Review Research

A Comprehensive Classification of Snoring Appliances: A Systematic Review

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Received: 01 Nov. 2023 Accepted: 01 Dec. 2023

Abstract

Background and Objective: Obstructive sleep apnea (OSA) and snoring are common conditions that adversely affect sleep quality. Snoring has several etiologies; however, difficulty in airflow through the upper airways is considered a principal mechanism. If snoring persists despite addressing the underlying causes, appliances can help reduce snoring. A variety of appliances with different mechanisms have been proposed. This review aimed to classify appliances, their mechanisms of action, and methods of fabrication.

Materials and Methods: This systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. A literature search was performed in PubMed, Scopus, and Google Scholar for studies published between 1995 and 2024 using the following keywords: mandibular advancement devices, obstructive sleep apnea, snoring, continuous positive airway pressure, and dentistry.

Results: Of the 200 initially identified articles, 25 relevant abstracts were selected for full-text review, and 13 studies were ultimately included in the review. This study investigated the fabrication methods and characteristics of snoring appliances. Based on the reviewed literature, appliances used for snoring and OSA management were categorized into five groups: custom-made mandibular advancement splints (MASs), prefabricated mandibular advancement devices (MADs), modified complete dentures, bite-raising appliances (BRAs), and tongue-retaining devices (TRDs).

Conclusion: A wide variety of appliances have been proposed for snoring. MASs are the most frequently reported appliances, followed by TRDs. Current evidence suggests that these appliances are primarily effective in mild and moderate cases.

Keywords: Mandibular advancement devices; Obstructive sleep apnea; Snoring; Continuous positive airway pressure; Dentistry

Citation: Jahangiri M, Shayegh SS. **A Comprehensive Classification of Snoring Appliances: A Systematic Review.** J Sleep Sci 2023; 8(3-4): 90-99.

Introduction

Sleep disorders represent a major public health concern. Their significance and prevalence were highlighted in a 2006 report by the American National Research Council, which estimated that approximately 70 million Americans experience chronic sleep problems (1).

Sleep disorders may arise from various factors, including anatomical abnormalities such as an enlarged soft palate or a narrowed upper airway, nasal conditions such as septal deviation, obesity, hypertension (HTN), alcohol consumption, inappropriate sleep posture, sinusitis and allergies, and hormonal fluctuations, including those associated with menopause in women (2).

Generally, these etiological factors can be categorized into two main categories: those related to the oral cavity and those unrelated to it (Figure 1). Sleep-related bruxism, primary snoring, and obstructive sleep apnea (OSA) are examples of sleep disorders with oral manifestations. Collaboration between dentists, prosthodontists, and sleep specialists may facilitate the diagnosis and management of oral cavity-related sleep problems, thereby improving overall patient health (3).

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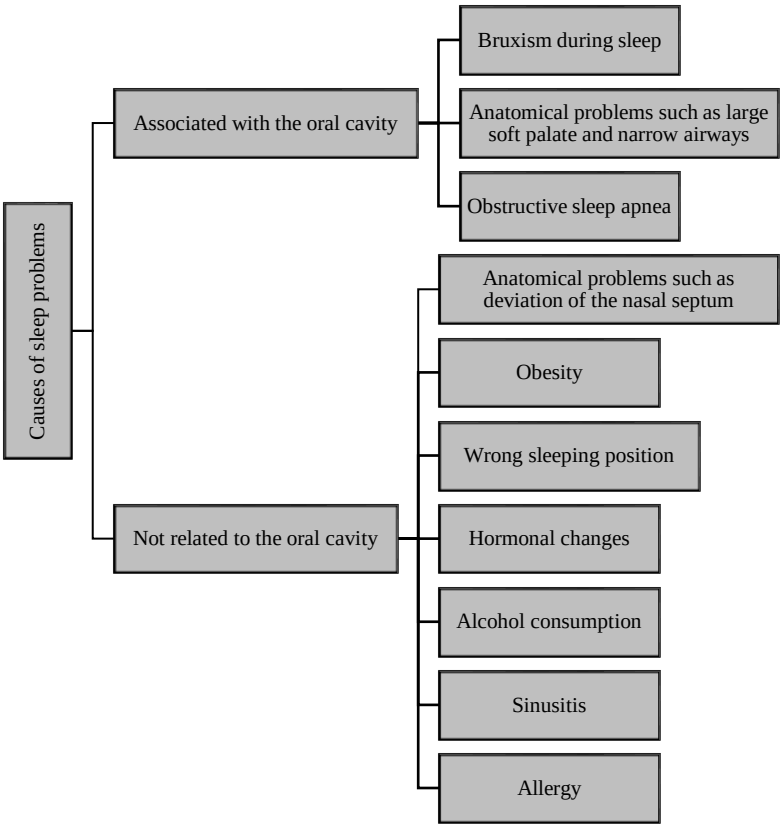

Figure 1. Causes of sleep problems

OSA syndrome (OSAS), a term first coined by Lee (4), encompasses a spectrum of sleep-related breathing disorders ranging from simple snoring to OSA (5). Across this spectrum, snoring may be present at various levels of airway obstruction and can occur in both mild and severe forms of apnea (6, 7). Snoring is primarily caused by upper airway obstruction, leading to vibration of the uvula, soft palate, and surrounding tissue during respiration, thus generating snoring sounds (8).

Snoring may represent an early or accompanying symptom of OSA. Apnea is defined as a cessation of airflow, characterized by a reduction in airflow of more than 90% for at least 10 seconds (9, 10). Recurrent apneic events are associated with various health problems, including cardiovascular issues, high blood pressure, impaired quality of life (QOL), reduced sleep quality, decreased work performance, cognitive dysfunction, and psychological disturbances (11). Some studies have suggested an association between temporomandibular joint (TMJ) disorders and OSA (12). Consequently, attention to the diagnosis and treatment of OSA has increased in recent years (12).

Numerous therapeutic options are available for the management of snoring and OSA. The primary goal of treatment is to improve upper airway patency. Available treatment modalities include positional therapy, dietary modifications, weight loss, continuous positive airway pressure (CPAP) therapy, mandibular advancement devices (MADs), and surgical interventions (3). The selection of the appropriate treatment method depends on disease severity. Polysomnography (PSG) is considered the gold standard for diagnosing and determining the severity of OSA. PSG involves overnight monitoring in a sleep laboratory to record multiple physiological parameters, including electroencephalography (EEG), electrooculography (EOG), electrocardiography (ECG), respiratory effort measured by air pressure sensors and thoracoabdominal sensors, and arterial oxygen saturation assessed by pulse oximetry (12-15).

The treatment choice depends on the severity and underlying cause of apnea. In patients with moderate to severe OSA, CPAP therapy and MADs are commonly used and have demonstrated clinical efficacy (9). MADs advance the man-

dible anteriorly, similar to orthodontic Class II appliances, thereby increasing upper airway space and alleviating OSA (16).

Various oral appliances have been developed for the treatment of snoring, differing in design, fabrication techniques, and mechanisms of action (17). This systematic review aims to classify oral appliances used for sleep-disordered breathing (SDB), their design and fabrication methods, and clinical effectiveness.

Materials and Methods

This systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (18) and followed the PICO(S) approach, defining patient or population, intervention, control or comparison, outcomes, and study design. The PICO question was formulated as follows: In patients with mild to moderate snoring (P), do snoring appliances (I) differ in effectiveness on snoring (O) depending on their manufacturing methods (C)?

A search strategy was developed, and inclusion and exclusion criteria were predefined. Inclusion criteria were studies published between June 1995 and June 2024, written in English, and including all or part of the selected keywords in their titles or abstracts. Exclusion criteria included non-English studies and studies that did not address the defined PICO question (Table 1).

The electronic databases PubMed, Google Scholar, and Scopus were searched using the following search terms: ("Mandibular Advancement Devices" OR "Oral Appliances") AND ("Obstructive Sleep Apnea" OR Snoring OR Hypopnea) AND "Continuous Positive Airway Pressure" AND Dentistry. The study selection process consisted of three stages: initial screening of titles and abstracts, full-text review of eligible studies, and final selection of articles for qualitative analysis.

Results

Following database searches in PubMed, Scopus, and Google Scholar, all identified records were imported into EndNote for deduplication. After removal of duplicates, 200 unique records were subjected to a two-stage screening process. First, titles and abstracts were independently screened by two reviewers according to predefined inclusion criteria (Table 1), yielding 25 potentially relevant articles. Systematic reviews and studies unrelated to the PICO question were excluded.

Full texts of the remaining 13 potentially eligible articles were then retrieved and independently assessed for final inclusion by two reviewers. Any disagreements at either screening stage were resolved through discussion or consultation with a third reviewer. This process, conducted in accordance with the PRISMA guidelines, resulted in a final inclusion of 13 studies (Table 2, Figure 2).

For quality assessment, the Cochrane Risk of Bias 2 (RoB 2) tool was used for randomized controlled trials (RCTs) (Table 3), while Risk of Bias in Non-randomized Studies of Interventions (ROBINS-I) was applied to non-randomized studies, including clinical audits, as for the study by Izci et al. which demonstrated a serious overall risk of bias. Specifically, the study presented a low risk in intervention classification and deviations from intended interventions; however, it showed moderate risk in participant selection, missing data, and selection of reported results. A serious risk was identified in the domains of confounding and outcome measurement (25). Based on these assessments, the included studies demonstrated a low to moderate risk of bias.

Discussion

Types of snoring appliances

Several types of oral appliances are available for the management of snoring, including custom-made MADs, prefabricated MADs, modified complete dentures, bite-raising appliances (BRAs), and tongue-retaining devices (TRDs) (Figure 3). These appliances differ in design, fabrication methods, and mechanisms of action.

Table 1. Inclusion and exclusion criteria for study selection in the systematic review

Inclusion criteria	Exclusion criteria
Interventional studies or clinical trial studies including clinical audits assessing therapeutic outcomes	Reviews, expert opinions, non-interventional observational studies
Studies addressing the PICO research question	Studies not relevant to the PICO research question
Studies providing a clear description of the appliance	Studies that do not provide a clear description of the appliance
Studies detailing the fabrication process	Studies that do not clearly detail the fabrication process

PICO: Population, intervention, comparison, and outcome

Table 2. Summary characteristics of the studies included in the systematic review

Appliance features									
Appliance classification	**Appliance description**	**Author**	**Year**	**Place of manufacture**	**Occlusal coverage**	**Design (monoblock/bimaxillary)**	**Mandibular advancement (anterior/lateral)**	**Screws and connectors**	**Reported outcomes**
Custom-made MAS	MAS with anterior connectors	Sutherland et al. (19)	2011	Orthodontic Master, Singapore	Full occlusal coverage	Bimaxillary	-	Anterior connectors	MAS is the most widely used snoring appliance for snoring management
	MAS with lateral connectors	Sutherland et al. (19)	2011	SomnoMed, Sydney, Australia	Full occlusal coverage	Bimaxillary	-	Lateral connectors	MAS is the most widely used snoring appliance for snoring management
	MAS with Hyrax	Aarab et al. (20)	2005	Oral Kinesiology Clinic, Department of Oral Function, Academic Centre for Dentistry Amsterdam, Amsterdam, Netherlands	Full occlusal coverage	Bimaxillary	-	Lateral connectors	The appliance was tested in 17 participants and showed favorable outcomes in mild to moderate sleep apnea
	Monoblock MAS	Sutherland et al. (19)	2011	Courtesy of the Orthodontic Laboratory, National Dental Centre of Singapore, Singapore	Full occlusal coverage	Monoblock	-	Lateral connectors	MAS is the most widely used snoring appliance for snoring management
	F22 MAS*	Cremonini et al. (9)	2024	Clinics of the School of Orthodontics, University of Ferrara, and the Otorhinolaryngology and Pneumology Departments, Sant'Anna Hospital, Cona, Italy	Full occlusal coverage	Bimaxillary	Anterior	Anterior connectors	The appliance was tested in 19 participants and showed positive outcomes in cases of simple snoring
	Custom-made MAS	Maguire et al. (21)	2010	Newcastle Dental Hospital, Newcastle, United Kingdom	Full occlusal coverage	Bimaxillary	Anterior	-	This study compared MAS and the BRAs and demonstrated that both improved mild and moderate snoring, with no significant difference between groups
	MAS	O'Sullivan et al. (22)	1995	Department of Pulmonary Physiology, Sir Charles Gairdner Hospital, Nedlands, Australia	Molar, premolar, and canine coverage	Monoblock	Lateral	-	Use of this appliance in 57 patients showed acceptable outcomes
	Magnetic MAS	Bernhold and Bondemark (23)	1998	Department of Otorhinolaryngology, Central Hospital, Kristianstad, Sweden	Full occlusal coverage	Bimaxillary	-	Magnet + Adams clasp	The appliance did not adversely affect the TMJ and improved breathing during sleep
	Herbst MAS	Smith and Battagel (24)	2004	Dental Institute, Royal London Hospital, London, United Kingdom	Full occlusal coverage	Bimaxillary	Lateral	Herbst attachment (rod and tube)	The appliance demonstrated high effectiveness in patients with snoring of non-apneic cause
	Mandibular repositioning splint	Izci et al. (25)	2005	Department of Sleep Medicine, Post-Graduate Dental Institute, Edinburgh University, Edinburgh, United Kingdom	Partial occlusal coverage	Monoblock	-	Adams clasp	Positive outcomes were reported following the use of this appliance

Table 2. Summary characteristics of the studies included in the systematic review (continue)

Appliance features									
Appliance classification	**Appliance description**	**Author**	**Year**	**Place of manufacture**	**Occlusal coverage**	**Design (monoblock/bimaxillary)**	**Mandibular advancement (anterior/lateral)**	**Screws and connectors**	**Reported outcomes**
Prefabricated MADs	Klearway appliance	Gauthier et al. (26)	2009	Classic Dental Laboratory, Ottawa, Ontario, Canada	Full occlusal coverage	Bimaxillary	-	-	Both appliances were effective; however, the Silencer appliance was preferred due to greater patient-reported comfort
	Silencer appliance	Gauthier et al. (26)	2009	Silencer Laboratory, Burnaby, British Columbia, Canada	Full occlusal coverage	Bimaxillary	-	-	
Complete dentures	Modified complete denture	Tripathi et al. (27)	2017	Department of Prosthodontics, Saraswati Dental College and Hospital, Lucknow, India, in collaboration with Department of Pulmonary Medicine, King George's Medical University, Lucknow, India	Full occlusal coverage	Bimaxillary	-	Brass screw + soft liner	The modified appliance showed acceptable improvements in sleep quality and snoring reduction in a cohort of 10 patients
TRDs	LOA	Kao et al. (28)	2020	Nature Dental Clinic, Puli Township, Nantou, Taiwan	Full occlusal coverage	Monoblock (maxilla)	-	-	Snoring intensity decreased by 5% for each 1-cm increase in tongue retractor height
	TRD	Sutherland et al. (19)	2011	Innovative Health Technologies Ltd., Dunedin, New Zealand	Full occlusal coverage of the maxilla	Monoblock (maxilla)	-	-	90% of patients preferred MAS appliances over TRDs
	TRD + MAS	Banu et al. (29)	2021	Department of Otolaryngology and Department of Prosthodontics, Sri Ramachandra Institute of Higher Education and Research, Chennai, India	Full occlusal coverage	Monoblock	-	-	A hybrid appliance combining TRD and MAS appliances was used to fabricate a snoring appliance for completely edentulous patients
BRAs	BRA	Maguire et al. (21)	2010	Newcastle Dental Hospital, Newcastle, United Kingdom	Full occlusal coverage	Monoblock	-	-	This study compared MAS and the BRAs, and demonstrated that both improved mild and moderate snoring, with no significant difference between groups
	Splint with bite raising	Aarab et al. (30)	2010	Center for Sleep- Wake Disorders, Slotervaart Medical Center, Amsterdam, Netherlands	Full occlusal coverage	Bimaxillary	-	Hyrax + elastic	Use of the bite-opening appliance without mandibular protrusion resulted in backward mandibular rotation, with 5 participants experiencing increased breathing difficulty during sleep compared with no appliance use; optimal outcomes were observed with 50-75 percent mandibular protrusion.

BRA: Bite-raising appliance; MAD: Mandibular advancement device; MAS: Mandibular advancement splint; TMJ: Temporomandibular joint; TRD: Tongue-retaining device; LOA: Lin oral appliance

* Mandibular advancement splint

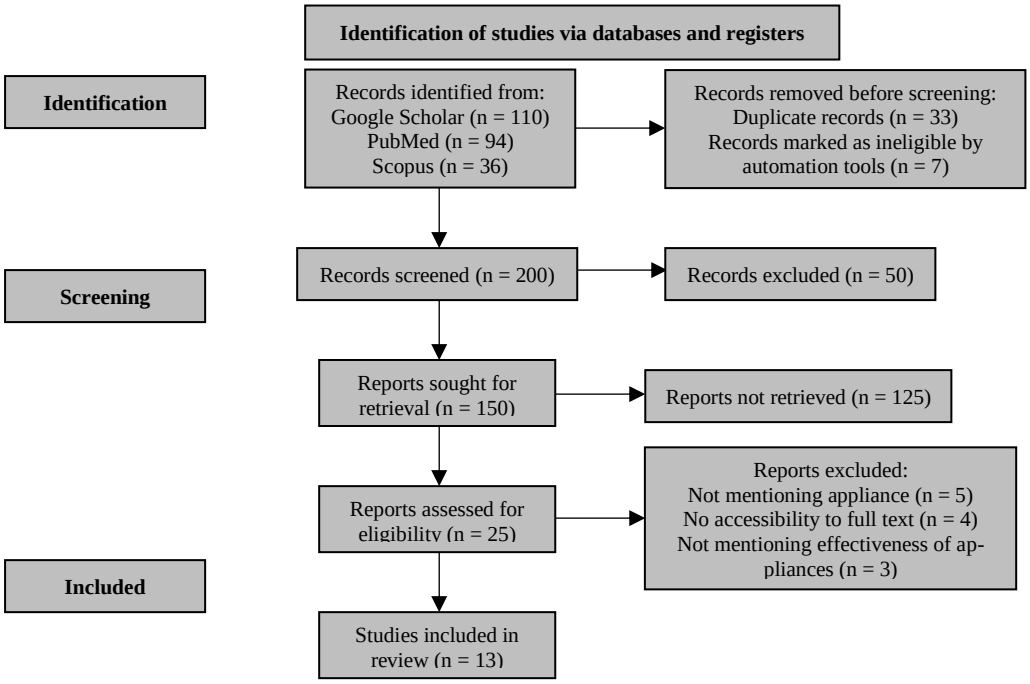

Figure 2. Flow diagram of the systematic review

Custom-made MADs

O'Sullivan et al. provided a detailed description of custom-made MADs. These appliances are fabricated using maxillary and mandibular arch impressions, with jaw relations recorded using a wax bite registration in a protruded mandibular position. The appliance is constructed from polyvinyl acetate-polyethylene acrylic and covers the molars and canines of both arches. Acceptable outcomes were reported in a study of 57 patients (22).

In 1998, Bernhold and Bondemark introduced the Swedish-designed magnetic splint appliance, consisting of two separate splints covering the entire occlusal surface. Splints were fabricated with a height of 14-18 mm and an inter-splint angle of 10-15 degrees. After fabrication, the splints were placed in the patient's mouth, and mandibular protrusion was set at 50% to 70% of maximum protrusion. Magnets were then incorporated into the splints within a protruded position using self-polymerizing acrylic. The study reported improved nocturnal breathing with no adverse effects on the TMJ (23).

Smith and Battagel investigated the Herbst mandibular advancement splint (MAS) in 35 patients with snoring. The appliance consists of an acrylic splint covering the entire occlusal surface of both the maxilla and mandible. It uses a telescopic rod-and-tube mechanism that permits mandibular opening and lateral movements while restricting retrusion.

Table 3. Results of the risk of bias assessment of included studies using the Cochrane Risk of Bias 2.0 (RoB 2.0) tool

Studies	Risk by domain					Risk of bias
	Abstract	Introduction	Methods	Result	Discussion	
Sutherland et al. (19)	Yes	Yes	No	Yes	Yes	Moderate (some concerns)
Maguire et al. (21)	Yes	Yes	Yes	Yes	Yes	Low
Aarab et al. (20)	Yes	Yes	Yes	Yes	Yes	Low
Aarab et al. (30)	Yes	Yes	Yes	Yes	Yes	Low
Banu et al. (29)	Yes	Yes	Yes	Yes	Yes	Low
Cremonini et al. (9)	Yes	Yes	Yes	Yes	Yes	Low
O'Sullivan et al. (22)	Yes	Yes	Yes	Yes	Yes	Low
Bernhold and Bondemark (23)	Yes	Yes	Yes	Yes	Yes	Low
Smith and Battagel (24)	Yes	Yes	Yes	Yes	Yes	Low
Gauthier et al. (26)	Yes	Yes	Yes	Yes	Yes	Low
Kao et al. (28)	Yes	Yes	Yes	Yes	Yes	Low
Tripathi et al. (27)	Yes	Yes	Yes	Yes	Yes	Low

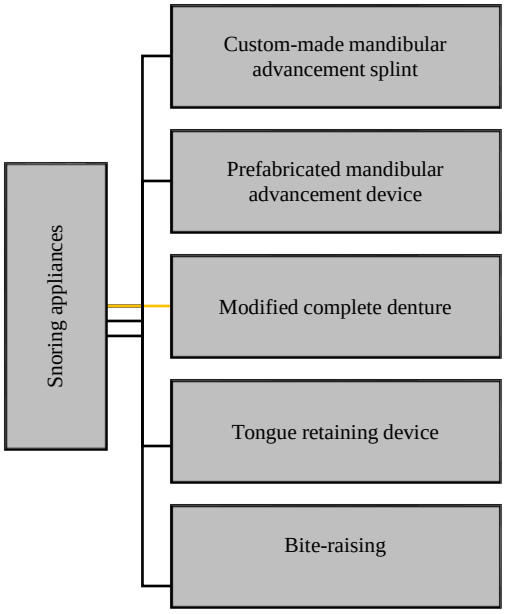

Figure 3. Classification of oral appliances used for snoring management

The study concluded that the Herbst appliance was highly effective in reducing snoring in patients without apnea (24).

Izci et al. investigated mandibular repositioning splints in 144 patients referred to the sleep health department at the University of Edinburgh, United Kingdom (UK), with mandibular advancement set at approximately 80% of maximum comfortable protrusion and an inter-arch clearance of 2-4 mm. Fabricated using dual laminate sheets, these appliances incorporated Adams clasps and did not cover the entire occlusal surface; nonetheless, they demonstrated positive results in snoring reduction (25).

Aarab et al. designed an adjustable MAS appliance, consisting of two hard acrylic splints connected by screws (Hyrax screws) and elastics, facilitating mandibular protrusion. A key advantage of this design was the adjustable degree of protrusion. In a study of 17 participants, acceptable outcomes were reported in mild to moderate OSA (20). A subsequent study in 2010 further evaluated different degrees of mandibular protrusion (0%, 25%, 50%, and 75%), using a modified MAS appliance (MAS + Hyrax), with optimal results observed at 50%-75% protrusion (30).

Sutherland et al. examined the most commonly used appliances for snoring treatment, highlighting two types of MAS appliances (19). The first type is a monoblock appliance that covers all teeth in both the maxilla and mandible. The second is a two-piece (biblock) MAS appliance, in which the maxillary and mandibular components are connected by a connector. These connectors can be anterior (as designed by Orthodontic Master, Singapore) or lateral (as seen in SomnoMed appliances, Sydney, Australia) (19).

More recently, Cremonini et al. introduced a novel MAD called the F22 MAD (10), a two-piece (bi-block) appliance, fabricated from DURASOFT thermoplastic polyurethane (TPU) reinforced with low-shrinkage acrylic resin. A titanium pin is positioned behind the upper anterior teeth, while the mandibular splint incorporates a wide slot extending from canine to canine, accommodating the pin. This design allows lateral mandibular movement while maintaining a protrusion at approximately 75% of maximum protrusion. Positive outcomes were reported in a cohort of 19 patients with snoring (9).

Prefabricated MADs

Gauthier et al. evaluated two prefabricated MAS devices, the Klearway and the Silencer, and reported snoring reduction with both appliances, with greater patient comfort reported for the Silencer. Both devices are biblock appliances providing full occlusal coverage and an interincisal space of 9-12 mm.

The Klearway appliance features a palatal connector design that preserves lingual space, facilitating tongue protrusion. Fabricated from thermoactive acrylic, this appliance is immersed in warm water before intraoral adaptation, allowing the clinician to adjust the degree of mandibular protrusion (26).

The Silencer appliance, developed by Halstrom and in clinical use since the 1990s, uses a titanium pin and hinge that allows lateral mandibular movement while minimizing potential harm to the TMJ. It is also adaptable using a boil-and-bite technique (30).

Modified complete dentures

Almeida et al. evaluated the effect of complete denture use on sleep apnea and snoring in 23 edentulous patients. The study reported that nighttime denture use exacerbated these conditions in 50% of participants (31). More recent investigations have further explored the relationship between complete denture use and snoring. Emami et al., in a study involving 77 participants, found no significant reduction in sleep apnea with nighttime denture use (32). In contrast, Chen et al. reported a significant correlation between nightly

denture use and increased chances of sleep apnea and snoring (33).

Krishnamurthy et al. investigated the effect of implant-supported removable prostheses on airflow in the upper, middle, and lower airways, demonstrating significant improvements in upper airway patency (34). A 2023 review by Krishnamurthy et al. acknowledged the potential role of removable complete dentures in reducing OSA, but concluded that mandibular advancement appliances were considerably more effective (35).

Considering that complete dentures alone may not be effective for snoring management and may, in some cases, exacerbate the condition, Tripathi et al. proposed modifications to convert dentures into functional MADs (36). This technique involves taking impressions of both arches, followed by facebow articulation with the maxillary denture in place. A 3-mm thick wax bite registration was obtained with the mandible in a protruded position. The dentures were attached to an articulator, and the articulator screw was secured at approximately 70% of the maximum protrusive position. Heat-cured soft-liner material was applied to the mandibular denture from the first premolar to the second molar region and set in the protruded position. Holes were created in the first molar region of both dentures, and the dentures were then connected using a brass screw. This allows the patient to use their existing dentures as a MAD during sleep. In the daytime, the screw can be loosened and the soft liner removed, thereby permitting conventional denture use.

This modified denture appliance demonstrated acceptable outcomes in a cohort of 10 patients, reporting improvements in sleep quality and reductions in snoring (36). Tripathi et al. further evaluated this appliance in a 2016 study involving 17 participants, demonstrating significant improvements in sleep quality (27).

TRDs

In 2020, Kao et al. introduced a novel appliance for snoring treatment termed the Lin Oral Appliance (LOA) (28). This maxillary appliance consists of two components: dental braces and a tongue compressor. The tongue retractor height is adjustable from 0.5 to 3.5 cm. In a study involving 42 patients, the LOA was evaluated at various retractor heights (0.5, 1, 2, 2.5, 3, and 3.5 cm). The study indicated a 5% reduction in snoring for each 1-cm increase in retractor height (28).

Chiang et al. examined the long-term effects of LOA use and concluded that a tongue retractor height of 2.5 cm yielded optimal results in snoring reduction (37).

In a 2020 review, Sutherland et al. reviewed commonly used snoring appliances and reported that 90% of patients preferred MAS over TRD (19). The TRD described in the review, designed by Innovative Health Technologies Ltd. (Dunedin, New Zealand), advances the tongue using saliva suction and negative pressure, and is supported by the upper lip (19).

In 2021, Banu et al. addressed the challenge of fabricating MAS appliances for completely edentulous patients by introducing a novel appliance incorporating features of both MAS and TRD designs (29). The technique involved taking impressions of both jaws and fabricating baseplates with wax rims. With the mandible positioned in maximum protrusion, the baseplates and wax rims were joined. A window was created in the anterior region of the combined assembly, and impression material was placed within the lingual space. The patient was instructed to protrude the tongue, capturing its position in the impression. This impression was then used to fabricate the final appliance (29).

BRAs

Aarab et al. investigated the effects of varying degrees of mandibular protrusion on snoring (30). In this study of 20 patients, protrusion levels of 0%, 25%, 50%, and 75% were evaluated. The 0% protrusion involved bite opening without mandibular advancement. This configuration resulted in posterior mandibular rotation, and five participants reported increased breathing difficulty during sleep compared with sleeping without an appliance. The greatest reduction in snoring was observed at protrusion levels of 50%-75%. The authors suggested that the use of BRAs warranted further investigation (30).

In the same year, Maguire et al. compared custom-made MAS with BRAs (21). The MAS used in the study was designed at Newcastle Dental Hospital, Newcastle, UK. The BRA was used passively, opening the bite with some mandibular rotation but without any anterior advancement. The study concluded that both appliances improved mild to moderate snoring, with no significant difference in effectiveness between groups (21).

This review explored the diverse landscape of oral appliances used in snoring management, categorizing them as custom-made MADs, prefabricated MADs, modified complete dentures, TRDs,

and BRAs (19-30, 36). Custom-made MADs, fabricated from materials such as polyvinyl acetate-polyethylene acrylic, have demonstrated efficacy across multiple studies, with some designs incorporating magnetic or telescopic mechanisms to enhance function and comfort (19).

Prefabricated MADs offer a more accessible treatment option, with appliances such as the Klearway and Silencer showing favorable outcomes, particularly the Silencer with respect to patient comfort and TMJ considerations (26). While complete dentures appear to be ineffective and may exacerbate snoring, modified denture-based MADs have demonstrated positive outcomes in limited studies (27). TRDs, including the LOA, offer an alternative approach by stabilizing the tongue; however, patient preference generally favors MADs (28). BRAs may reduce snoring through bite opening, but mandibular rotation must be carefully controlled to avoid potential breathing difficulties, and their effectiveness remains inconclusive compared to MADs across studies (20, 21).

This review has several limitations. The heterogeneity of study designs, appliance types, and outcome measures limited direct comparisons across studies. Additionally, although a comprehensive search of three databases was performed, the possibility of missing relevant literature cannot be excluded.

Conclusion

The findings of this review support the effectiveness of appliance therapy predominantly in mild to moderate snoring. Among the available appliance types, MASs appear to demonstrate superior overall efficacy. The findings further indicate that bite opening associated with appliance therapy does not adversely affect the TMJ, in agreement with previous reports. Given the growing interest in appliance-based snoring management and the increasing integration of digital dentistry, future research should investigate the effectiveness of digitally designed and manufactured appliances.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

The authors gratefully acknowledge the research assistance provided by Shahed University of Medical Sciences, Tehran, Iran, as well as the staff of the center for their invaluable support and guidance.

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