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The Knowledge and Awareness of General Dental Practitioners and Medical Specialist Regarding the Management of Snoring and Sleep Apnea Using Oral Appliances in Tamilnadu Population- A Questionnaire Study

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ABSTRACT

Background: Obstructive Sleep Apnea (OSA) is a prevalent but underdiagnosed condition that can lead to severe health complications if left untreated. Oral appliances (OAs) have emerged as an alternative to Continuous Positive Airway Pressure (CPAP) therapy, particularly for mild to moderate OSA. However, awareness and knowledge about OA therapy among healthcare professionals, especially dentists and general practitioners, remain limited.

Objective: This study aims to assess the awareness and knowledge of sleep apnea management among dentists and general practitioners in Tamil Nadu, focusing on the role of oral appliance therapy in OSA treatment.

Methods: A descriptive cross-sectional study was conducted among healthcare professionals, including general dentists, general medical practitioners, pulmonologists, and ENT specialists in Tamil Nadu. Data were collected through an online questionnaire (Google Forms), comprising multiple-choice, Likert-scale, and Yes/No questions. A total of 305 responses were analyzed using SPSS software.

Results: Among the respondents, 65.4% were general dentists, 31.4% were general medical practitioners, and the remaining were specialists. Only 28.3% demonstrated complete awareness of oral appliances, while 51.9% had partial knowledge but expressed interest in learning more. A majority (72.5%) identified common side effects of oral appliances, such as jaw pain and tooth movement. Additionally, 72.1% correctly identified polysomnography as the diagnostic test for OSA before prescribing oral appliances. A significant association was found between profession and knowledge about oral appliance suitability and management responsibility (p=0.037). Despite this, only 10% had attended training or workshops on OSA management with oral appliances.

Conclusion: The study highlights a substantial knowledge gap regarding OSA management and oral appliance therapy among healthcare professionals in Tamil Nadu. Although many practitioners recognize the role of oral appliances, formal training remains inadequate. Strengthening education and interdisciplinary collaboration between dentists and general medical practitioners is essential for improving OSA diagnosis and treatment outcomes.

Keywords: Obstructive Sleep Apnea, Oral Appliances, Dentists, General Practitioners, Awareness, Tamil Nadu

I. INTRODUCTION:

The term "apnea" originates from the Greek word meaning "without breath." Obstructive sleep apnea (OSA) is a chronic condition characterized by intermittent partial or complete obstruction of the upper airway during sleep. The condition can lead to significant health complications if left untreated, including daytime sleepiness, hypoxia, snoring, and hypercapnia[1].

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OSA is classified into three main types: central, obstructive, and mixed, with severity levels ranging from mild to severe[2].Despite its prevalence, OSA often goes undiagnosed due to a lack of awareness among both patients and healthcare providers, as well as the high costs and complexity associated with diagnostic procedures[3]. If untreated, OSA is associated with several comorbidities, including hypertension, cardiovascular diseases, diabetes, and cognitive dysfunction[4].Affected individuals often experience fatigue, anxiety, excessive daytime sleepiness, and an increased risk of accidents (e.g., motor vehicle crashes) due to sleep deprivation[5].Moreover, frequent snoring—a hallmark of OSA—can significantly affect interpersonal relationships[6].The etiology of OSA is multifactorial. In non-obese individuals, craniofacial skeletal abnormalities, such as micrognathia and retrognathia, are often the primary cause of airway obstruction[7].Dentists are often the first to detect early signs of OSA, including the size of the tongue, enlarged tonsils, and other soft tissue features like an enlarged uvula[8].Obesity is a major risk factor for OSA, with soft tissue accumulation in the upper airway leading to obstruction[9].Unfortunately, despite the severe health risks, more than half of all OSA cases remain undiagnosed[10].Polysomnography remains the gold standard for diagnosing OSA, although home-use diagnostic devices have emerged as more affordable alternatives with comparable diagnostic performance[11].Following an initial screening, obtaining a comprehensive dental and medical history is essential for effective treatment planning[12] . Oral appliances (OAs) have been shown to be effective for treating mild to moderate OSA and are often recommended when continuous positive airway pressure (CPAP) therapy is not tolerated[13]. Dentists, particularly general dentists (GDPs) trained in OSA management, play a key role in prescribing OAs for patients[12]Collaboration between trained GDPs and general medical practitioners (GMPs) is critical for optimal patient outcomes. The complexity of OSA management necessitates a multidisciplinary approach, and a lack of knowledge, training, or collaboration can lead to suboptimal care[1].This study aims to assess the awareness and knowledge of sleep apnea management among dentists and general practitioners in Tamil Nadu, highlighting gaps in education and potential areas for improvement in clinical practice.

II. MATERIALS AND METHODOLOGY:

A descriptive cross-sectional study was conducted, to evaluate the knowledge and awareness of healthcare practitioners in Tamil Nadu regarding the use of oral appliances in the treatment of obstructive sleep apnea (OSA).The study population will include medical professionals involved in diagnosing or treating OSA, such as general practitioners, pulmonologists, sleep specialists and dentists. The questionnaire was sent through **online** (via Google Forms) to healthcare professionals around Tamil Nadu. A total sample of 305 were collected to provide knowledge and awareness of sleep apnea management among dentists and general practitioners in Tamil Nadu.The questionnaire consisted of closed-ended questions in multiple-choice, Likert scale, and Yes/No formats to assess their knowledge and awareness regarding oral appliance therapy for OSA. The data collection period lasted for a predetermined duration of approximately two to four weeks, during which 305 responses were obtained. The collected data will be analyzed using SPSS software to summarize participants' knowledge levels. This study aims to identify knowledge and awareness of sleep apnea management among dentists and general practitioners in Tamil Nadu.

III. RESULT :

The study population included 197 general dentists (65.4%), 94 general medical practitioners (31.4%), 7 pulmonologists (1.4%) and 3 ENT specialists (0.9%). Among them, 136 dentists, 64 medical practitioners, 3 pulmonologists and 1 ENT specialist knew about obstructive sleep apnoea (OSA), the condition where breathing repeatedly stops due to airway obstruction during sleep. A total of 194 participants gave the correct reply that oral appliances used in the management of OSA will keep the airway open by repositioning the jaw or tongue during sleep. Majority of the study population reported that the two main types of oral appliances used for OSA are mandibular advancement devices (MADs) and tongue-retaining devices (TRDs). The oral appliances were reported to be less effective when compared to CPAP but still beneficial for managing mild to moderate OSA by 136 participants (45.2%). Around 218 participants (72.5%) answered the common side effects of using oral appliances for OSA as jaw pain, tooth movement, and dry mouth. A total of 206 participants (68.4%) replied that severity of

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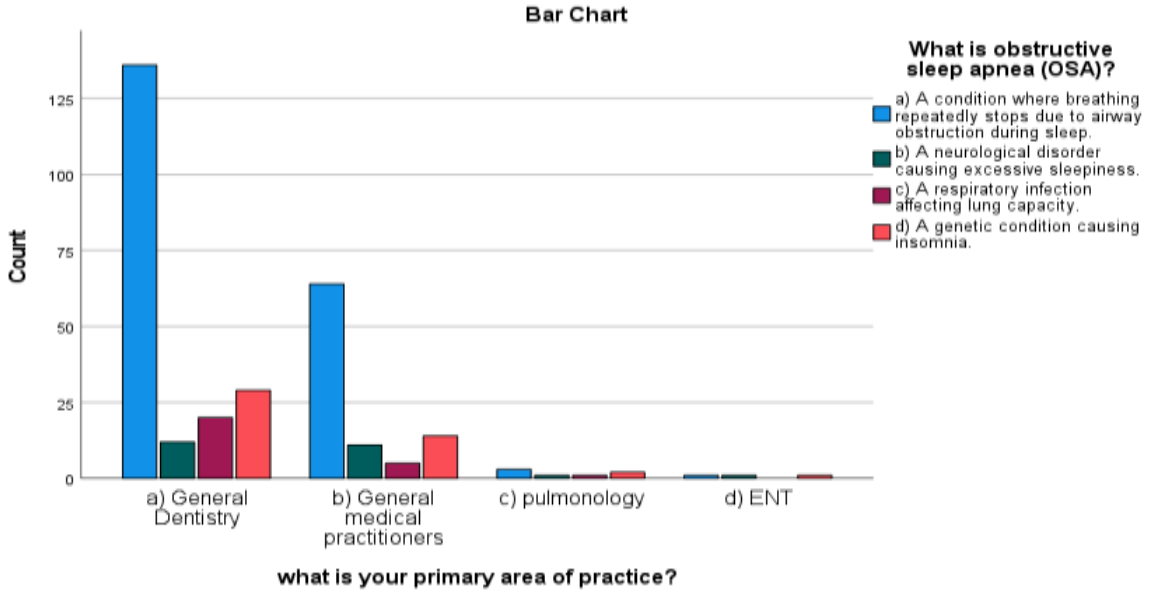
OSA, dental health, and patient preference determined the suitability of oral appliances in a patient. A positive response (62.1%) was obtained when the participants were asked if the oral appliances can be custom-fitted. Most of the study participants (78.2%) including general medical practitioners (23.3%) and other specialists (1.4%) were aware that dentists / orthodontists are primarily responsible for fabricating and managing oral appliances in OSA. More than half of them (72.1%) replied correctly that diagnostic test is used to confirm OSA before giving oral appliances is Polysomnography. A statistically significant association was found between profession and knowledge about factors determining suitability of oral appliances and professionals responsible for managing oral appliances in OSA. The table 1 shows the knowledge about OSA based on the profession.

Regarding the Distribution of knowledge of the study population about OSA based on profession: Complete awareness about oral appliances was expressed by only 28.3% of the study participants while around 51.9% replied that they are somewhat aware that oral appliances can be an alternative for CPAP therapy, but would like to learn more about the therapy. Less than one-third of the study population (27.8%) were familiar with the guidelines prescribing oral appliances for OSA. About 33.5% study participants were aware of long-term follow-up and monitoring requirements for patients using oral appliances. Less than 30% of the total study population were aware of advancements in oral appliance technology for managing OSA. A total of 35.8% study participants felt that oral appliances should be included as a standard treatment option in OSA management guidelines.

Regarding the Distribution of awareness about OSA based on profession of the study population: Training or workshop on the management of OSA with oral appliances were attended by only 10% of the study participants. Nearly 40.5% of the study population replied that they will refer OSA patients to dentists for oral appliance therapy when appropriate. A significant association was found between profession and referral of OSA patients to dentists for oral appliance therapy (p=0.037). Majority of the study population have educated their OSA patients about the oral appliance treatment options (76.4%), irrespective of their profession. Patients who are non-compliant with CPAP therapy and might benefit from oral appliances were frequently encountered by 55 general dentists (18.3%), 19 general medical practitioners (6.3%) and other specialists (0.6%). The table 3 shows the distribution of study population based on their training and treatment of OSA patients.

Graph 1: Distribution of study population based on knowledge about OSA



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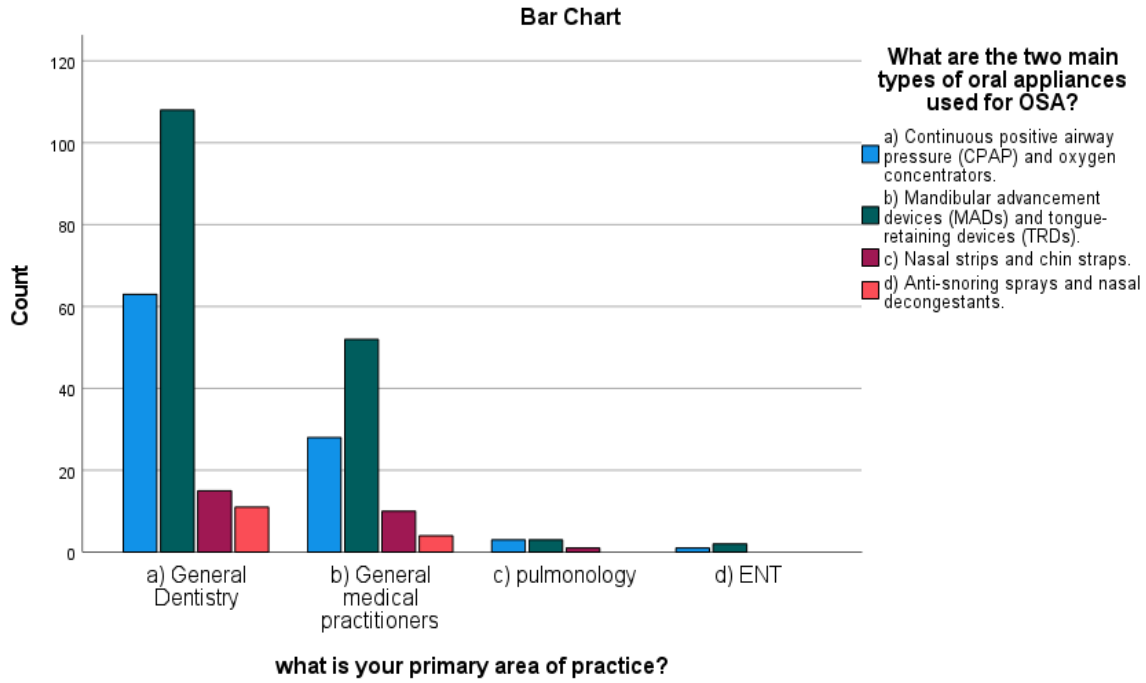
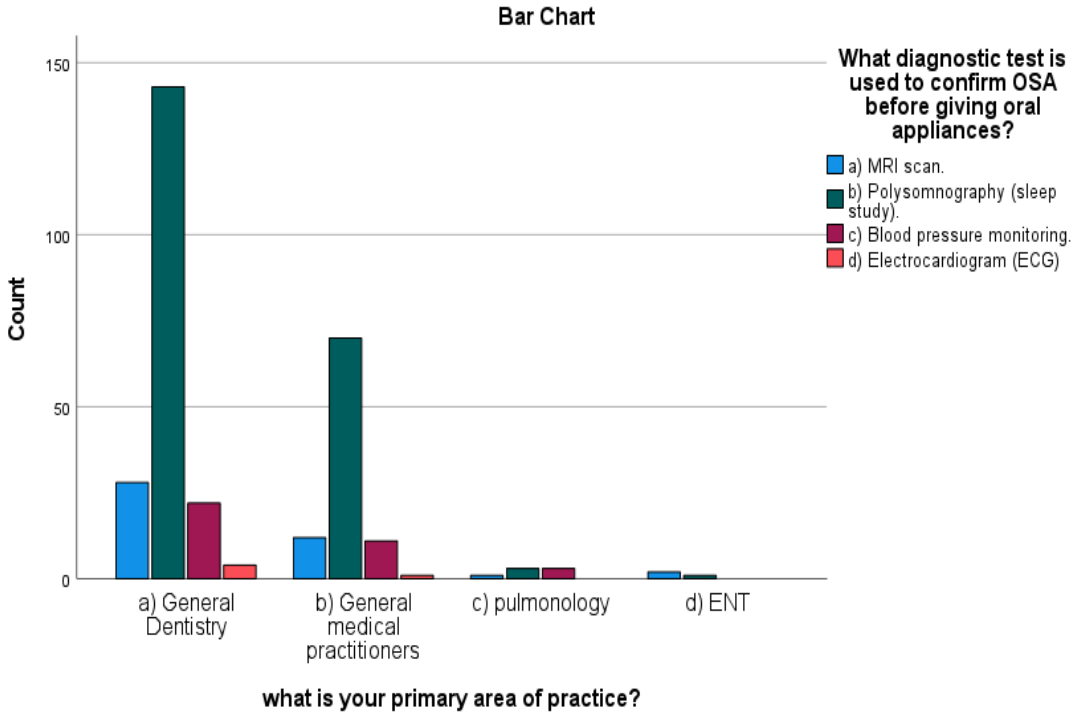
Graph 2: Distribution of study population based on knowledge about oral appliances used for management of OSA



Graph 3: Distribution of study population based on knowledge about diagnostic tests used for management of OSA



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IV. DISCUSSION

The results of this study provide valuable insights into the knowledge and awareness of health professionals and dental practitioners in Tamil Nadu, regarding the Sleep Apnea Management. Obstructive sleep apnea (OSA) is a prevalent yet often under diagnosed sleep disorder associated with significant health risks, including cardiovascular disease, metabolic disorders, and impaired cognitive function[14]. This study aimed to assess the awareness, knowledge, and attitudes of healthcare practitioners in Tamil Nadu regarding the use of oral appliances in OSA management. The findings highlight critical gaps in knowledge and emphasize the need for improved training and interdisciplinary collaboration. The study revealed that while most participants were aware of OSA, knowledge regarding oral appliance therapy (OAT) was limited. Only **28.3%** of respondents demonstrated complete awareness of oral appliances, while **51.9%** acknowledged having some knowledge but expressed interest in learning more. These findings align with previous studies indicating that healthcare providers often have insufficient knowledge of alternative OSA treatments beyond continuous positive airway pressure (CPAP) therapy[15].Additionally, awareness regarding guidelines for prescribing oral appliances was low (**27.8%**), and less than **30%** of participants were familiar with advancements in oral appliance technology. Given that oral appliances are an established alternative for managing mild to moderate OSA[16], the lack of knowledge among healthcare practitioners could contribute to underutilization of these devices in clinical practice. The study findings showed that **45.2%** of participants considered oral appliances effective for mild to moderate OSA but less effective than CPAP. This perception aligns with existing literature, which suggests that CPAP remains the gold standard for OSA treatment due to its superior ability to maintain airway patency [17]. However, oral appliances are often preferred by patients due to better adherence, comfort, and portability[18]. Moreover, **72.5%** of participants recognized common side effects such as dry mouth, jaw pain, and tooth movement, which are well-documented in previous studies[19].Patient selection criteria were also well recognized, with **68.4%** of respondents correctly identifying that the severity of OSA, dental health, and patient preference influence the appropriateness of oral appliance therapy. Furthermore, **62.1%** acknowledged that oral appliances could be custom-fitted, a crucial factor for ensuring treatment efficacy and patient comfort[20].A significant gap in professional training was observed, as only **10%** of the study population had attended workshops or training sessions on OSA management using oral appliances. This aligns with previous research indicating that inadequate education among healthcare professionals leads to underutilization of oral appliance therapy in OSA management[21]. The study also found that **40.5%**of participants were willing to refer OSA patients to dentists for oral appliance therapy.This highlights an opportunity for enhanced collaboration between general practitioners, sleep specialists, and dental professionals. Encouragingly, **76.4%** of participants had educated their patients about oral appliance treatment options, demonstrating a positive attitude toward patient awareness. However, only **35.8%** of respondents supported the inclusion of oral appliances as a standard treatment option in OSA management guidelines. Given the American Academy of Sleep Medicine's (AASM) recommendation that oral appliances be considered for patients with mild to moderate OSA or those who are CPAP-intolerant[16], more efforts are needed to integrate this approach into routine clinical practice.

Clinical Implications

This study underscores the importance of improving awareness and training among healthcare practitioners regarding oral appliance therapy for OSA. To bridge the knowledge gap, targeted educational programs, workshops, and updated guidelines should be implemented. Furthermore, enhancing interdisciplinary collaboration between dentists, sleep specialists, and general practitioners could lead to better patient outcomes.

Limitations of the study

Future research should explore the barriers to adopting oral appliance therapy in clinical settings, assess long-term patient adherence, and evaluate the impact of training programs on healthcare professionals' knowledge and referral patterns. Addressing these factors could lead to broader acceptance and utilization of oral appliances in OSA management.

Conflict of interest : nil

V. CONCLUSION

The findings of this study highlight significant gaps in knowledge, training, and referral

practices regarding oral appliance therapy for OSA among healthcare practitioners in Tamil Nadu. While awareness of OSA was relatively high, knowledge of oral appliances, their effectiveness, and advancements in the field remained limited. Given the growing recognition of OAT as an effective treatment option, targeted training initiatives and interdisciplinary collaboration are essential to improve its adoption in clinical practice.

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