

ASSESSMENT OF AWARENESS AND PERCEPTION OF AIRWAY HEALTH AND ITS ORTHODONTIC IMPLICATIONS AMONG THE GENERAL POPULATION: A CROSS-SECTIONAL QUESTIONNAIRE-BASED STUDY AT DYPU SCHOOL OF DENTISTRY, NAVI MUMBAI

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ABSTRACT:

The relationship between nasorespiratory function and dentofacial development has been widely investigated; however, its clinical significance remains incompletely defined. Impaired nasal breathing has been implicated in altered craniofacial growth patterns, although the strength and consistency of this association remain variable across studies. [1,2] Breathing pattern is an important functional determinant in the development and maintenance of orofacial structures, yet it is frequently under-assessed in routine dental practice. Nasal breathing contributes to airway health through filtration of inspired air, humidification within the nasal passages, and the delivery of nitric oxide to the lower respiratory tract, all of which support normal physiological function.[3,4,5]

INTRODUCTION

Mouth breathing, typically defined as a pattern in which a significant proportion of airflow occurs via the oral cavity rather than the nasal route-may alter orofacial muscular equilibrium and has been associated with changes in craniofacial growth patterns. [6,7] Persistent mouth breathing has been associated with changes in facial morphology and dental structures, potentially leading to unfavorable growth patterns. [8] When persistent during growth, it has been associated with features such as increased lower anterior facial height, maxillary constriction, excessive gingival display, and dentoalveolar malocclusions. [9] Despite the range of complications associated with mouth breathing, early identification and timely intervention can effectively prevent or reduce many of these adverse outcomes. Early identification and management have also been associated with improvements in sleep quality, behaviour, and overall functional well-being in affected children. [10] In this context, improving awareness of normal and altered breathing patterns, along with their potential dentofacial implications, is essential for facilitating early diagnosis and timely intervention. This underscores the importance of integrating airway assessment and preventive orthodontic strategies into routine dental care. [11]

MATERIALS AND METHODS:

A questionnaire-based survey was conducted among adult patients receiving treatment at D. Y. Patil School of Dentistry, Navi Mumbai, with 105 participants. A printed questionnaire was distributed to patients visiting the OPD of various departments of the university.

I.DEMOGRAPHICS

1.Age

- a. 18-25 years
- b. 26-35 years
- c. 36-45 years
- d. 46-60 years
- e. > 60 years

2. Gender

- a. Male
- b. Female
- c. Prefer not to say

3. Have you ever consulted a doctor for breathing problems?

- a. Yes
- B. No

II. AWARENESS OF AIRWAY HEALTH

1.Are you aware that breathing should ideally occur through the nose and not the mouth?

- a. Yes
- b. No

2. Are you aware of conditions like snoring/ sleep apnea?

- a. Yes
- b. No

3. Do you think snoring in children is normal?

- a. Yes
- b. No

4. Are you aware that enlarged adenoids/ tonsils can affect breathing?

- a. Yes
- b. No

III. KNOWLEDGE

1.The normal mode of breathing at rest is

- a. Mouth breathing
- b. Nasal breathing
- c. Both
- d. Don't know

2. Chronic mouth breathing can alter jaw development

- a. Yes
- b. No
- c. Don't know

3. Airway obstruction can worsen the quality of sleep

- a. Yes
- b. No
- c. Don't know

4. Breathing pattern can impact oral health

- a. Yes
- b. No
- c. Don't know

5. Nasal breathing is healthier than mouth breathing

- a. Yes
- b. No
- c. Don't know

IV. PERCEPTION AND ATTITUDE

1.Do you think breathing pattern is important for general health

- a. Yes
- b. No

2. Do you think airway evaluation should be part of routine dental check-ups?

- a. Yes
- b. No
- c. Not sure

3. If advised, would you consider orthodontic treatment to improve breathing?

- a. Yes
- b. No
- c. Maybe

4. Would you like more information about airway related dental issues?

- a. Yes
- b. No

V. AWARENESS AND ORTHODONTIC IMPLICATIONS

1.Are you aware that breathing patterns can affect your jaw growth and facial appearance?

- a. Yes
- b. No
- c. Not sure

2.Do you think that orthodontic treatment can help improve airway space?

- a. Yes
- b. No
- c. Not sure

3. Have you heard that early orthodontic treatment can help in correcting breathing related jaw problems?

- a. Yes
- b. No
- c. Not sure

4.Do you think that mouth breathing can cause crooked teeth?

- a. Yes
- b. No
- c. Not sure

5. Are you aware that orthodontists assess airway during diagnosis?

- a. Yes
- b. No

Name: _____

Signature: _____

RESULTS:

Distribution of the Participants Responses towards Demographic Detail Questions

		Frequency	Percentage	Chi Square	p Value
Age	18 - 25 Years	68	64.8%	152.09	<0.001
	26 - 35 Years	27	25.7%		
	36 - 45 Years	3	2.9%		
	46 - 60 Years	6	5.7%		
	> 60 Years	1	1.0%		
	Total	105	100.0%		
Gender	Male	36	34.3%	10.371	<0.001
	Female	69	65.7%		
	Total	105	100.0%		

Have you ever consulted a doctor for breathing problems?	No	87	82.9%	45.343	<0.001
	Yes	18	17.1%		
	Total	105	100.0%		

Have you ever consulted a doctor for breathing problems?

		Frequency	Percentage	Chi Square	p Value
Are you aware that breathing should really occur through the nose and not the mouth?	No	12	11.4%	62.486	
	Yes	93	88.6%		
	Total	105	100.0%		
Are you aware of conditions like snoring/ sleep apnea?	No	25	23.8%	28.810	
	Yes	80	76.2%		
	Total	105	100.0%		
Do you think snoring in children is normal?	No	76	72.4%	21.038	
	Yes	29	27.6%		
	Total	105	100.0%		
Are you aware that enlarged adenoids/ tonsils can affect breathing?	No	44	41.9%	2.752	0.097
	Yes	61	58.1%		
	Total	105	100.0%		

Distribution of the Participants Responses towards Awareness of Airway Health

		Frequency	Percentage	Chi Square	p Value
Are you aware that breathing should really occur through the nose and not the mouth?	No	12	11.4%	62.486	
	Yes	93	88.6%		
	Total	105	100.0%		
Are you aware of conditions like snoring/ sleep apnea?	No	25	23.8%	28.810	
	Yes	80	76.2%		
	Total	105	100.0%		
Do you think snoring in children is normal?	No	76	72.4%	21.038	
	Yes	29	27.6%		
	Total	105	100.0%		
Are you aware that enlarged adenoids/ tonsils can affect breathing?	No	44	41.9%	2.752	0.097
	Yes	61	58.1%		

	Total	105	100.0%		
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Distribution of the Participants Responses towards KNOWLEDGE

		Frequency	Percentage	Chi Square	p Value
The normal mode of breathing at rest is	Mouth Breathing	6	5.7%	127.419	<0.001
	Nasal Breathing	76	72.4%		
	Both	15	14.3%		
	Don't Know	8	7.6%		
	Total	105	100.0%		
Chronic mouth breathing can alter jaw development	Don't Know	54	51.4%	31.029	<0.001
	No	9	8.6%		
	Yes	42	40.0%		
	Total	105	100.0%		
Airway obstruction can worsen the quality of sleep	Don't Know	16	15.2%	87.486	<0.001
	No	9	8.6%		
	Yes	80	76.2%		
	Total	105	100.0%		
Breathing pattern can impact oral health	Don't Know	29	27.6%	43.200	<0.001
	No	11	10.5%		
	Yes	65	61.9%		
	Total	105	100.0%		
Nasal breathing is healthier than mouth breathing	Don't Know	12	11.4%	130.800	<0.001
	No	3	2.9%		
	Yes	90	85.7%		
	Total	105	100.0%		

Distribution of the Participants Responses towards PERCEPTION AND ATTITUDE

		Frequency	Percentage	Chi Square	p Value
Do you think breathing pattern is important for general health	Don't Know	0	0.0%	89.610	<0.001
	No	4	3.8%		
	Yes	101	96.2%		

	Total	105	100.0%		
Do you think airway evaluation should be part of routine dental check-ups?	Not Sure	42	40.0%	42.229	<0.001
	No	5	4.8%		
	Yes	58	55.2%		
	Total	105	100.0%		
If advised, would you consider orthodontic treatment to improve breathing?	Maybe	35	33.3%	25.200	<0.001
	No	14	13.3%		
	Yes	56	53.3%		
	Total	105	100.0%		
Would you like more information about airway related dental issues?	No	24	22.9%	30.943	<0.001
	Yes	81	77.1%		
	Total	105	100.0%		

Distribution of the Participants Responses towards AWARENESS AND ORTHODONTIC IMPLICATIONS

		Frequency	Percentage	Chi Square	p Value
Are you aware that breathing patterns can affect your jaw growth and facial appearance?	Not Sure	34	32.4%	8.971	0.011*
	No	23	21.9%		
	Yes	48	45.7%		
	Total	105	100.0%		
Do you think that orthodontic treatment can help improve airway space?	Not Sure	45	42.9%	24.914	<0.001
	No	11	10.5%		
	Yes	49	46.7%		
	Total	105	100.0%		
Have you heard that early orthodontic treatment can help in correcting breathing related jaw problems?	Not Sure	36	34.3%	0.057	0.972
	No	35	33.3%		
	Yes	34	32.4%		
	Total	105	100.0%		

Do you think that mouth breathing can cause crooked teeth?	Not Sure	39	37.1%	0.743	0.690
	No	32	30.5%		
	Yes	34	32.4%		
	Total	105	100.0%		
Are you aware that orthodontists assess airway during diagnosis?	.00	1	1.0%	66.057	
	No	69	65.7%		
	Yes	35	33.3%		
	Total	105	100.0%		

Comparison of the Overall Awareness Score between Age of the Participants

	N	Minimum	Maximum	Mean	Std. Deviation	F	p Value
18 - 25 Years	68	1.00	10.00	5.7206	2.44855	2.049	.093
26 - 35 Years	27	1.00	10.00	4.5926	3.10408		
36 - 45 Years	3	6.00	10.00	8.3333	2.08167		
46 - 60 Years	6	1.00	10.00	4.8333	3.06050		
> 60 Years	1	3.00	3.00	3.0000			
Total	105	1.00	10.00	5.4286	2.71342		

Comparison of the Overall Awareness Score between gender

Gender		N	Mean	Std. Deviation	Std. Error Mean	Mean Difference	t	p Value
Total Awareness Score	Male	36	4.6667	3.03315	.50553	-1.15942	-2.113	.037
	Female	69	5.8261	2.46121	.29629			

Comparison of the Overall Awareness Score between history of previous consultation for breathing problems

Have you ever consulted a doctor for breathing problems?	N	Mean	Std. Deviation	Std. Error Mean	Mean Difference	t	p Value

Total Awareness Score	No	87	5.5287	2.72729	.29240	.58429	.830	.408
	Yes	18	4.9444	2.66728	.62868			

Regression Analysis evaluating factors affecting the Awareness

		B	S.E.	Wald	df	P Value	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1a	Age	-.100	.265	.142	1	.706	.905	.539	1.521
	Gender	.367	.483	.580	1	.446	1.444	.561	3.719
	Consulted_Doctor_for_breathing_problem	-.306	.619	.244	1	.621	.736	.219	2.479
	Constant	-1.122	1.138	.972	1	.324	.326		
a. Variable(s) entered on step 1: Age, Gender, Consulted_Doctor_for_breathing_problem.									

1. Distribution of Participants According to Demographic Details

The study population comprised 105 participants, with the majority belonging to the younger age group. Specifically, 64.8% of participants were aged between 18–25 years, followed by 25.7% in the 26–35 years category. Only a small proportion belonged to older age groups, with 2.9% aged 36–45 years, 5.7% aged 46–60 years, and 1.0% above 60 years. This distribution was statistically significant ($p < 0.001$), indicating a predominance of younger individuals in the study sample.

With respect to gender, females constituted a higher proportion (65.7%) compared to males (34.3%), and this difference was also statistically significant ($p < 0.001$). Regarding medical consultation history, a substantial majority of participants (82.9%) reported that they had never consulted a doctor for breathing problems, while only 17.1% had sought such consultation. This difference was statistically significant ($p < 0.001$), suggesting limited prior medical engagement for airway-related concerns among participants.

2. Awareness of Airway Health

A high level of awareness was observed regarding the normal mode of breathing, with 88.6% of participants correctly identifying nasal breathing as the appropriate pattern, while 11.4% were unaware. Similarly, 76.2% of participants reported awareness of conditions such as snoring and sleep apnea, whereas 23.8% lacked such awareness.

When assessing perceptions about snoring in children, 72.4% of participants correctly believed that it is not normal, while 27.6% considered it normal. However, awareness regarding the impact of enlarged adenoids or tonsils on breathing was comparatively lower, with only 58.1% responding affirmatively and 41.9% lacking awareness. Notably, this finding was not statistically significant ($p = 0.097$), indicating variability in understanding this specific aspect of airway health.

3. Knowledge Regarding Airway and Breathing

The knowledge assessment revealed that 72.4% of participants correctly identified nasal breathing as the normal mode of breathing at rest, while smaller proportions reported mouth breathing (5.7%), both modes (14.3%), or lacked knowledge (7.6%). This distribution was statistically significant ($p < 0.001$), reflecting a generally good foundational understanding. However, knowledge gaps were evident in specific areas. More than half of the participants (51.4%) were unaware that chronic mouth breathing can alter jaw development, while only 40.0% correctly acknowledged this association. In contrast, awareness that airway obstruction can worsen sleep quality was high, with 76.2% responding correctly, and only 15.2% reporting lack of knowledge.

Similarly, 61.9% of participants recognized that breathing patterns can impact oral health, while 27.6% were unaware. A strong majority (85.7%) agreed that nasal breathing is healthier than mouth breathing, with very few participants (2.9%) disagreeing. All these knowledge-related findings were statistically significant ($p < 0.001$), indicating meaningful variation in responses and highlighting areas of both adequate awareness and knowledge deficiency.

4. Perception and Attitude Towards Airway Health

The perception and attitude of participants towards airway health were predominantly positive. An overwhelming majority (96.2%) believed that breathing patterns are important for general health, while only 3.8% disagreed, demonstrating strong awareness in this domain ($p < 0.001$).

Regarding the inclusion of airway evaluation in routine dental check-ups, 55.2% supported this idea, although a notable 40.0% were uncertain and 4.8% disagreed, suggesting moderate acceptance but some hesitation among participants ($p < 0.001$).

When asked about willingness to undergo orthodontic treatment to improve breathing, 53.3% expressed willingness, 33.3% were unsure, and 13.3% declined. Additionally, 77.1% of participants showed interest in receiving more information about airway-related dental issues, indicating a strong inclination toward learning and awareness. All these findings were statistically significant ($p < 0.001$), reflecting a generally positive attitude with scope for further educational interventions.

5. Awareness and Orthodontic Implications

Awareness regarding the relationship between breathing patterns and craniofacial development was moderate, with 45.7% of participants responding affirmatively, 32.4% uncertain, and 21.9% unaware. This association was statistically significant ($p = 0.011$), suggesting partial understanding among participants.

Similarly, 46.7% believed that orthodontic treatment can improve airway space, while 42.9% were unsure and 10.5% disagreed, indicating a considerable degree of uncertainty despite statistical significance ($p < 0.001$).

In contrast, awareness about early orthodontic intervention for breathing-related jaw problems was almost evenly distributed, with 34.3% unsure, 33.3% unaware, and 32.4% aware, showing no statistically significant difference ($p = 0.972$). Likewise, perceptions regarding mouth breathing causing crooked teeth were varied and not statistically significant ($p = 0.690$), indicating inconsistent understanding.

Notably, only 33.3% of participants were aware that orthodontists assess airway during diagnosis, while a majority (65.7%) were unaware, highlighting a critical gap in knowledge despite statistical significance in response distribution.

6. Comparison of Overall Awareness Score Across Age Groups

The comparison of overall awareness scores across different age groups showed that participants aged 36–45 years had the highest mean awareness score (mean = 8.33, SD = 2.08), followed by the 18–25 years group (mean = 5.72, SD = 2.45). Participants aged 46–60 years had a mean score of 4.83 (SD = 3.06), while those aged 26–35 years had a slightly lower mean of 4.59 (SD = 3.10). The participant above 60 years had a mean score of 3.00.

Despite these variations, the differences in awareness scores across age groups were not statistically significant ($p = 0.093$), indicating that age did not have a significant influence on overall awareness levels in this study.

7. Comparison of Overall Awareness Score Between Gender

A comparison of awareness scores between genders revealed that females had a higher mean awareness score (mean = 5.83, SD = 2.46) compared to males (mean = 4.67, SD = 3.03). This difference was statistically significant ($p = 0.037$), indicating that female participants demonstrated significantly greater awareness regarding airway health and its implications.

8. Comparison Based on Previous Consultation for Breathing Problems

Participants who had not consulted a doctor for breathing problems had a slightly higher mean awareness score (mean = 5.53, SD = 2.73) compared to those who had consulted (mean = 4.94, SD = 2.67). However, this difference was not statistically significant ($p = 0.408$), suggesting that prior consultation did not significantly influence awareness levels in this study.

9. Regression Analysis of Factors Affecting Awareness

Regression analysis was performed to evaluate the influence of age, gender, and history of consultation for breathing problems on awareness levels. The results indicated that none of the variables significantly predicted awareness. Age ($p = 0.706$), gender ($p = 0.446$), and history of consultation ($p = 0.621$) were all non-significant predictors.

The odds ratios further supported these findings, with confidence intervals crossing unity for all variables, indicating no meaningful association. Thus, it can be concluded that demographic factors and prior medical consultation did not significantly influence awareness levels in the studied population.

DISCUSSION:

The present study demonstrated a generally positive attitude toward airway health among participants. However, awareness regarding the orthodontic implications of airway dysfunction was moderate and inconsistent. A substantial proportion of participants remained uncertain about the role of orthodontic intervention in airway management and the significance of early treatment. A notable gap was identified in the understanding of the orthodontist's role in airway evaluation and management. More than half of the participants lacked awareness of the potential impact of chronic mouth breathing on craniofacial development, and some lacked understanding of the relationship between breathing and oral health.

Previous studies have extensively evaluated the relationship between airway function and dentofacial development. Alterations in breathing patterns, particularly habitual mouth breathing, have been associated with changes in dentofacial morphology and occlusion. Harvold et al. provided early experimental evidence suggesting that persistent mouth breathing can influence the development of dental and skeletal structures, highlighting the importance of normal nasal respiration in craniofacial growth. [12] These findings have been supported by subsequent clinical and epidemiological studies. Kasparaviciene et al., in their investigation involving children aged 5–7 years, reported that mouth breathing was associated with unfavorable changes in dental arch development and the alignment of erupting teeth. [13] Similarly, Dimberg et al. identified a significant relationship between breathing patterns and the presence of malocclusion in children between 3 and 7 years of age. [14] Cephalometric evaluations further strengthen this association. Jaiswal et al. observed that individuals exhibiting mouth-breathing habits demonstrated a shorter maxillary length (ANS–PNS) and a statistically significant variation in the gonial angle (Ar–Go–Me) when compared with nasal breathers. These findings suggest that airway adequacy and breathing patterns may influence craniofacial morphology, although differences in head posture were reported to be minimal and not statistically significant. [15]

Despite extensive research, awareness of the relationship between airway function and dentofacial development remains inconsistent among the general population. Desani et al. reported that many parents were able to identify common signs related to mouth breathing; however, a considerable proportion were unaware of the possible long-term dental and craniofacial consequences associated with this habit. [16] This indicates a gap between the recognition of symptoms and understanding their broader clinical implications. On the other hand, some studies have demonstrated relatively encouraging findings. Sreshtaa V et al. found that more than half of the participants were aware that mouth breathing could potentially influence the alignment of dental arches. Additionally, approximately 50% of the parents reported taking their children for dental examinations at regular intervals of around two months, reflecting a growing awareness regarding preventive dental care. [3]

Awareness and knowledge gaps are also evident among healthcare professionals involved in airway-related conditions. In a survey conducted by Patel et al. among 47 otolaryngologists in Gujarat, less than half of the participants were aware of the potential role orthodontists can play in the management of conditions such as obstructive sleep apnea and mouth breathing. These findings highlight limited interdisciplinary awareness and emphasize the need for improved collaboration between dental and medical professionals [17] Similar observations have been reported among dental practitioners. Kale et al. noted that although dentists generally displayed a positive attitude toward the management of obstructive sleep apnea, their knowledge regarding screening methods, diagnostic protocols, and available treatment options remained inadequate. Such gaps in knowledge may adversely affect early identification, referral patterns, and overall clinical management of airway-related conditions. [18] Manohar et al. also reported that while dentists tend to possess a reasonable understanding of the theoretical aspects of obstructive sleep apnea, their familiarity with its practical management is comparatively limited. [19] In addition, another study revealed that a large proportion of dentists had never referred patients with suspected obstructive sleep apnea to sleep physicians, and nearly 89.8% had not fabricated oral appliances for such patients. These observations suggest inadequate integration of dental practitioners within multidisciplinary sleep medicine frameworks. [20]

Clinical Airway Assessment & Management Protocol

Step 1: Routine Screening

1A. Chair-side History (Screening Questionnaire)

Assess for symptoms suggestive of airway dysfunction or sleep-disordered breathing:

- Habitual snoring
- Daytime sleepiness or fatigue
- Xerostomia on waking
- History of allergic rhinitis, adenotonsillar hypertrophy, or nasal obstruction

1B. Extraoral and Intraoral Clinical Examination

Evaluate for phenotypic features associated with altered breathing patterns:

- Lip incompetence at rest
- Increased lower anterior facial height (vertical growth pattern)
- Transverse maxillary deficiency / high-arched palate
- Marginal gingivitis consistent with mouth breathing
- Anterior open bite or proclination of maxillary incisors

Step 2: Airway Examination

2A. Assessment of Breathing Pattern

- Mirror test (nasal airflow condensation pattern)
- Cotton wisp test (qualitative airflow assessment)
- Water-holding test (functional lip seal competence)
- Observation of resting lip posture

2B. Intraoral and Oropharyngeal Evaluation

- Tonsillar size using Brodsky classification
- Oropharyngeal airway assessment using Mallampati score

- Tongue posture at rest (palatal vs low posture)
- Soft palate morphology and length

2C. Dentofacial and Skeletal Assessment

- Maxillary transverse dimension
- Sagittal mandibular position
- Occlusal relationships (crossbite, open bite)

Cephalometric evaluation (if indicated):

- Posterior airway space (PAS)
- Maxillary length (ANS–PNS)
- Mandibular plane angle (e.g., SN–GoGn)

2D. Risk Stratification

- Low risk: Predominant nasal breathing, absence of symptoms or structural abnormalities
- Moderate risk: Mouth breathing with mild dentofacial or functional alterations
- High risk: Presence of snoring, suspected obstructive sleep apnea (OSA), or significant skeletal discrepancy

Step 3: Diagnostic Classification

Airway-related conditions should be categorized as:

- 1.Functional factors
 - Habitual mouth breathing
 - Altered tongue posture

2.Structural factors

- Transverse maxillary deficiency
- Adenotonsillar hypertrophy
- Nasal obstruction (e.g., deviated septum, turbinate hypertrophy)

3.Sleep-related breathing disorders

- Suspected OSA
- Sleep-disordered breathing with associated symptoms

4.Multifactorial etiology (most common clinical presentation)

STEP 4: AGE-BASED MANAGEMENT

3–7 Years (Interceptive Phase)

- Referral to otolaryngologist for evaluation of upper airway obstruction
- Myofunctional therapy for correction of oral habits
- Nasal hygiene and management of allergic conditions
- Interceptive orthodontics:
 - Maxillary expansion (in cases of transverse deficiency)
 - Habit-breaking appliances where indicated

8–12 Years (Growth Modification Phase)

- Rapid maxillary expansion (RME)
- Functional orthopedic appliances for mandibular retrusion (if indicated)
- Adjunctive myofunctional therapy
- Continued interdisciplinary management

13–18 Years (Late Growth Phase)

- Comprehensive orthodontic treatment with airway considerations
- Limited orthopedic expansion where feasible
- Screening for sleep-disordered breathing

Adults

- Referral to sleep physician for definitive diagnosis (polysomnography where indicated)
- Oral appliance therapy (mandibular advancement devices)
- Orthodontic treatment (expansion or camouflage)
- Surgical interventions in selected cases:
 - Surgically-assisted rapid palatal expansion (SARPE)
 - Maxillomandibular advancement (MMA)

Step 5: Interdisciplinary Management

- Otolaryngologist (ENT): Upper airway obstruction, adenotonsillar pathology
- Sleep physician: Diagnosis and management of OSA

- Myofunctional therapist: Orofacial muscular dysfunction

Step 6: Treatment Planning

- Mouth breathing — Habit correction + management of underlying cause
- Transverse maxillary deficiency — Maxillary expansion
- Adenotonsillar hypertrophy — ENT intervention
- Orofacial muscular dysfunction — Myofunctional therapy
- OSA — Oral appliance therapy / CPAP / medical referral

Step 7: Monitoring And Follow-Up

- Review at 3–6 month intervals in growing patients
- Reassess:
 - Breathing pattern
 - Dentofacial growth changes
 - Patient complianceIndicators of improvement:
- Establishment of lip competence at rest
- Predominant nasal breathing
- Improvement in sleep quality and daytime symptoms

Step 8: Documentation

- Screening findings and symptom history
- Clinical and radiographic observations
- Risk stratification category
- Referrals and interdisciplinary inputs
- Treatment progress and outcomes

The questionnaire consisted of 21 questions including demographic details and questions assessing participants' awareness, knowledge, perceptions, and attitudes toward airway health, as well as their awareness of its orthodontic implications.

Airway Health Self-Screening Questionnaire

1.Do you snore regularly?

- a.Never (0)
- b.Sometimes (1)
- c.Often (2)
- d.Almost always (3)

2. Do you wake up feeling tired despite adequate sleep?

- a.Never (0)
- b.Sometimes (1)
- c.Often (2)
- d.Almost always (3)

3. Do you feel fatigued, or struggle to concentrate during the day?

- a.Never (0)
- b.Sometimes (1)
- c.Often (2)
- d.Almost always (3)

4. Do you wake up with a dry mouth or sore throat?

- a.Never (0)
- b.Sometimes (1)
- c.Often (2)
- d.Almost always (3)

5. Do you have difficulty breathing through your nose or persistent nasal blockage?

- a.Never (0)
- b.Sometimes (1)
- c.Often (2)
- d.Almost always (3)

6. Do you wake up multiple times during the night or have restless sleep?

- a.Never (0)
- b.Sometimes (1)

- c. Often (2)
- d. Almost always (3)

7. Do you suffer from morning headaches, brain fog, or poor memory?

- a. Never (0)
- b. Sometimes (1)
- c. Often (2)
- d. Almost always (3)

8. Do you drool on your pillow while sleeping?

- a. Never (0)
- b. Sometimes (1)
- c. Often (2)
- d. Almost always (3)

9. Do you experience allergies?

- a. Never (0)
- b. Sometimes (1)
- c. Often (2)
- d. Almost always (3)

10. Do you keep your mouth open when you are distracted?

- a. Never (0)
- b. Sometimes (1)
- c. Often (2)
- d. Almost always (3)

TOTAL SCORE: ____/30

Interpretation:

0-7 points: LOW RISK:

Your symptom do not currently suggest significant airway compromise. Maintain good sleeping habits and repeat the screening if symptoms develop.

8-14 points: MILD TO MODERATE RISK:

You may have early airway dysfunction or sleep-disordered breathing. Consider an airway evaluation, especially if symptoms are affecting the quality of your life.

Your symptoms are suggestive of a significant airway problem and warrant assessment by an airway-focused orthodontist, or sleep physician.

22-30 points: VERY HIGH RISK:

There is a strong possibility of clinically significant sleep-disordered breathing or obstructive sleep apnea. A comprehensive airway evaluation and sleep study are recommended.

CONCLUSION:

The airway function and breathing status plays a crucial, and often overlooked role in the development of facial structures as well as the dentition. Within the limitations of this cross-sectional study, the findings indicate that while general awareness and attitudes toward airway health are encouraging, important gaps in specific knowledge, specially in correlation to the field of orthodontics, persist. These findings underscore the need for targeted educational initiatives and increased emphasis on airway assessment in dental practice. Integrating airway health education into routine dental consultations may help bridge existing knowledge gaps and promote early identification and management of airway-related issues.

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