the number and intensity of jaw muscle contractions related to sleep bruxism,^[5] TMD patients displayed more respiratory effort-related arousals and higher jaw muscle tone over the course of the night.^[6] It has also been reported that sleep bruxism and painful TMDs greatly increase the risk for the development of episodic migraine, episodic tension-type headache, and especially for chronic migraine.^[7] Orofacial pain and TMD patients may also report sleep of poor quality.^[8] Hence, it is important for the oral clinician to identify if transient jaw muscle pain in the morning in TMD patients is isolated or if it is secondary to sleep bruxism and/or sleep apnea because the treatment will then differ.^[9] Dental practitioners also have a significant role to play in the treatment of these disorders through fabrication of occlusal appliances.^[10,11] Currently, in our country, the dental profession does not address this life-threatening ailment adequately because of lack of awareness and education in the field.

OSA is a chronic medical condition, which can have serious medical consequences such as hypertension, myocardial infarction, coronary artery disease, and arrhythmias.^[12] It has also been reported to cause depression, neurocognitive impairment, structural brain changes, excessive daytime sleepiness, fatigue, mood disturbance, and reduced quality of life.^[13-15] Although

continuous positive airway pressure (CPAP) is the treatment of choice for OSA, there is an important role for mandibular advancement devices (MADs), especially in mild to moderate cases, as many patients find it difficult to tolerate CPAP and use it for a prolonged period of time.^[16] OSA is diagnosed by a comprehensive sleep history, the presence of characteristic clinical features, and objective demonstration by a polysomnography test (PSG).^[17] Sleep screening can be easily introduced in a dental practice by giving a self-reported questionnaire like Epworth Sleepiness Scale for the patients to fill. A symptomatic patient is then referred to the sleep physician/specialist for the final diagnosis, and the dental surgeon could be involved again if an oral appliance is indicated for the treatment. The current guidelines on the subject also reiterate that the physician should consider referring the patient to a dental practitioner for fabricating appliances in mild and moderate OSA.^[18] Surgical treatment for OSA could be considered when other modalities of conservative treatment (such as CPAP and MADs) have been tried without success, or in select cases when anatomical abnormalities are readily identified and can be corrected.

SRB is now considered to be a sleep-related movement disorder. It is rather doubtful now if occlusion and presentation of tooth wear are demonstrative of this entity.^[11] Stress and psychological factors, which were also considered major etiologic factors, have been found to be true only in a very small percentage of people.^[19] The most recent hypotheses on the etiology of sleep bruxism support the theory that “sleep-related mechanisms under the influence of brain chemicals and maintenance of airway patency during sleep may increase motor activity underlying the genesis of sleep bruxism and rhythmic masticatory muscle activity (RMMA), the motor manifestation of sleep bruxism preceding tooth grinding during sleep.”^[11] RMMA is currently proposed to be the main source of pain. The role of the autonomic nervous system is also very evident now. Only a PSG test can quantify and qualify SRB. Management of sleep bruxism needs to be multipronged – a combination of patient education, avoidance of risk factors and triggers, sleep hygiene, cognitive behavioral therapy, and relaxation techniques, although most are not supported by clinical trials. Maxillary and mandibular appliances or stabilization splints have also been used extensively to manage bruxism. Although their exact mechanisms of action are still under debate, and no evidence supports their role in stopping sleep bruxism, they do seem to lower sleep bruxism activity in the first

2 weeks of treatment, independent of the design of the appliance.^[20] Hence, to successfully treat these patients, dental practitioners must recognize the paradigm shift happening in this topic with respect to the etiology and management of the same.

In clinical practice, it is extremely important that the dental practitioner includes sleep history as a part of their routine case history charts. This will help identify these patients early and also will go a long way in improving their quality of life. Since it is well documented that orofacial pain and TMD patients can present with SRDs and patients with SRDs could present with pain in the facial region, the dental practitioner must be trained to recognize these disorders. The sleep physician will also involve the dental clinician in his/her team to manage these patients as they also have a role to play in treatment with oral appliances. A collaborative and interdisciplinary effort is required to provide comprehensive care for these patients.

V. Rangarajan

Professor and Head, Department of Prosthodontics,
Sri Venkateswara Dental College and Hospital,
Chennai, Tamil Nadu, India

Address for correspondence: V. Rangarajan,
Professor and Head, Department of Prosthodontics,
Sri Venkateswara Dental College and Hospital,
Chennai, Tamil Nadu, India.
E-mail: drvrange@gmail.com

REFERENCES

- National Center on Sleep Disorders Research. National Sleep Disorders Research Plan. Bethesda, MD: National Heart, Lung, and Blood Institute, National Institutes of Health; 2003. p. 7.
- Panda S, Taly AB, Sinha S, Gururaj G, Girish N, Nagaraja D. Sleep-related disorders among a healthy population in South India. *Neurol India* 2012;60:68-74.
- American Academy of Sleep Medicine. Sleep related bruxism. In: International Classification of Sleep Disorders. 3rd ed.. Darien, IL: American Academy of Sleep Medicine; 2014.
- Smith MT, Wickwire EM, Grace EG, Edwards RR, Buenaver LF, Peterson S, *et al.* Sleep disorders and their association with laboratory pain sensitivity in temporomandibular joint disorder. *Sleep* 2009;32:779-90.
- Raphael KG, Sirois DA, Janal MN, Wigren PE, Dubrovsky B, Nemelivsky LV, *et al.* Sleep bruxism and myofascial temporomandibular disorders: A laboratory-based polysomnographic investigation. *J Am Dent Assoc* 2012;143:1223-31.
- Raphael KG, Janal MN, Sirois DA, Dubrovsky B, Wigren PE, Klausner JJ, *et al.* Masticatory muscle sleep background electromyographic activity is elevated in myofascial temporomandibular disorder patients. *J Oral Rehabil* 2013;40:883-91.
- Fernandes G, Franco AL, Gonçalves DA, Speciali JG, Bigal ME, Camparis CM. Temporomandibular disorders, sleep bruxism, and primary headaches are mutually associated. *J Orofac Pain* 2013;27:14-20.
- Dao TT, Lund JP, Lavigne GJ. Comparison of pain and quality of life in bruxers and patients with myofascial pain of the masticatory muscles. *J Orofac Pain* 1994;8:350-6.
- Lavigne G, Palla S. Transient morning headache: Recognizing the role of sleep bruxism and sleep-disordered breathing. *J Am Dent Assoc* 2010;141:297-9.
- Barewal RM, Hagen CC. Management of snoring and obstructive sleep apnea with mandibular repositioning appliances: A prosthodontic approach. *Dent Clin North Am* 2014;58:159-80.
- Klasser GD, Rei N, Lavigne GJ. Sleep bruxism etiology: The evolution of a changing paradigm. *J Can Dent Assoc* 2015;81:f2.
- Redline S, Budhiraja R, Kapur V, Marcus CL, Mateika JH, Mehra R, *et al.* The scoring of respiratory events in sleep: Reliability and validity. *J Clin Sleep Med* 2007;3:169-200.
- Baldwin CM, Griffith KA, Nieto FJ, O'Connor GT, Walsleben JA, Redline S, *et al.* The association of sleep-disordered breathing and sleep symptoms with quality of life in the sleep heart health study. *Sleep* 2001;24:96-105.
- Beebe DW, Groesz L, Wells C, Nichols A, McGee K. The neuropsychological effects of obstructive sleep apnea: A meta-analysis of norm-referenced and case-controlled data. *Sleep* 2003;26:298-307.
- Peppard PE, Szklo-Coxe M, Hla KM, Young T. Longitudinal association of sleep-related breathing disorder and depression. *Arch Intern Med* 2006;166:1709-15.
- Quan SF, Awad KM, Budhiraja R, Parthasarathy S. The quest to improve CPAP adherence – PAP potpourri is not the answer. *J Clin Sleep Med* 2012;8:49-50.
- Sleep-related breathing disorders in adults: Recommendations for syndrome definition and measurement techniques in clinical research. The report of an American academy of sleep medicine task force. *Sleep* 1999;22:667-89.
- Leeuw RD, Klasser G. Orofacial Pain: Guidelines for assessment, diagnosis and management, 6th ed. Chicago, Quintessence Publishing Co 2018.
- Pierce CJ, Chrisman K, Bennett ME, Close JM. Stress, anticipatory stress, and psychologic measures related to sleep bruxism. *J Orofac Pain* 1995;9:51-6.
- Macedo CR, Silva AB, Machado MA, Saconato H, Prado GF. Occlusal splints for treating sleep bruxism (tooth grinding). *Cochrane Database Syst Rev* 2007;17:CD005514.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Access this article online

Quick Response Code:



Website:
www.jidonline.com

DOI:
10.4103/jid.jid_34_19

How to cite this article: Rangarajan V. Sleep-related disorders and its relevance in dental practice. *J Interdiscip Dentistry* 2019;9:49-50.