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Prevalence of Probable Obstructive Sleep Apnoea Among Dental Patients: A Cross-Sectional Study

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ABSTRACT

Background: Sleep deprivation is one of the most common yet unrecognized problems in which Obstructive sleep apnea (OSA) is a disorder in which breathing is repetitively interrupted during sleep due to collapse of the upper airway.

Aim: The aim of this study is to assess the prevalence of probable obstructive sleep apnea/sleep-disordered breathing and symptoms associated with this condition in a population of dental patients

Materials and methods: A total of 450 respondents attending OPD of Dental College who were present on the days of the survey and who were willing to participate were included in the study. OSA in dental patients was assessed using the Apnea Risk Evaluation System (ARES™) questionnaire. The collected data were analyzed using a statistical package for social sciences (SPSS) 21.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics and Chi-Square analysis were used.

Results: T-tests and chi-squared analysis confirmed that there were no significant differences in the distributions of age, BMI, neck size, Epworth sleepiness scale, and prevalence of OSA risk between gender. 75% of the men and 51% of the women reported snoring at least sometimes, and 25% of the men and 49% of the women snored frequently or always

Conclusion: The percentage of dental patients found to have a high pretest probability of having undiagnosed OSA was substantially greater than previous prevalence estimates.

Keywords: Dentistry, Obstructive Sleep Apnea, Prevalence.

INTRODUCTION

Health care in India is burdened with not only infectious diseases but also chronic diseases like diabetes, hypertension e.t.c. Sleep deprivation is another most common yet unrecognized problem in which Obstructive sleep apnea (OSA) is a disorder in which breathing is repetitively interrupted during sleep due to collapse of the upper airway. An apnea is defined as complete cessation of breathing lasting 10 seconds or greater. High blood pressure, diabetes, obesity, coronary artery disease, stroke and increased mortality etc., are linked to sleep apnea.[1] Several research studies suggest that

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prevalence of OSA in the Indian population is about 13%, and also its incidence is 3-fold higher in men as compared to women. Limited data have suggested that sleep-disordered breathing, a condition of repeated episodes of apnea and hypopnea during sleep, is prevalent among adults. [2] Data from the Wisconsin Sleep Cohort Study, a longitudinal study of the natural history of cardiopulmonary disorders of sleep, were used to estimate the prevalence of undiagnosed sleep-disordered breathing among adults and address its importance to public health. [3]

Mainly there are two types of sleep apnea - Obstructive sleep apnea (OSA) and central sleep apnea. Obstructive sleep apnea (OSA) is the more common of the two forms of apnea; it is caused by a blockage of the airway, usually when the soft tissue in the back of the throat collapses during sleep. OSA affects 1 to 6% of adults and 2% of children. It affects males about twice as often as females. Even though it affects people at any age group, it most commonly occurs among those people in the age group of 55 to 60 years. [4] In central sleep apnea, unlike OSA, the airway is not blocked, but the brain fails to signal the muscles to breathe due to instability in the respiratory control centre. Central sleep apnea affects less than 1% of people. A type of central sleep apnea was described in the German myth of Ondine's curse where the person, when asleep, would forget to breathe. [5]

The risk factors for sleep apnea include being male, excessive weight, age above 40, large neck size (greater than 16–17 inches), enlarged tonsils or tongue, small jaw bone, gastro-oesophagal reflux, allergies, sinus problems, a family history of sleep apnea, deviated nasal septum etc. Alcohol, sedatives and tranquillizers may also promote sleep apnea by relaxing throat muscles. Smokers have sleep apnea at three times the rate of people who have never smoked. [1,2]

The most common signs and symptoms of obstructive and central sleep apneas include loud snoring (more prominent in obstructive sleep apnea), episodes of breathing cessation during sleep witnessed by another person, abrupt awakenings accompanied by shortness of breath (mostly in central sleep apnea), awakening with a dry mouth or sore throat, morning headache, difficulty staying asleep (insomnia), excessive daytime sleepiness (hypersomnia), attention problems and irritability. One of the most common oral health sign is the grinding of teeth. Other signs include a small jaw, tongue with scalloped edges, or redness in the throat (caused by snoring a lot, which is another symptom of sleep apnea) etc. [6]

Dentists play an important role in detecting the less evident symptoms of sleep apnea through a candid conversation with a patient about the patient's recent pains or discomforts and also by noticing the oral signs and symptoms. [7] The aim of this study is to assess the prevalence of probable obstructive sleep apnea/sleep-disordered breathing and symptoms associated with this condition in a population of dental patients.

MATERIALS AND METHODS

Study design and study setting:

This is an institution-based cross-sectional study conducted in a private dental college in Uttar Pradesh, India, to assess the prevalence of probable obstructive sleep apnea/sleep-disordered breathing and symptoms associated with this condition in a population of dental patients. The ethical clearance for the study was obtained from the institutional review board of the college.

Study Subjects

A total of 450 respondents attending OPD of Dental College who were present on the days of the survey and who were willing to participate were included in the study.

Questionnaire

OSA in dental patients was assessed using the Apnea Risk Evaluation System (ARES™) questionnaire. The ARES questionnaire is a validated one-page instrument that can be filled out by the patient in less than 5 min without assistance. The ARES analyses provide classifications of OSA risk (i.e., those in need of a sleep study), which includes "high risk" [i.e., predicted apnea/hypopnea index (AHI) five or more events per hour), "low risk" (i.e., not classified as high-risk but indications such as co-morbid disease, high BMI or neck circumference plus hypersomnolence, etc.), or "no apparent risk" (AHI<5). The OSA severity categories include minimal (predicted AHI<5), mild

(AHI=6–20), moderate (AHI=21–40), and severe (AHI>40).

Data management and statistical analysis: The collected data were analyzed using a statistical package for social sciences (SPSS) 21.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics and Chi-Square analysis were used.

RESULTS

Table 1: Demographic and anthropomorphic characteristics

	MALE (255)	FEMALE (195)
Mean ± SD		
Age - years	53±14.1	54±12.4
Neck size - cm	42±2.5	33±3.6
Body mass index	25±4.5	21±3.3
Epworth score	7±4.1	6±3.2
Number (%)		
High blood pressure	54%	36%
Heart disease	12%	4%
Diabetes	48%	33%
Stroke	2%	1%
Obstructive sleep apnea	18%	5%

Table 2: Distribution of responses typically used to identify OSA

	NEVER (%)	RARELY 0–1/WEEK (%)	SOMETIMES 1–2/WEEK (%)	FREQUENT 3–4/WEEK (%)	ALMOST ALWAYS 5–7/ WEEK (%)
In the past month, snored or told you snore?					
Male	30%	28%	17%	13%	12%
Female	12%	22%	17%	16%	33%
Do you wake up choking or gasping?					
Male	75%	11%	4%	8%	2%
Female	83%	7%	5%	4%	1%
Told you stop breathing or wake up choking or gasping?					
Male	77%	12%	6%	5%	0%
Female	81%	9%	7%	3%	0%

Table 3: Distribution of predicted OSA severity stratified by OSA Risk for all dental patients

	OSA severity			
	Minimal (%)	Mild (%)	Moderate (%)	Severe (%)
No apparent risk				
Male	25.4%	0%	0%	0%
Female	54%	0%	0%	0%
Low risk				
Male	1%	4%	0%	0%
Female	2%	6%	0%	0%
High risk				
Male	0.6%	28%	9%	11%
Female	3.2%	17%	5%	1%

Demographic and anthropomorphic characteristics of the men and women by and across practices are presented in Table 1. T-tests and chi-squared analysis confirmed that there were no significant differences in the distributions of age, BMI, neck size, Epworth sleepiness scale, and prevalence of OSA risk between gender.

75% of the men and 51% of the women reported snoring at least sometimes, and 25% of the men and 49% of the women snored frequently or always (Table 2). In addition, 4% of the men and 5% of the women reported being aware of waking up choking at least sometimes, while 6% and 7% were told by bed partners that they stopped breathing or awoke choking at least sometimes.

DISCUSSION

Possibly, as a result of the age of the surveyed population, only 25.4% of the men and 54% of the women had no apparent risk of having OSA, while 11% and 1%, respectively, were predicted to have severe OSA (Table 3).

The prevalence of high risk by the ARES questionnaire in female dental patients was similar to women between 50 and 64 years classified as OSA risk by the Berlin questionnaire in the National Sleep Foundation (NSF) survey (i.e., 29%) [8]. Comparatively, the percentage of male dental patients classified as high-risk OSA was almost twice the number of men between 50–64 years classified at OSA risk (37%) in the NSF survey. In this survey, 13% of men and 16% of women snored at least three times per week, and 12% and 33%, respectively, reported witnessed apneas. Comparatively, 37% of Hong Kong bus drivers (96% male) reported snoring at a similar frequency, while only 8% reported witnessed apneas [9]. The mean percentage of dental patients with high blood pressure (46%) and heart disease (8.4%) was almost similar to those surveyed by the NSF (29% and 10%, respectively) [13].

Fifteen per cent of the dental patients in this study were considered obese (BMI>30), while the reported obesity in California is between 20% and 25%. The prevalence of diabetes in this study (41.3%) was much higher than the 11% reported in the NSF survey, possibly as a result of the lower BMIs. [8]

CONCLUSION

The percentage of dental patients found to have a high pretest probability of having undiagnosed OSA was substantially greater than previous prevalence estimates.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

REFERENCES

1. Surani SR. Diabetes, sleep apnea, obesity and cardiovascular disease: Why not address them together?. World J Diabetes. 2014;5(3):381-384.

2. Young T, Palta M, Dempsey J, Skatrud J, Weber S, Badr S. The occurrence of sleep-disordered breathing among middle-aged adults. N Engl J Med. 1993;328(17):1230-1235.

3. Young T. Rationale, design, and findings from the Wisconsin sleep Cohort study: toward understanding the total societal burden of sleep-disordered breathing. Sleep Med Clin. 2009;4(1):37-46.

4. Spicuzza L, Caruso D, Di Maria G. Obstructive sleep apnoea syndrome and its management. Therapeutic advances in chronic disease. 2015;6(5):273-285.

5. Botero-Meneses JS, Orrego E, Gil SM, Rincón GM. Ondine's curse: the origin of the myth. Arq Neuropsiquiatr. 2020;78(4):238-240

6. Finkel KJ, Saager L, Safarzadeh E, Bottros MM, Avidan MS Obstructive sleep apnea: the silent pandemic. Anesthesiology. 2006;105:A988

7. Kale SS, Kakodkar P, Shetiya SH. Assessment of oral findings of dental patients who screen high and no risk for obstructive sleep apnea (OSA) reporting to a dental college-A cross sectional study. Sleep Sci. 2018; 11(2):112-117.

8. Hiestand DM, Britz P, Goldman M, Phillips B. Prevalence of symptoms and risk of sleep apnea in the us population. Results from the national sleep foundation sleep in America 2005 poll. Chest 130:780–786

9. Hui DSC, Chan JKW, Ko FWS, Choy DKL, Li TST, Chan AT, Wong KK, Lai CKW. Prevalence of snoring and sleep disordered breathing in a group of commercial bus drivers in Hong Kong. Int Med J. 2002; 32(4):149–157.