# The Sleep-disordered Breathing Patient

Sleep-disordered breathing (SDB) includes, but is not limited to, mouth breathing, snoring, upper airway resistance syndrome (UARS), and obstructive sleep apnea (OSA). OSA is defined as 5 or more episodes of complete (apnea) or partial (hypopnea) upper airway obstruction per hour of sleep. It is estimated to involve 24% of middle-aged men and 9% of middle-aged women. Two to three percent of children have OSA; increasing to 30 to -40% in obese children.[1] Patients suffer from daytime drowsiness, cognitive impairment, and increased risk of heart attacks, strokes, uncontrolled hypertension, and diabetes. Untreated OSA can significantly impair a patient's quality of life and increase morbidity due to medical complications or transport- or work-related accidents.

## Diagnosis

### *Oral examination*

Most airway obstructions occur behind the maxilla and mandible at the level of the soft palate, tongue, and lateral fat pads. The size and shape of the upper airway are among factors to consider in the likelihood of upper airway collapse. A smaller airway (obesity or small maxilla and/or mandible) is more susceptible to collapsing than a larger airway. Imaging studies of the upper airway have demonstrated a larger volume of soft tissue structures (tongue size and fat in the posterior area) in patients affected by OSA. Many OSA patients tend to present with a compromised upper airway resulting from skeletal and/or soft tissue abnormalities.[2] An evaluation of the size of the tongue, the presence and size of the tonsils, the opening of the oral and nasal airways, and the size of the neck can raise concerns on the patency of the airway.[3]

The presence of tooth wear and TMJ symptoms is important, because these may play a role in OSA. The terminology "night bruxism" should be replaced by sleep bruxism (SB), because it occurs during sleep periods, which are not necessarily at night. There is some evidence of a possible association between SB and OSA.[4-6] While the strength of this association is uncertain, a sub-group of bruxers do appear to have clinical commonalties[7] in which the activation of the masseter muscle is thought to stabilize the mandible, enabling the genioglossus to dilate the upper airway more efficiently.[8-10] SB can occur before a breathing event, after a breathing event, or unrelated to a breathing event.[11,12] A significant number of bruxism patients may have OSA, with bruxism increasing muscle tone and possibly dilating the airway.[13,14]

### *Associated comorbidities*

Obesity or increased body mass index (BMI) are associated with OSA. The presence of hypertension, cardiovascular disease, stroke, diabetes, and thyroid disease have been identified as aggravating factors or the results of OSA.[15]

*OSA in children*

OSA in children is often due to enlarged tonsils and adenoids peaking at 5 to 6 years of age.[16] Craniofacial morphological characteristics often present in children with airway problems are a narrow maxilla, anterior open-bite, mouth breathing, and dolichocephalic profile.[17]

*Daytime sleepiness and snoring*

Snoring occurs in a high percentage of patients with OSA. Witnessed apneas and excessive daytime sleepiness are also important symptoms, but only witnessed apneic events are pathognomonic for OSA. The Epworth Sleepiness Scale (ESS) is a simple questionnaire commonly used in the assessment of daytime sleepiness and screening for potential OSA. When patients with SB and/or temporomandibular disorder (TMD) complain about insomnia, snoring, cessation of breathing during sleep, sleepiness of unidentified causes, uncontrolled hypertension, or hypertension requiring multiple medications, it is prudent to screen for the presence of OSA.[7]

*Diagnosis and Treatment*

The diagnosis must be made by a sleep physician who will prescribe a polysomnography (PSG) test and prescribe the best modality of treatment depending on the severity of OSA. A PSG study performed in a sleep laboratory is the gold standard for the diagnosis of OSA. The role of the prosthodontist is to screen patients using the ESS, STOPBANG, and Berlin assessment tools, and an oral examination and refer the patient to a sleep physician for diagnostic and treatment prescription when OSA is suspected.

The final management of OSA may require input from ear-nose-throat (ENT) specialists, pneumologists, oral and maxillofacial surgeons (OMFS), prosthodontists or dentists trained in dental sleep medicine, and other professionals as required.

*Conclusion*

It is the position of the American College of Prosthodontists that due to the complexity and extensive amount of time and financial expenses involved in a prosthodontic rehabilitation as well as the serious health risks of untreated OSA, prosthodontists should consider screening for OSA through questionnaires for their patients. The simple question, “Do you snore?” in the medical questionnaire is an excellent marker that can be complemented by OSA questionnaires and specific oral examination.

Prosthodontists play an important role in preserving patients’ general health by restoring and maintaining physiological oral function and esthetic appearance. Sleep bruxism and oro-facial pain are conditions for which the dentist has diagnostic and management skills. With their additional training and expertise in oral anatomy, occlusion, and temporomandibular joint function, prosthodontists should recognize the signs and symptoms of OSA, refer to the sleep physician for diagnosis, and collaborate with the health team surrounding the patient in providing care that will improve the patient’s oral and general health.

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