

Awareness on sleep apnea among patients reporting to Saveetha Dental College

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Running Title: Awareness on sleep apnea among patients reporting to Saveetha Dental College

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Abstract

Introduction: Obstructive sleep apnea (OSA) is characterized by repeated airway collapse during sleep. It is characterized by tense breathing, decreased levels of oxygen in blood, and arousals that disrupt normal sleep. OSA has a negative impact on the health and behavior of millions of adolescents throughout the world. It is an independent risk factor for many diseases, such as hypertension, heart failure, heart attack, cardiovascular events and arrhythmias. Patients who consult with suspected OSAS tend to have a long prior history of snoring that has become increasingly intense and irregular over time, often in connection with increased body weight, alcohol consumption or muscle relaxant drugs, or with menopause in women. Alcohol and tobacco use have strong associations with the development and progression of obstructive symptoms.

Materials and methods:

In this study the awareness on sleep apnea among patient attending Saveetha Dental college and Hospitals are evaluated. A questionnaire study (Berlin questionnaire) with a sample size of 100 between the age group of 25- 70 containing 10 questions covering three categories including 1) snoring severity, 2) excessive daytime sleepiness, and 3) history of high blood pressure or obesity.

Results:

In this study, it was observed that among the 100 individuals, 63% of them were aware of their snoring habits. 35% of the patients felt fatigued and tired during sleep nearly every day. 12% felt 3-4 times a week, 26% felt tierd1-2 times a week and 27% felt it nearly once or never. According to most of the patients, the reason for snoring was obesity, constricted nasal passage, smoking and fatigue.

Conclusion:

OSA is an important public health concern. Disturbed sleep patterns lead to increased levels of daytime somnolence, which can cause days of missed work and increased levels of motor vehicle and occupational accidents. Hence, awareness on sleep apnea and its ill effects should be created among the patients. Motivating healthy lifestyle modifications and treatment options should to made aware to patients.

Introduction

Obstructive sleep apnea (OSA) is characterized by repeated airway collapse during sleep. The main cause is a reduction of the expansion forces of the pharyngeal dilator muscles, as in situations of genioglossal muscle dysfunction, and discoordination between the inspiratory activity of the muscle and respiratory effort, which play an important role in progression of the disease. Other described causes are soft tissue disorders, such as macroglossia or tonsillar hypertrophy, and skeletal structural alterations such as micrognathia and retrognathia. In obese people, the accumulation of fat in the neck region produces narrowing of the pharyngeal airway, resulting in diminished passage of air (1). Within the upper airway, the pharynx, and particularly the oropharynx and hypopharynx, is the region where most obstructive processes leading to apnea are found (2). OSA has a negative impact on the health and behavior of millions of adolescents throughout the world. It is an independent risk factor for many diseases, such as hypertension, heart failure, heart attack, cardiovascular events and arrhythmias. Unfortunately, it is a common chronic disease that greatly conditions the life of the patient (3). It is characterized by tense breathing, decreased levels of oxygen in blood, and arousals that disrupt normal sleep (2).

Snoring is the most common symptom of OSAS (present in up to 95% of all patients) (4). Patients who consult with suspected OSAS tend to have a long prior history of snoring that has become increasingly intense and irregular over time, often in connection with increased body weight, alcohol consumption or muscle relaxant drugs, or with menopause in women (5). Morning headaches, apathy, depression, concentration difficulties, memory loss and decreased libido are other characteristic daytime symptoms of patients with OSA.

Orthodontists focus on three aspects to study and treat sleep apnea:

- a) Diagnosis of the structural changes often present in these diseases.
- b) The treatment of mild to moderate forms using intraoral appliances.
- c) Presurgical orthodontic treatment of patients programmed for orthognathic surgery (6).

Obesity, thickened lateral pharyngeal walls, nasal congestion, enlarged uvula, facial malformations, micrognathia, macroglossia, and tonsillar hypertrophy are also known to contribute to sleep apnea. (10-13) Obesity contributes to airway narrowing through fatty infiltration of the tongue, soft palate, or other areas surrounding the airway. 11 Several studies show a strong relation between Sleep apnea and hypertension (7-9). As the patient falls asleep, muscles of the nasopharynx begin to relax and the surrounding tissue collapses, causing compromise of the airway. (13,14,15) As oxygen levels in the body start to drop and carbon dioxide levels rise, the patient is aroused from sleep; this causes an increase in sympathetic tone and subsequent contraction of nasopharyngeal tissue, which allows alleviation of the obstruction. (18). Upon the patient's falling back to sleep, however, the airway is again subjected to narrowing until the patient is aroused from sleep once again. The cycle continues throughout the night, causing decreased time spent in rapid eye movement sleep and an overall decrease in quality of sleep. (13-16) Because of the gravity-dependent factors discussed above, most obstructive symptoms happen in the supine position. (17)

Social factors also play an important role in the development of OSA. Alcohol and tobacco use have strong associations with the development and progression of obstructive symptoms. (19) Alcohol, as well as benzodiazepines and other central nervous system depressants, preferentially inhibit upper airway muscle activity while also depressing the respiratory centers of the brain. Tobacco use alone causes a threefold increase in risk of OSA, as observed in smokers compared to nonsmokers (20).

Materials and materials

A questionnaire study (Berlin questionnaire) with a sample size of 100 between the age group of 25- 70 containing 10 questions covering three categories including 1) snoring severity, 2) excessive daytime sleepiness, and 3) history of high blood pressure or obesity. The patient is instructed to answer questions to all three categories.

Q1. Do you snore?

- a. Yes (63%)
- b. No (37%)

Q2. If yes, your snoring is

- a. Slightly louder than breathing (30%)
- b. As loud a breathing (22%)
- c. Very loud, can be heard in adjacent room (11%)

Q3. How often do you snore?

- a. Nearly every day (20%)
- b. 3-4 times a week (26%)
- c. 1-2 times a week (20%)
- d. Never or nearly never (34%)

Q4. Has your snoring bothered others?

- a. Yes (47%)
- b. No (37%)
- c. Don't know (19%)

Q5. Has anyone complained that you quit breathing during your sleep?

- a. Nearly everyday (11%)
- b. 3-4 times a week (12%)
- c. 1-2 times a week (40%)
- d. Never or nearly never (37%)

Q6. How often do you feel tired or fatigued during you sleep?

- a. Nearly everyday (37%)
- b. 3-4 times a week (27%)
- c. 1-2 times a week (16%)
- d. Never or nearly never (20%)

Q7. During your waking time, do you feel tired, fatigued or not upto par on waking up?

- Nearly everyday (35%)
- 3-4 times a week (12%)
- 1-2 times a week(26%)
- Never or nearly never (27%)

Q8. Have you nodded off or fall asleep while driving a vehicle?

- Yes (53%)
- No (47%)

Q9. If yes, how often does this occur?

- Nearly everyday (5%)
- 3-4 times a week (18%)
- 1-2 times a week (55%)
- Never or nearly never (22%)

Q10. Do you have high blood pressure?

- Yes (27%)
- No (73%)

Q11. Type of jaw

- Normal (63%)
- Prognathic (16%)
- Retrognathic (21%)

Q12. Are you aware snoring is harmful?

- Yes
- No
- Don't know

Q13. Are you aware of BMI?

- Yes (41%)
- No (59%)

Q14. Are you aware snoring is treatable?

- Yes (26%)
- No (11%)
- Don't know (63%)

Q15. According to you, why do people snore?

Results:

In this study, it was observed that among the 100 individuals, 63% of them were aware of their snoring habits (fig.1). Among the 63%, it seen that majority of them felt they snore slightly louder than breathing and 17.46% felt their snoring very loud and 47.6% felt their snoring was slightly louder than breathing and 47.62% felt their snoring was as loud as breathing. (Fig. 2). 20% of the patient felt they snore everyday, 26% felt they snore 3-4 times a week, 20% felt they snore 1- 2 times a week and 34% felt they snore nearly once or never. (fig 3). 44% felt their snoring bothers others whereas 37% felt it did not bother others and 19% were not aware. (fig 4). 11% of the patients felt they quit breathing or breathlessness during sleep nearly everyday. 12% felt breathlessness 3-4 times a week, 40% felt breathlessness 1-2 times aweek and 37% felt it nearly once or never. (fig 5). 35% of the patients felt fatigued and tierd during sleep nearly everyday. 12% felt 3-4 times a week, 26% felt tierd1-2 times aweek and 27% felt it nearly once or never. (fig 6 and 7). 53% of the patient have nodded off while driving a vehicle. Among them, 5% of them fall asleep almost everyday, 18% fell asleep 3-4 times a week, 55% fell asleep 1-2 times a week and 22% did not feel so. (fig 8). 27% of the selected patients were hypertensive. (Fig 9). 63% had a normal jaw morphology, 16% had a prognathic jaw and 21% had a retrognathic jaw (fig 10). 55% of the patient were not aware about the ill effects of snoring, and 47% were aware. (fig 11). 41% were aware of BMI and 59% were not aware of BMI (fig. 12). 26% of the patients knew snoring is a treatable condition, 11% were not aware so and 63% did not know whether it is treatable or not. (fig 13). According to most of the patients, the reason for snoring was obesity, constricted nasal passage, smoking and fatigue.

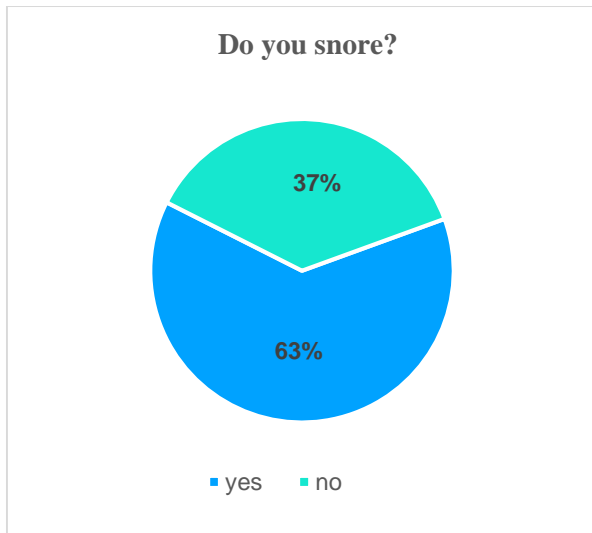


Figure 1

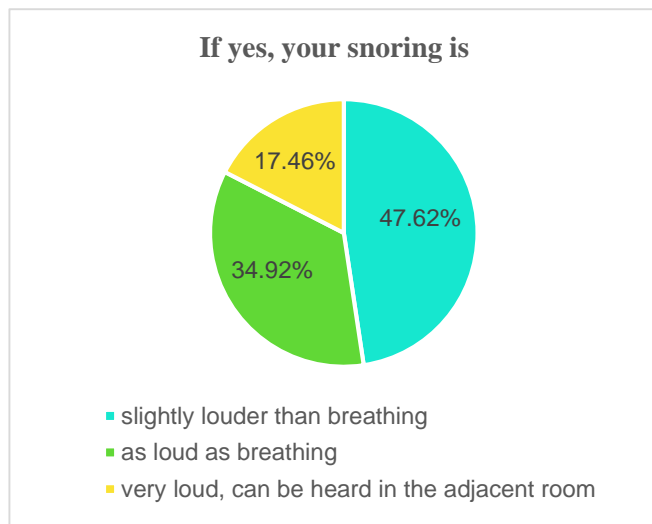


Figure 2

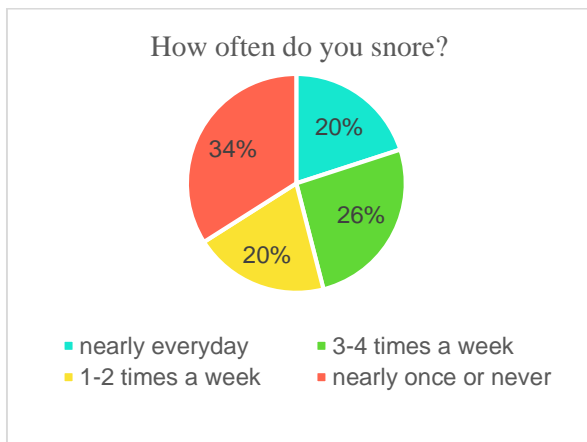


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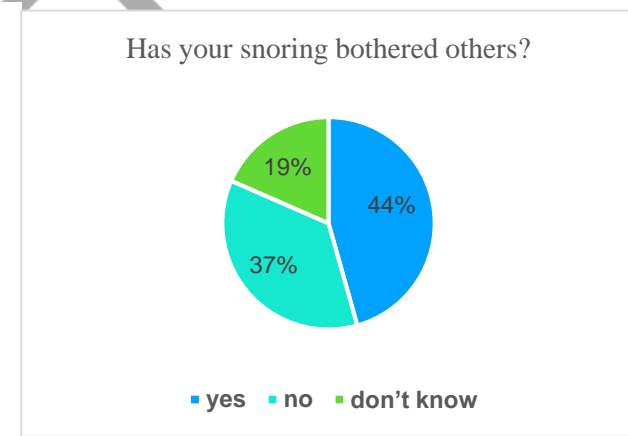


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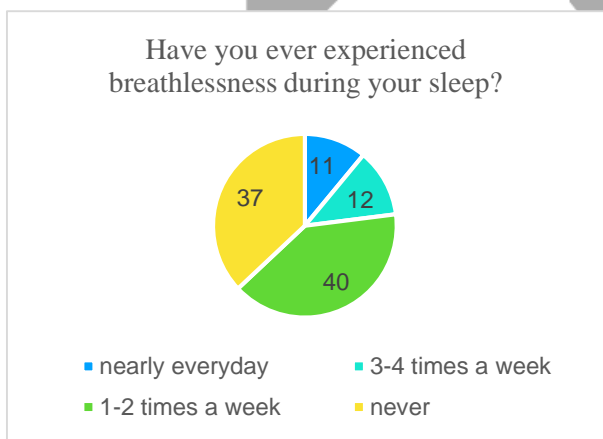


Figure 5

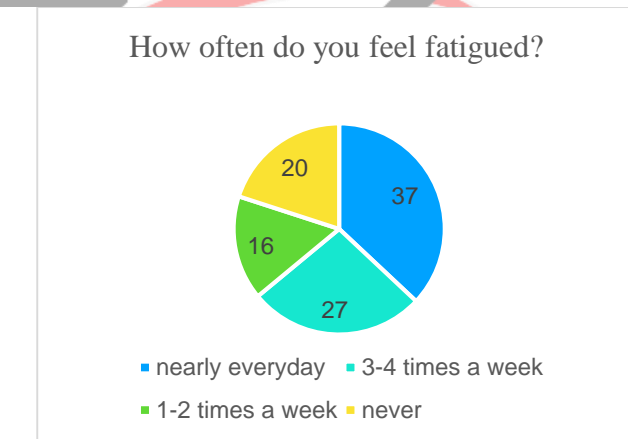


Figure 6

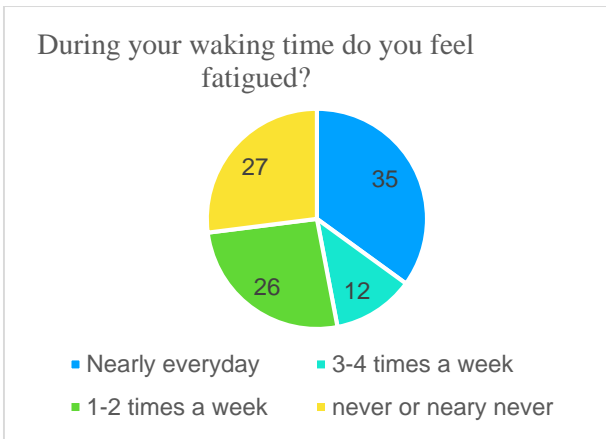


Figure 7

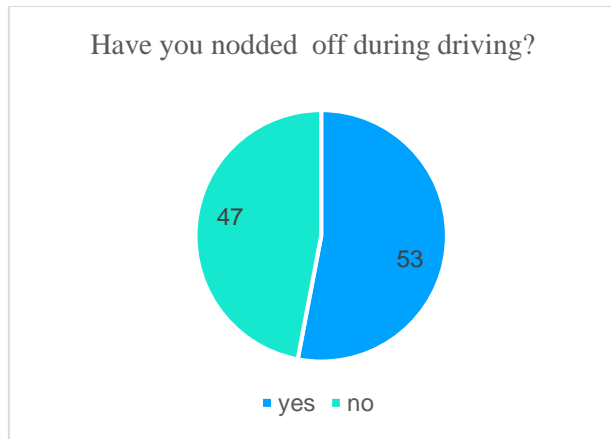


Figure 8

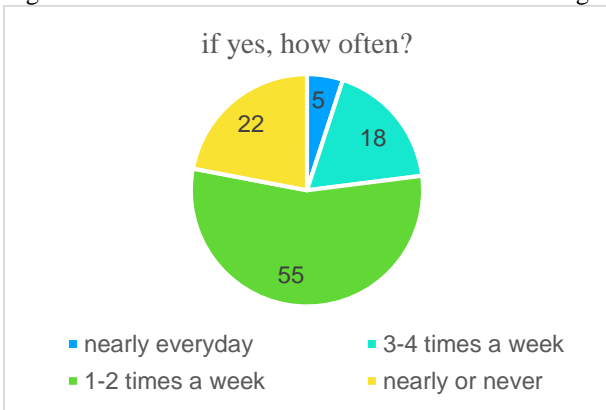


Figure 9

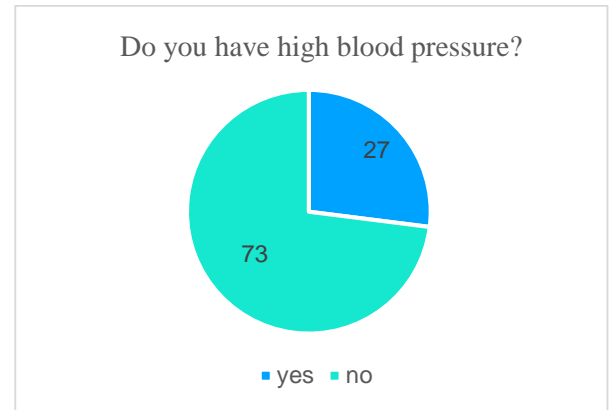


Figure 10

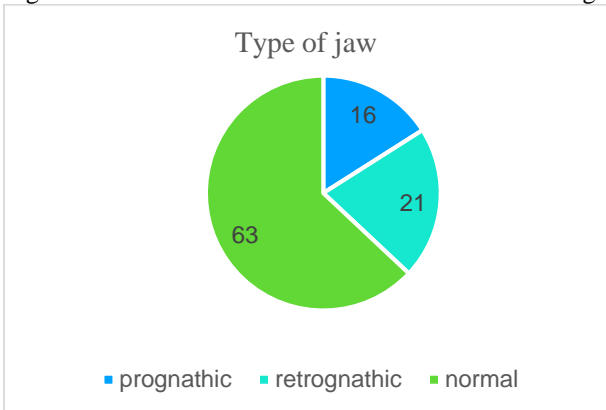


Figure 11

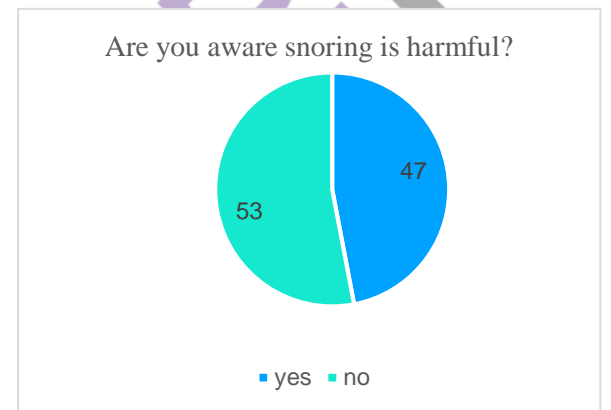


Figure 12

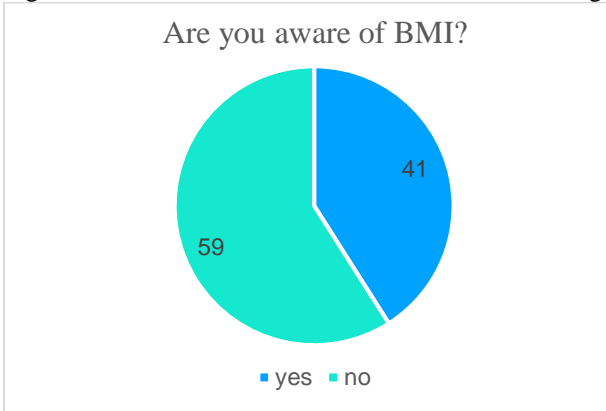


Figure 13

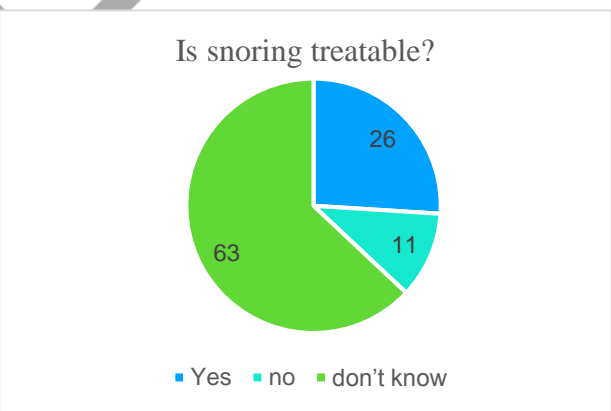


Figure 14

Discussion:

Sleep apnea is a neglected condition among the Indian population. The awareness on the ill-effects and consequences are significantly low. Most of the patients are not aware of their snoring habits. Several patients have fallen asleep while driving a vehicle. This can be dangerous and life-threatening. The intensity of sleep apnea depends on the airway passage. The narrower the

passage, severe is the intensity of snoring. Treatment of OSA depends on the severity, duration, and cause of the patient's symptoms as well as the patient's lifestyle, comorbidities, and overall health. (21) For severely obese patients, bariatric surgery (ie, gastric banding, gastric bypass, gastroplasty) may be considered, as studies (22) have shown that symptoms of OSA can be relieved in up to 86% of patients undergoing such operations. Other lifestyle changes that may help modify the signs and symptoms of OSA include cessation of alcohol and tobacco use, as well as the use of a lateral sleeping position.^{23, 21} Furthermore, the use of benzodiazepines and other central nervous system depressants should be avoided.

Devices are designed to provide the minimum necessary pressure at any given time and change that pressure as the needs of the patient change. (24) CPAP, the most common of the three therapy modes, is administered at bedtime through a nasal or facial mask held in place by velcro straps around the patient's head. The mask is connected by a tube to a small air compressor. Air under pressure is sent through the tube into the mask, where positive pressure is imparted to the upper airway. This essentially "splints" the upper airway open and keeps it from collapsing in the deeper stages of REM sleep. (24, 25)

Conclusion

OSA is an important public health concern. Disturbed sleep patterns lead to increased levels of daytime somnolence, which can cause days of missed work and increased levels of motor vehicle and occupational accidents. OSA can both worsen existing medical conditions and influence the onset of new disease. As dentists, we have a significant role to play in the diagnosis, management and care of patients suffering from sleep apnea. Many treatment approaches have been used in the management of this condition. Oral appliances also play a major role in the nonsurgical management of OSA. It has become the first line of treatment in most patients suffering from OSA. Of all the oral modalities of treatment, CPAP is considered to be the most effective for management of OSA. Hence, awareness on sleep apnea and its ill effects should be created among the patients. Motivating healthy lifestyle modifications and treatment options should be made aware to patients.

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