

Predicted Prevalence of OSA in Population of Dental Patients Undergoing Moderate Sedation Compared to a Cohort of General Dentistry Patients

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Introduction Anxiety toward dental treatment is increasingly being managed with parenteral sedation techniques. Agents used in these techniques compromise the patency of the airway, suppress respiratory drive, and poses risk of adverse outcomes in patients with obstructive sleep apnea (OSA). The goal of this investigation was to assess the prevalence of undiagnosed OSA in a population of patients undergoing parenteral sedation for dentistry.

Methods A prospective study design was used to assess the probably OSA risk and severity in 98 consecutive patients (59 female and 35 male) prior to undergoing parenteral sedation (see Table 1). The 94 patients who successfully completed the validated ARES Screener questionnaire [1] were assigned into one of three pre-test probability categories of in need of a sleep study (i.e., no apparent, low and high risk) with separate classifications for the likelihood of having minimal, mild, moderate, or severe OSA. Chi-squared and analysis of variance (ANOVA) measures were used to compare this population of parenteral sedation patients and a previously report cohort of 175 male and 156 female general dentistry patients [2].

Table 1: Demographic, anthropomorphic and Co-Morbidity Data

	Females	Males	Diagnosed with	Females	Males
Age, years + SD	49.2 ± 16.1	49.6 ± 14.6	Hypertension	37.3%	22.9%
Neck size, cm + SD	36.5 ± 3.4	41.7 ± 2.7	Heart disease	3.4%	11.4%
BMI, kg/km ² + SD	28.5 ± 6.5	26.8 ± 4.5	Diabetes	8.5%	14.3%
Snored sometimes or more	44.1%	48.6%	Stroke	3.4%	5.7%
Woke up choking, rarely or more	25.4	34.3	Depression	10.2%	2.9%
Witnessed apneas, rarely or more	6.8	34.3%	Sleep Apnea	0%	22.9%
Epworth > 10	5.1%	17.1%			

Results *Females*: The profile of the females is presented in Table 1. Of these, 56% were predicted to be moderate and 44% with mild severity. An additional 25.4% of the females were classified with low risk (15/59) with 93% likely to have mild OSA. Only 28.8% were predicted to have no risk of OSA. Sixty percent of the males and 45.8% of the females were identified with a high pre-test probability of OSA indicating the need to undergo a sleep study. For the females, 19.6% were predicted to have mild OSA and 30.4% moderate OSA by questionnaire. For the males, 37.5% had a pre-test probability indicating moderate OSA and 25.0% with severe OSA.

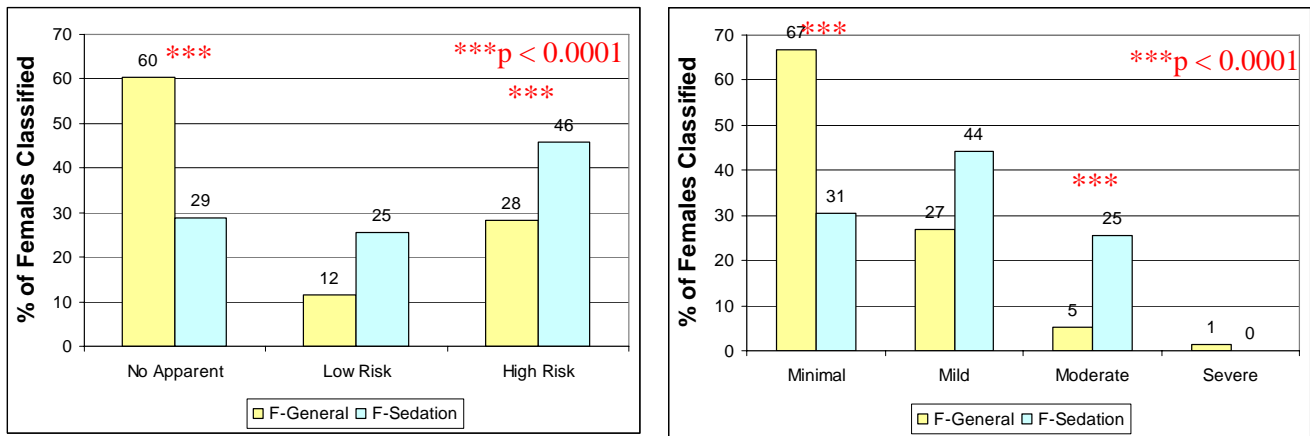


Figure 1. Percentage of female general and sedation dentistry patients classified by OSA risk and OSA severity.

As compared to their general dentistry cohort, the female sedation group were younger ($F=6.95$, $p<0.01$) had greater BMI values ($F=14.57$, $p < 0.0001$) and had greater prevalence of diabetes ($p=0.02$). The females undergoing sedation were predicted to have significantly greater OSA risk and OSA severity as compared to the female general dentistry patients (Figure 1).

Males: In the males, 63% (22/35) were classified with a high risk of having OSA, of these 27% (6/22) were predicted to be severe, 68% (15/22) moderate risk and 4% with mild severity. An additional 17% of the males were classified with low risk (6/35), five were predicted to have mild severity and one with minimal severity). Only 20% of the males were predicted to have no significant risk of having undiagnosed OSA. Of the eight males who were previously diagnosed with sleep apnea, all were classified at high risk with a predicted severity of either moderate or severe. Although the percentage of sedation patients who reported snoring sometimes or greater was less than the general dentistry group (49% vs. 69%, $p<0.05$), the predicted prevalence of high OSA risk was similar to the general dentistry patients and a greater percentage of sedation dentistry patients were predicted to have moderate OSA (Figure 2).

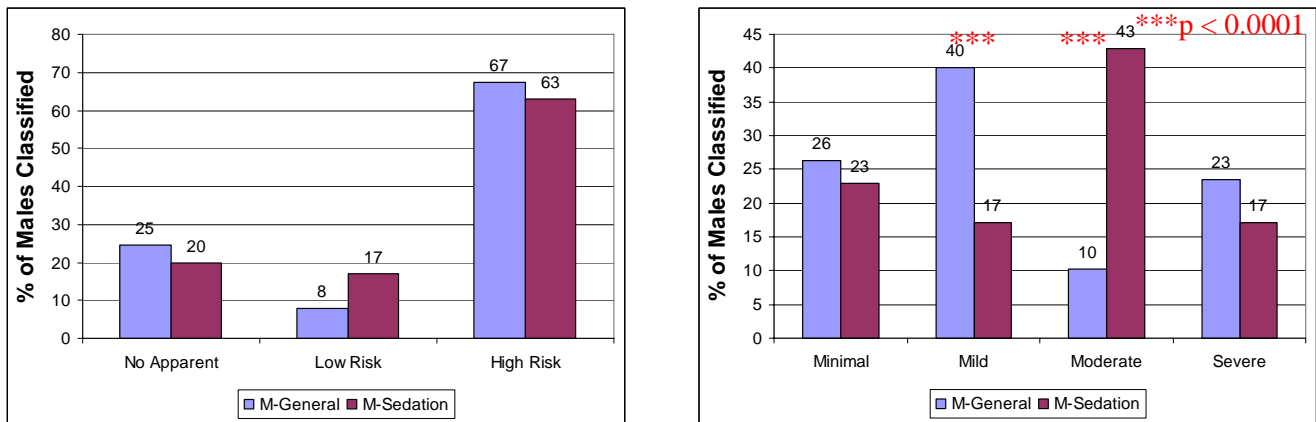


Figure 2. Percentage of male general and sedation dentistry patients classified by OSA risk and OSA severity.

The predicted prevalence of undiagnosed OSA after adjusting for previously reported positive predictive values for the ARES Screener is presented in Figure 3. By way of example, 31% of female and 45% of male sedation patients are expected to have an AHI greater than 15 events/hour.

Conclusions Females constituted a greater percentage of parenteral sedation patients; the prevalence of predicted OSA was 60% greater in this female sedation patient group as compared to a female general dentistry cohort. The estimated prevalence in both females and males suggests that parenteral sedation practitioners should be aware of OSA prevalence and consider screening for OSA as a normal part of their pre-sedation work-up.

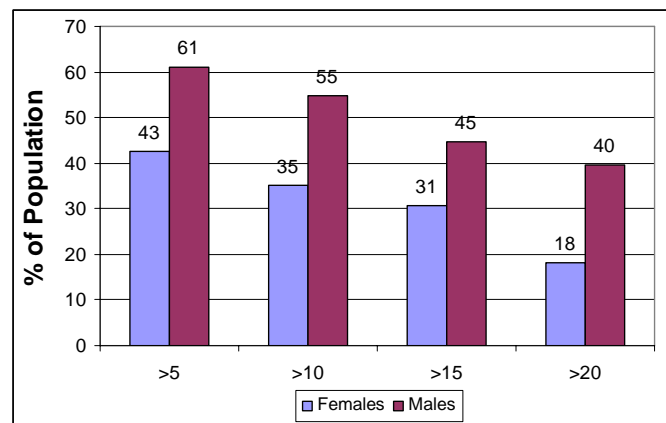


Figure 3. Predicted Prevalence of undiagnosed OSA adjusted for the PPV of the ARES Screener

References:

1. Assessment of Obstructive Sleep Apnea Risk and Severity in Truck Drivers: Validation of a Screening Questionnaire. Levendowski D, Olmstead R, Popovic D et al. *Sleep Diagnosis and Therapy* 2007; 2(2);20-26.
2. Prevalence of probable Obstructive Sleep Apnea Risk and Severity in a Population of Dental Patients. Levendowski DJ, Morgan T, Montague J et al. *Sleep Breath.* 2008;12(4); 303-309.