Guest Editorial

Bridging the gap between orthodontics and sleep medicine

Subash Chandra Nayak¹, Anshuman Mishra¹*

¹Dept. of Orthodontics and Dentofacial Orthopaedics, Hi-Tech Dental College & Hospital, Bhubaneswar, Odisha, India

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1. Introduction

Sleep is essential for growth, metabolism, emotional regulation, and cognition, yet sleep-disordered breathing (SDB) including snoring and obstructive sleep apnea (OSA) remains underdiagnosed in children and adolescents. Traditionally managed by ENT, pulmonology, and sleep specialists, the craniofacial contributions to airway dysfunction were often overlooked. Structural risk factors such as maxillary constriction, mandibular retrusion, and increased facial height are closely linked to craniofacial development,[1-3] highlighting the orthodontist's role in early detection. Integrating airway assessment into orthodontic care enables proactive identification and intervention, bridging orthodontics and sleep medicine for preventive, interdisciplinary healthcare.

2. The Craniofacial Connection

Craniofacial anatomy strongly influences upper airway size and airflow during sleep. Features such as maxillary width, mandibular position, tongue posture, and vertical facial proportions can protect or compromise airway patency, often developing during childhood and signaling risk for sleep-disordered breathing (SDB). Fernandes Fagundes et al. (2023) identified craniofacial phenotypes predicting airway vulnerability in children,[1] while Zhou et al. (2023) showed OSA-affected children often have narrow maxillae, retrognathic jaws, and elongated soft palates.[3] Early detection via cephalometrics, 3D models, or CBCT allows orthodontists to intervene and guide growth to reduce later SDB risk.

3. The Orthodontist's Expanding Role

Orthodontic care now extends beyond occlusal alignment to supporting systemic health, particularly via craniofacial growth and airway modulation. Rapid maxillary expansion (RME) corrects transverse deficiencies and enlarges the nasal airway; Zreaqat et al. (2024) showed RME improved maxillary width and airway volumes, enhancing sleep and daytime behaviour.[5] Mandibular advancement devices (MADs) also reduce pediatric OSA severity, as confirmed by Li et al. (2025).[3] These findings highlight the orthodontist's role in improving both facial harmony and respiratory health.

4. Collaboration - The Missing Link

Despite shared clinical goals, orthodontics and sleep medicine often function separately. Sleep physicians assess airway obstruction through polysomnography, while orthodontists focus on craniofacial growth and occlusion. This gap can delay early identification of airway-compromised patients.

Su et al. (2024) showed that craniofacial parameters could be integrated into predictive models to identify children at risk for OSA before symptoms appear.[4] Establishing structured referral pathways and joint diagnostic protocols between orthodontists and sleep physicians can greatly enhance care efficiency. Interdisciplinary collaboration

*Corresponding author: Anshuman Mishra
Email: docanshuman09@gmail.com

ensures that both structural and functional aspects of airway health are addressed transforming management from isolated intervention to comprehensive prevention.

5. Education and Future Directions

The role of orthodontists in early detection and management of pediatric sleep-disordered breathing (SDB) highlights the need for curricular integration of airway assessment, craniofacial growth, and sleep medicine.[1,3,4] Interdisciplinary training with pediatricians, pulmonologists, and otolaryngologists can enhance early recognition and collaborative care.[1]

Emerging technologies, including AI-assisted craniofacial analysis and 3D imaging, offer opportunities for precise, personalized interventions addressing both malocclusion and airway compromise.[2,4] Longitudinal studies are needed to evaluate the impact of interventions such as rapid maxillary expansion and mandibular advancement appliances on sleep, craniofacial development, and overall health.[2,5]

Ultimately, equipping orthodontists with airway-focused skills and fostering integrative, patient-centered approaches will expand the specialty's preventive role and improve long-term pediatric outcomes.[5]

6. Conclusion

Orthodontists play a vital role in the early detection and management of pediatric sleep-disordered breathing. Integrating airway-focused assessments into routine practice, combined with interdisciplinary collaboration, can enhance diagnosis and patient outcomes. Advances in technology, such as AI-assisted craniofacial analysis and 3D imaging, enable personalized interventions that address both malocclusion and airway issues.

Future research should focus on long-term studies to assess the impact of orthodontic interventions on sleep, craniofacial development, and overall health. By adopting a holistic, patient-centered approach, orthodontics can move beyond traditional boundaries and contribute significantly to preventive pediatric care.

7. Source of Funding

8. Conflict of Interest

None.

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