



# Association of Oral Airway Risk Factors with Obstructive Sleep Apnea in Pediatric Dental Patients

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## INTRODUCTION

- OSA is characterized by **airway obstruction** and oxygen desaturation
- Untreated OSA can be problematic:
  - Neurobehavioral issues (ADHD, aggression)
  - Impaired executive function
  - Systemic risks like hypertension and insulin resistance.
- Adenotonsillar hypertrophy (Type 1) is leading cause of OSA in children
- Pediatric dentists are critical in early recognition of risk factors and to facilitate timely referrals

## METHODS

Retrospective chart review  
 Collected data from Dentrix®:

- OSA diagnosis, age, gender, BMI, occlusal classification, overjet, overbite, Mallampati score, and Brodsky Tonsil Scale.

Inclusion Criteria

- Aged 6 to 18 with OSA diagnosis
- Documented airway, occlusal, and tonsil classifications

Exclusion Criteria

- Chronic lung disease, craniofacial malformations, trisomy 21, history of tonsillectomy and/or adenoidectomy, developmental delay, prematurity < 37 weeks, or active tonsillitis/pharyngitis.

2 Control patients matched by age and gender  
 Each risk factor was first examined individually, followed by multivariable analyses at a two-sided 5% significance level.

## RESULTS

Patients with dental **class 2 malocclusion** had **3.2** increased odds of having OSA compared to patients in class 1 occlusion.

No significant difference between Class 3 and other occlusal classifications

Each mm of increase in **overjet** was associated with **1.37** increase odds of having OSA.

All patients with Class 4 Mallampati score or Class 4 Brodsky (tonsil) score were a part of the experimental group diagnosed with OSA, so no odds ratio could be estimated.

**Table 2: Obstructive Sleep Apnea (OSA) Univariate Odds-Ratio**

	Odds Ratio	p-value
Overjet	1.42 (1.10, 1.83)	0.0077
Overbite	0.99 (0.97, 1.01)	0.0769
Occlusal Class	2 vs 1: 4.97 (1.81, 13.65)	0.0019
	2 vs 3: 2.18 (0.49, 9.61)	0.3038
	3 vs 1: 2.28 (0.65, 8.07)	0.2004
Mallampati Score	{4} Positive for OSA, See below*	0.0019
Tonsil Score	{0,4} Positive for OSA, See below*	<.0001

## TABLES

**Table 1: Demographic profile of study subjects**

	Controls (N = 74)	Experimental (N = 37)	p-value*
Age at Visit	8 (1.9)	8 (1.9)	1.0000
BMI	18.3 (3.6)	20.9 (6.7)	0.0139
Gender			1.0000
	Female	22 (29.7%)	11 (29.7%)
	Male	52 (70.3%)	26 (70.3%)

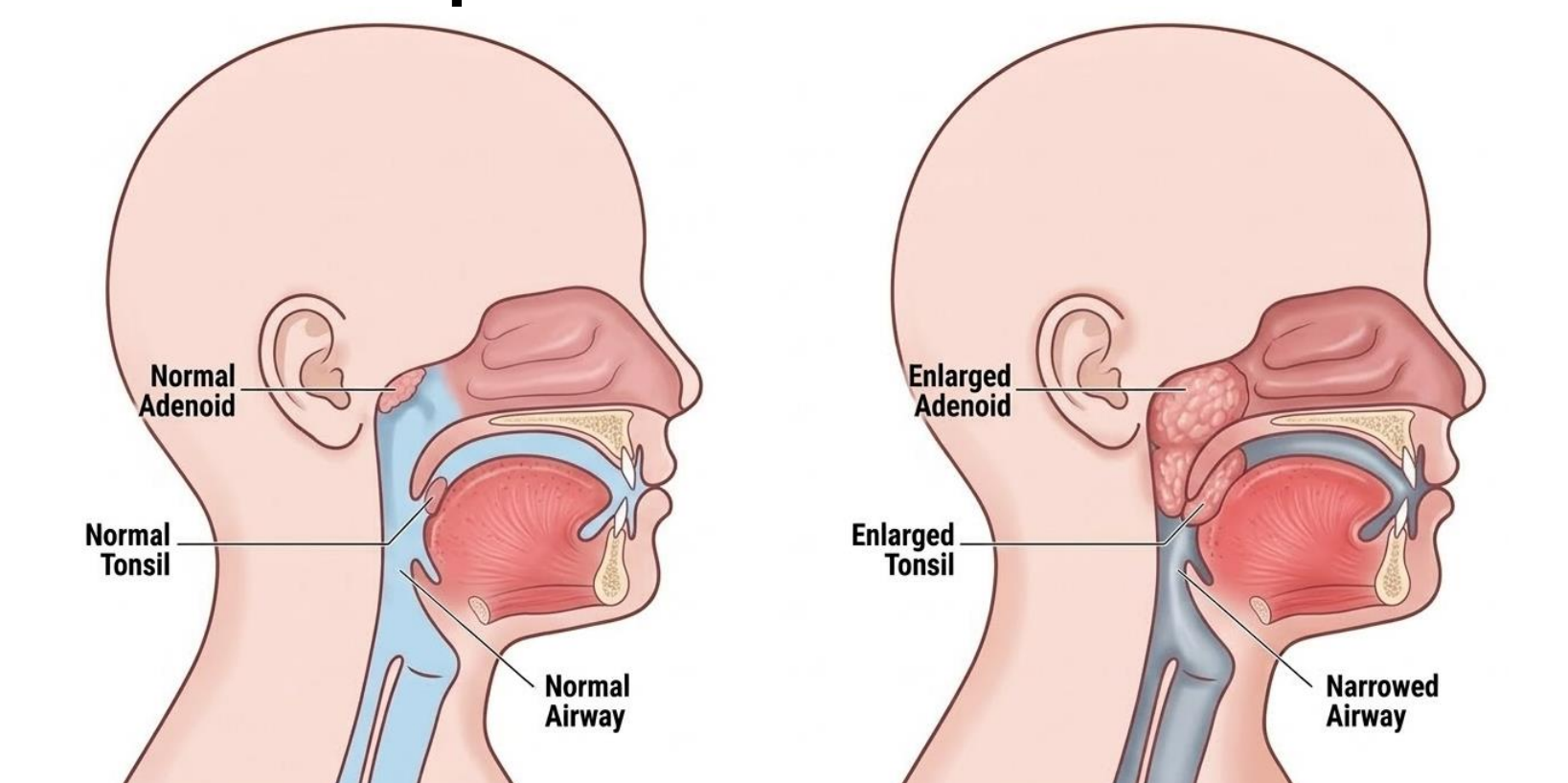
\*Chi-squared test or t-test as appropriate

**Table 3: Odds ratio estimates**

Odds Ratio Estimates and Wald Confidence Intervals				
Odds Ratio	Estimate	95% Confidence Limits	p-value	
Occlusal Class 2 vs 1	<b>3.20</b>	1.07	9.53	0.0370
Occlusal Class 2 vs 3	0.79	0.12	5.14	0.8041
Occlusal Class 3 vs 1	4.05	0.91	18.17	0.0674
Overjet	<b>1.37</b>	1.02	1.86	0.0383

## LIMITATIONS/CONCLUSION

- Relatively small sample size, which was largely in part due to the high exclusion rate among the initially identified patients with OSA.
- Retrospective case-control study
  - There may measurement variability and confounding factors --> inability to establish causality
- These findings should be interpreted in conjunction with patient symptoms and parental reports, such as snoring, mouth breathing, witnessed apneas, or daytime behavioral concerns
- Incorporating validated screening questionnaires (PSQ) may improve risk estimation and help guide timely referral for medical sleep evaluation.



## REFERENCES

