

## Screening for Obstructive Sleep Disorders

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It's the Same Screening, So Why Stop at Oral Cancer, Save More Lives with Screening for both.

Obstructive Sleep Apnea and Oral Cancer. Dental hygienists are clinicians that are trained in assessing signs for the potentially malignant lesions or early-stage cancers while performing routine visual and tactile examinations in all patients. Squamous cell carcinoma of the oral cavity and pharynx account for almost 49,000 cases per year in the United States and an estimated 9,500 people will die this year due to these cancers [1]. The five-year survival rate of those with oral cancers is less than 60 percent and those who do survive are often faced with the dysfunctional use of anatomical structures for daily activities such as eating, swallowing, salivating, speaking, and chewing [1]. Oral cancer survivors often endure cosmetic disfiguration, as well as, the physiological dysfunction.

In recent years, the overall rate of new cases of oral cancers has remained stable in men but has dropped slightly in women [1]. Previously, the average age for someone to be diagnosed with oral cancer is sixty-two. A new subgroup of white non-smoking males ages 35 - 55 are also at risk due for the Human Papilloma Virus (HPV) affecting males 4:1 males to female ratio [2]. The common areas for these oral cancers to occur are in the tongue, tonsil and oropharynx, gingiva, floor of the mouth, as well as other anatomies of the oral cavity [1].

Practice standards dictate that the dental hygienist is positioned to perform a professional responsibility of care to patients by conducting a systematic evaluation starting with a review of the patient's health history. The health history can help identify indications of possible unhealthy behaviors and conditions, which can target the patient for significant links to the disease. Some indicators of malignancies are tobacco use, alcohol use, family history, weight loss, fatigue and prior head and neck malignancies. Although smoking is a significant indicator of oral cancer, younger males who have HPV and do not smoke are more commonly affected than those in this group who do smoke [2].

Oral cancer screening includes a complete screening of the neck area followed by a screening of the oral cavity. The neck area is inspected for any asymmetry, swelling, enlarged lymph nodes or unexplained tenderness. In the oral cavity the lateral and ventral aspects of the tongue, floor of the mouth, hard and soft palate, oropharynx, tonsils and the epiglottis are examined [3].

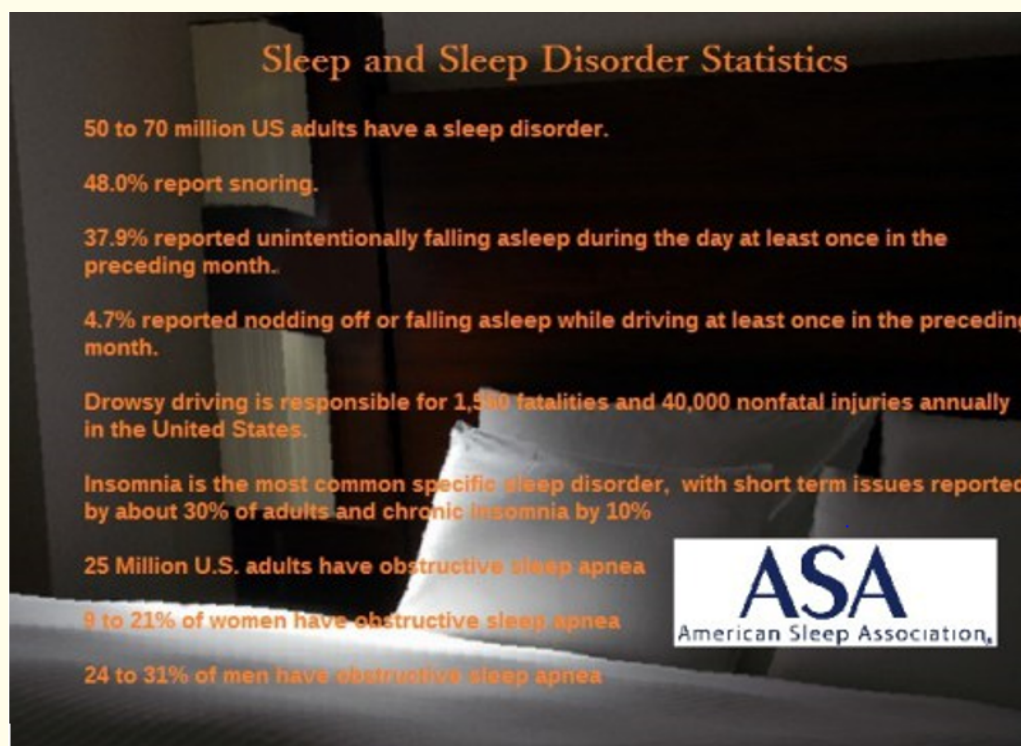
Both the dental hygienist and the dentist are part of a team which aid in the care of treating for oral cancer. An inter-professional health care collaboration is a key area of responsibility that the dental hygienist must fulfill in the process of care. An indication of oral cancer detected during the health history evaluation or evidence of questionable lesions, after a thorough review and protocol of re-evaluation appointments, should be referred to a specialist, such as an oral surgeon, ENT, or to the patient's primary physician [4]. This screening has been a protocol for approximately a decade. Although data on the efficacy of the screening are not available, oral cancer screening presents the opportunity to save at least one life.

The role of today's hygienist is quickly becoming a primary health care provider in that hygienists are positioned to effectively screen patients for many other current chronic health conditions, with the opportunity to save many more lives than just one. There is a growing

understanding of the relationship between the oral cavity and other systematic conditions including hypertension, pulmonary disease, diabetes, ischemic stroke, Alzheimer disease and now Obstructive Sleep Disorder (OSD).

The American Dental Hygienist Association [5] states that “dental hygienists are encouraged to enhance their knowledge and skill base to maintain continued competence. These Standards will be modified based on emerging scientific evidence, [and] changing disease patterns as well as other factors to assure quality care and safety as needed. The protocol in caring and treating patients with OSD is rapidly changing, which may be an underlying factor for each of those disorders or diseases listed previously.

Until about 1993, little was known about OSD. Although OSD was described in the middle of the last century, data describing the prevalence of this disease were not available until 1993 when the results from the Wisconsin Sleep Cohort Study were reported [6]. Obstructive Sleep Disorder is a disorder in which a person frequently stops breathing completely (apnea) or partially (hypopnea) during sleep resulting from the collapse of the upper airway during sleep [7]. Evidence of sleep apnea has been reported in that 10% of men and 5% of women in the 30 - 40 age group reaching at least 20% for men and 15% for woman in the 50 - 60-year age group. OSA occurs in about 2% of children and can even occur in very young children. In addition, approximately 75% of severe OSA cases remain undiagnosed [8].



American Sleep Association. “Sleep and Sleep Disorder Statistics” (2018) [9].

Hypopnea is an OSD characterized by a fifty percent reduction of airflow for 10 seconds or longer with an oxygen desaturation of less than 4%. Individuals with hypopnea struggle to take in oxygen. Apnea is an OSD in which the individual experiences a complete cessation of air for 10 seconds or longer [7]. Both events can happen repeatedly while the person is sleeping and is unaware he or she suffers from OSDs. Usually, the first and most obvious symptom is snoring reported from an annoyed bed-partner.

The mechanism in which OSDs affects the body is complex. The simple version, offered by Dr. Robb Heinrich is that during the course of a night's sleep a person with OSD will have multiple apnea and/or hypopnea events, as many as 100 per night. These OSD events will trigger signals to the brain to arouse the person from deep sleep known as Stage 3 or Rapid Eye Movement (REM) sleep, into a less healing sleep in order to allow the person to regain normal breathing. As a person sleeps the body becomes relaxed with less muscle tone. When this happens, the lower jaw falls back to bring back the tongue. As the tongue falls back the airways become partially or completely closed off from air moving in and out. The person struggles to breathe, and the diaphragm and chest muscles work harder to open the obstructed airway and pull air into the lungs. This sequence of events is often followed by a loud gasp, snort, or body jerk resulting in very fragmented sleep, thus creating a cycle of very poor sleep structure as well as an oxygen deprived body. Obtaining a deep level of nightly sleep, Stage 3 and REM, is vital for sustained immune function, memory, alertness, psychological well-being, biochemical refreshment and decreased fatigue [7].

The decrease in oxygen saturation creates arterial blood oxygen known as hypoxemia. Hypoxemia increases the risk of organ tissue damage, problems with blood flow to the end tissues and problems with breathing rhythm. At the same time, hypoxemia causes a condition called hypercapnia causing a higher concentration of carbon dioxide in the that may result in a person experiencing muscle twitching, headaches, a raise in blood pressure, and increased cardiac output [7].

Stage 3 sleep is the deepest and most restorative sleep. During Stage 3 sleep blood pressure drops, breathing becomes slower, muscles relax and blood supply to the muscles increases. Hormones such as Human Growth Hormone (HGH) is essential for growth and development and are released resulting in tissue growth, and repair, and restoration in [10].

The National Sleep Foundation [10] describes REM sleep as deep sleep that provide energy to the brain and the body and supports daytime performance. During REM sleep, most of the dreaming occurs and eyes dart back and for the, hence rapid eye movement; the body becomes immobile relaxed and muscles are turned off, so dreams are not physically acted out.

Parks [11] outlines the effects of OSD on the body, including increased odds of fatal and nonfatal cardiovascular events. Severe OSD is associated with 3 to 4-fold higher odds of having complex tachyarrhythmias, including atrial fibrillation and non-sustained ventricular tachycardia. The effects of cognitive impairment, hypersomnolence, and fatigue strengthens the relationship between OSD and stroke. OSD also appears to be a risk factor for insulin resistance and the development of adult type 2 diabetes. People with OSD are more likely to have an elevated fasting glucose level.

Lack of restorative sleep increases the risks for motor vehicle accidents. Recently the National Transportation Safety Board (NTSB) recommends that Metro-North and the Long Island Railroad (LIRR) develop and implement protocols to routinely screen and fully evaluate their safety-sensitive employees for sleep disorders and ensure such disorders are adequately addressed if diagnosed. The NTSB concludes that without evaluating safety-sensitive employees for sleep disorders or other medical conditions, increased risk to railroad employees, passengers, and the public will remain at risk for potential accidents [12-17].

Dental hygienists should be screening patients for indicators of OSA because of the frequency of regularly treating patients about 1 to 4 times a year. Hygienist have positive relationships with patients as well as with family members and are often knowledgeable about patients' family health histories. Hygienists see patients when they are well, in contrast to other medical professionals who typically see patients when they are sick. Dental hygienists are already checking many of the same anatomical structures such as the tongue, bite classification, hard and soft palate, pharyngeal and tooth wear patterns and abrasion. When referring an oral cancer screening dental hygienist regularly review patients' health histories for high blood pressure, diabetes, smoking, alcohol consumption and medication. These are the same factors which should be observed in screening patients for OSA.

Having OSA can be debilitating socially, economically and can be life-threatening to the person as well as to others. Social effects of OSAs include a person being too tired to join family and friends for an enjoying time together because of fatigue or mood disturbances, which may lead to someone to be difficult or unpleasant to be around. When people struggle to stay awake, concentrate or continually cannot remember work related information, their careers may be jeopardized. When people stop breathing as in an apneic event, they have a greater risk of sudden cardiac death, or can fall asleep while operating cars, trains, and plane possibly killing or injuring themselves or others. OSA does not only affect the person who has it but also it affects families and people around him or her.

The dental hygiene screening process can easily be incorporated in a time-saving systematic approach. While reviewing the health history (HH) for common health concerns for oral cancer as previously mentioned, this same information can be used for the detection of OSA. Adding a place to note if the patient snores on the HH would quicken the information gathering process. If there is a question, then the hygienist can simply ask the patient relevant questions and add the additional information to the HH. Since hygienist see patients 1 - 4 times a year alternating the conversation each visit is useful too. On one of these alternating visits an Epworth questionnaire could be filled out by the patient while in the waiting room prior to seating the patient. The Epworth Sleepiness Scale (ESS) is a scale intended to measure daytime sleepiness that is measured by use of a very short questionnaire (see appendage 1). The second diagnostic tool is a Mallampati score (see appendage 2). Once the hygienist has this information, it is easy to have a conversation with the patient about OSA. The dentist could be notified of indicating factors and a referral could be made to send the patient to the physician for a follow-up consultation with enough information, so the patient could have an informed conversation with the appropriate medical practitioner.

## Appendage 1

### The Epworth Sleepiness Scale

The Epworth Sleepiness Scale is widely used in the field of sleep medicine as a subjective measure of a patient's sleepiness. The test is a list of eight situations in which you rate your tendency to become sleepy on a scale of 0, no chance of dozing, to 3, high chance of dozing. When one finishes the test, he/she adds up the values of responses. The total score is based on a scale of 0 to 24. The scale estimates whether you are experiencing excessive sleepiness that possibly requires medical attention.

How Sleepy Are You? How likely are you to doze off or fall asleep in the following situations? You should rate your chances of dozing off, not just feeling tired. Even if you have not done some of these things recently try to determine how they would have affected you. For each situation, decide whether or not you would have:

- No chance of dozing =0
- Slight chance of dozing =1
- Moderate chance of dozing =2
- High chance of dozing =3

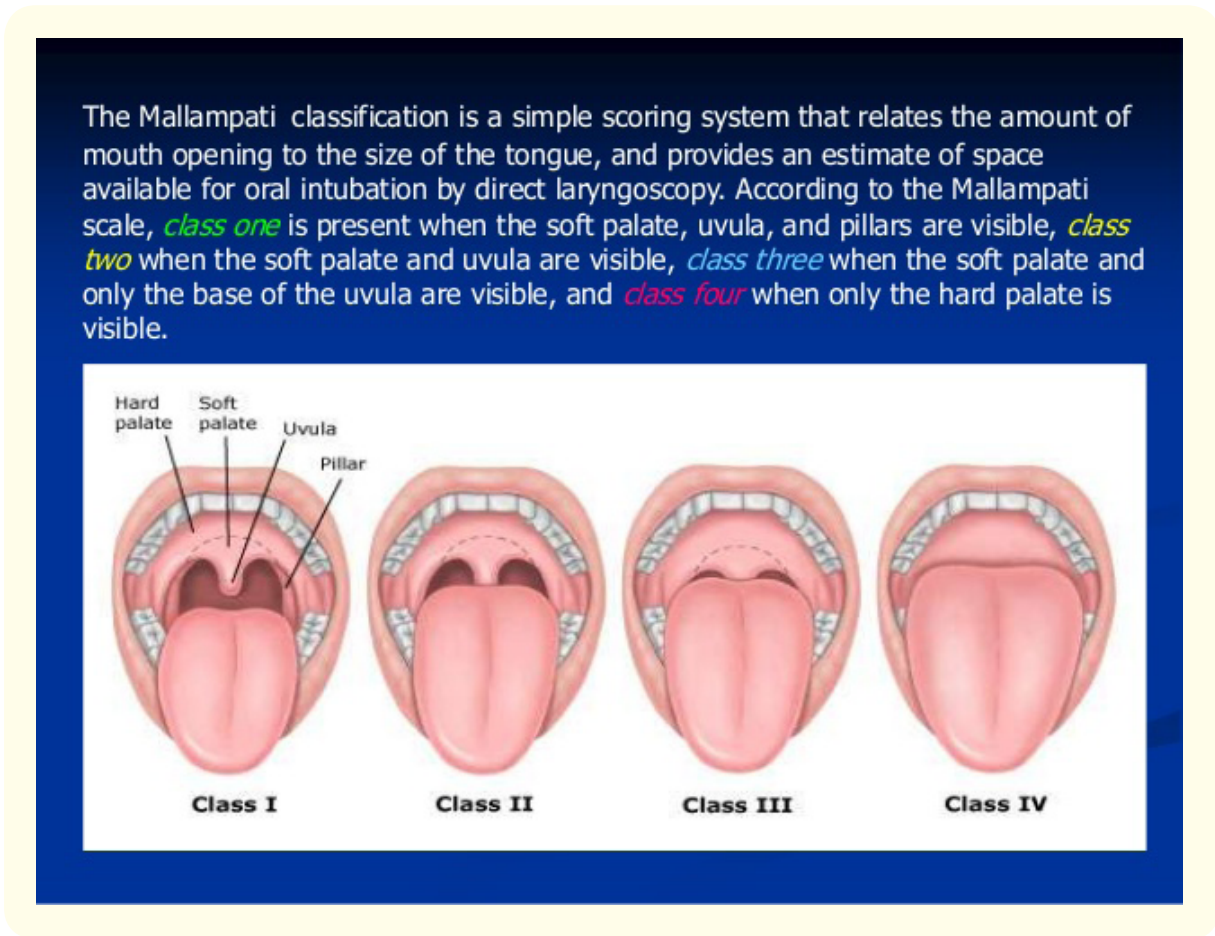
Write down the number corresponding to your choice in the right-hand column. Total your score below. Situations:

- Chance of Dozing Sitting and reading
- Watching TV
- Sitting inactive in a public place (e.g., a theater or a meeting)
- As a passenger in a car for an hour without a break
- Lying down to rest in the afternoon when circumstances permit
- Sitting and talking to someone
- Sitting quietly after a lunch without alcohol
- In a car, while stopped for a few minutes in traffic

Total Score = Analyze Your Score

Interpretation: 0-7: It is unlikely that you are abnormally sleepy. 8-9: You have an average amount of daytime sleepiness. 10-15: You may be excessively sleepy depending on the situation. You may want to consider seeking medical attention. 16-24: You are excessively sleepy and should consider seeking medical attention. Johns MW (1991).

## Appendage 2



Dr. Paul Labana (2014).

Unequivocally, OSA screening is vital for patients of all ages. Relationships can be saved by re-uniting sleep partners into the same bed and changing mood disturbances from irritable and cranky to happy and pleasant. Diagnosing OSA improves patients work performance with better concentration and short-term memory improvement. Patients social lives improves because they go from sleepy all the time to having increased energy throughout the day, so they can experience more out of life. And recognizing OSA in patients saves the lives of everyday people who might be at the wrong place and become injured or die because a driver of a motor vehicle or train, or the operator of machinery suffers from OSA So, save a life today.

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