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AWARENESS AND KNOWLEDGE ABOUT PROSTHODONTIC TREATMENT OPTIONS FOR OBSTRUCTIVE SLEEP APNEA AMONG UNDER GRADUATES AND POST GRADUATE STUDENTS OF DIFFERENT DENTAL COLLEGES IN ANDHRA PRADESH: AN ONLINE SURVEY

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ABSTRACT

Aim: This study was aimed to assess the awareness and knowledge among under graduates and post graduate students on prosthodontic treatment options for obstructive sleep apnea. **Materials and Methods:** A questionnaire-based online study was conducted among undergraduates and post graduate students by conducting an online survey in the google sheets. A total of 17 questions were made, which were divided into three parts in which the first section contained questions regarding demographic data, the second section contained information regarding awareness about obstructive sleep apnea, and the third section included questions regarding knowledge about obstructive sleep apnea. The survey was conducted for 2 months of duration from 24-09-2022 to 24-10-2022. The google sheets were sent to about 150 email IDs and what's app groups waited for 2 months for the responses. The results were obtained in the form of quantitative data, which was represented in the form of a pie chart for each and every question determining the frequency of answers according to the percentage obtained and were represented systematically by using Docs Editors software in google forms. **Results:** At the end of 2 months, among 150 mail ID's and what's app groups 116 of the people responded. About 75% percent of the students could answer all the questions regarding awareness and knowledge towards prosthodontic treatment options for obstructive sleep apnea. Based on the assessment there is a significant difference between the undergraduates and post graduates regarding Problems of OSA i.e.,78% & symptoms of OSA which is 62%, Risk factors 50.9%, Treatment options 58%, Prosthodontist role to treat OSA 70%, Prosthodontic appliances 68%. **Conclusion:** Post graduate's students had better awareness and knowledge towards prosthodontic treatment options for obstructive sleep apnea.

INTRODUCTION

Healthy individuals spend roughly one-third of their lives[1] asleep, and adequate sleep is a vital indicator of overall body health and function of the many sleep-related breathing disorders that disrupt regular sleep cycles, obstructive sleep apnoea (OSA) is the most common. It is a clinical disorder that induces recurrent episodes of complete or partial obstruction of the upper airway occur for more than 10 seconds despite persistent respiratory efforts. In addition to loud snoring with choking or air gasping, OSA induces frequent sleep fragmentation and repetitive arousal. The interruption of sleep continuity leads to further consequences, included fatigue, headache, and cognitive impairment.

Moreover, repetitive airway obstruction can cause hypoxia and hypercapnia, thereby severely affecting the body's metabolic and cardiovascular systems. Undiagnosed or untreated OSA[2] has further been implicated as a risk factor for developing insulin-resistant diabetes, systemic hypertension, and acute myocardial infarction.

OSA is considered a global health issue because of its high prevalence in the general population The prevalence of OSA in the United States was estimated to be 3% to 7% in males and 2% to 5% in females. The severity of OSA is usually measured using the apnea-hypopnea index[3] (AHI), which is defined as the number of apnoea or hypopnea events per hour of sleep. According to the American Academy of Sleep Medicine (AASM), OSA is diagnosed when AHI exceeds 15 or falls below 5 in the presence of associated signs and symptoms. Male patients aged ≥40 years who are obese and have a neck size of more than 18 inches are at high risk of having OSA.

Implementing an appropriate screening protocol for new OSA cases, followed by a proper referral to sleep physicians for sleep studies and treatment,[4] is usually performed by dentists. Hence, the high prevalence of undiagnosed OSA is mainly due to the lack of appropriate knowledge and training amongst dentists. The AASM, the American Academy of Dental Sleep Medicine (AADSM), and the American Dental Association (ADA) state that a dentist's role in OSA management is to identify cases of OSA, refer at-risk patients, and provide oral appliances such as mandibular advancement devices.

Oral appliance therapy is considered an effective treatment option for patients with mild to moderate OSA and a feasible alternative for patient's intolerant to CPAP treatment Among these devices, the mandibular advancement device[5] (MAD) is the most commonly used and studied appliance. MADs cover the upper and lower dentition and maintain the mandible in a protruded position during sleep. By enlarging the upper airway and reducing upper airway collapsibility (e.g., by improving upper airway muscle tone), these devices help in sustaining upper airway patency in awake OSA patients.

Need for the study

In the literature there is only one study conducted among dental students on the knowledge on obstructive sleep apnea only. Hence this study was undertaken to assess the awareness and knowledge on prosthodontic treatment options to treat obstructive sleep apnea among undergraduates and post graduates of different dental colleges in Andhra Pradesh.

Aim of the study

To assess the awareness and knowledge among under graduate and postgraduate students on prosthodontic treatment options for obstructive sleep apnea.

Objectives of the study

1. To assess the awareness of under graduate students on prosthodontic treatment options for obstructive sleep apnea.
2. To assess the knowledge of under graduate students on prosthodontic treatment options for obstructive sleep apnea.
3. To assess the awareness of postgraduate students on prosthodontic treatment options for obstructive sleep apnea.
4. To assess the knowledge of postgraduate students on prosthodontic treatment options for obstructive sleep apnea.

MATERIALS AND METHODS

After literature search, a questionnaire (Annexure I) was made and uploaded in google sheets. The questionnaire was sent to email id's as well different social media through WhatsApp groups. This study was performed among under graduates and postgraduate students by conducting an online survey in the google sheet. A total of 17 questions were made, which were divided into three parts in which the first section contained questions regarding demographic data, the second section contained information regarding awareness about obstructive sleep apnea, and the third section included questions regarding knowledge about obstructive sleep apnea. The survey was conducted for 2 months of duration from 24-09-2022 to 24-10-2022. The google sheet was sent to about 150 email IDs and waited for 2 months for the responses. Finally, the results were obtained in the form of pie charts and were represented systematically by using Docs Editors software in google forms.

RESULTS

At the end of 2 months, 150 mail ID's, 116 of the people responded. About 75% percent of them gave correct answers. The results were obtained in the form of quantitative data, which was represented in the form of a pie chart for each and every question determining the frequency of answers according to the percentage obtained.

Section I - Demographic data

Under graduates and post graduates from different dental collages in Andhra Pradesh are participated in the survey.

Figure I: Illustrates the designation of the students i.e., under graduates or post graduates. More responses i.e., 50.9% were given by the post graduates than the undergraduate students i.e., 49.1%.

Figure II: Gives information regarding gender. Females were involved actively 69% than that of males31%.

Section II – Awareness of under graduate students post graduate students on obstructive sleep apnea

Figure III: Depicts the awareness of the students who came across the obstructive sleep apnea. A large number of students (90.5%) of students have revealed that they were aware of the obstructive sleep apnea and its various treatment options.

Figure IV: Designates about how the participants came to know about obstructive sleep apnea. 41% of the students mentioned that they know from the books where as 36.2% mentioned that they were taught in the class and very less percentage 9.5% revealed that by watching videos in social media knows about OSA and remaining from other sources.

Figure V: Exemplify about whether OSA can cause some problems, 78.4% of the students knows that OSA can cause some problems. 9.5% marked it as may be and 12.1%gave it as No.

Figure VI: Implies about the symptoms of OSA such as the day time drowsiness, snoring, waking up, choking, gasping. Of all that 62.1% mentioned all of the above and 22.4% given day time drowsiness, 9.5% given snoring.

Section III – Knowledge of under graduate Students and Post graduate students on obstructive sleep apnea

Figure VII: Encapsulate about the risk factors of untreated sleep apnea. 80.2% reacted as there are risk factors and 15.5% gave response as there may be some risk factors and remaining 4.3% claimed that there are no risk factors for OSA.

Figure VIII: Shows about the risk factors which includes the depression, diabetes, high blood pressure observed in OSA. 50.9% students responded to all the mentioned risk factors i.e., depression, diabetes, high blood pressure and 37.9% reacted as depression is the major factor and 4.6% said that diabetes is the risk factor and 6.6% reacted as the high blood pressure is the risk factor for OSA.

Figure IX: Instantiate about the treatment options for OSA i.e surgically or non-surgically or both.20.1% knows that to treat by non-surgically and 21.6% to treat by surgically and 57.8% reacted as to treat by both.

Figure X: Mentioned about role of prosthodontist to treat OSA. Almost 70.7% of students felt that there is a role of Prosthodontist in treating OSA. 8.6% felt that there isn't any role of Prosthodontist and 20.7% felt that there may be a role of Prosthodontist to treat OSA.

Figure XI: Demonstrate that how a prosthodontist treats OSA i.e., surgically or non-surgically or both. 49.1% knows that to treat by non-surgically and 19.8% to treat by surgically and 31% to treat by both.

Figure XII: Reveals about the gold standard treatment for OSA. 51.7%students knows that it is continuous positive airway pressure (CPAP) and 7.8% it is the Bilevel positive airway pressure (BIPAP), 40.5% students felt that it is the both (CPAP) and (BIPAP).

Figure XIII: Depicts about the surgical techniques can be undertaken for OSA. 64.7% felt that surgical techniques can be used to treat OSA and 21.6% felt it as multidisciplinary approach and 13.8% percent felt that no surgical techniques to treat OSA.

Figure XIV: Exhibit about whether to treat OSA by prosthodontic appliances. 75% knows that it can be treated by prosthodontic appliances, 15.5% responded as may be and remaining 9.5% felt that as surgically not by prosthodontic appliances.

Figure XV: Mentioned about prosthodontic appliances to treat OSA. 67.2% of individuals felt it as all the appliances to treat OSA. 21.6% felt soft palate lifting is the one appliance to treat OSA. Remaining 11.2% felt that to treat OSA with mouth guard, mandibular advancement devices and all.

Figure XVI: Reveals about treatment approach for OSA surgically or prosthodontically or both. 50% of students felt as Multidisciplinary approach and 29.3% as non-surgical approach and 20.7% felt as surgical approach.

Figure XVII: Defines about prosthodontic treatment is the best one to treat OSA. 91.4% of Post Graduate students knows that it is the best one to treat prosthodontically rather than surgically comparatively than undergraduates.

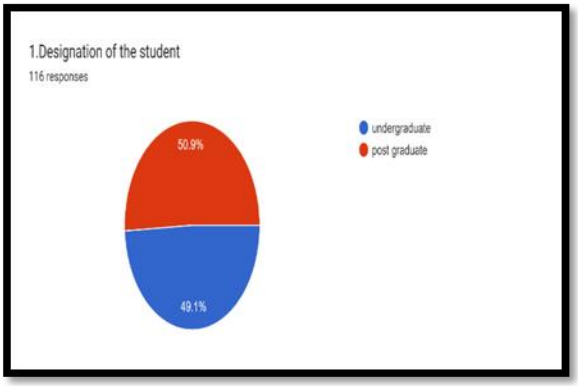

Figure I: Designation.

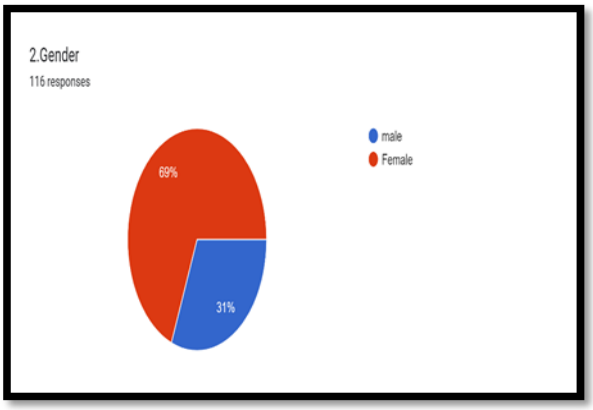

Figure II: Gender.

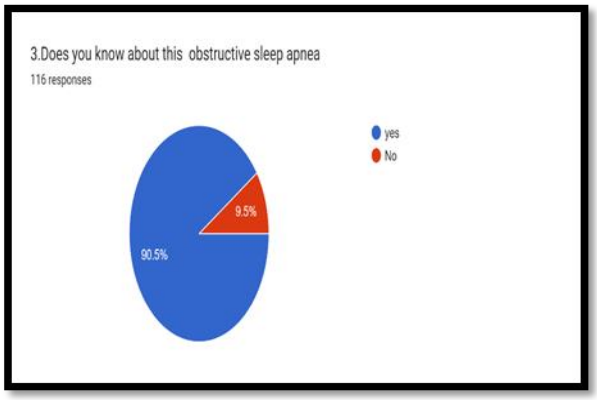

Figure III: OSA awareness.

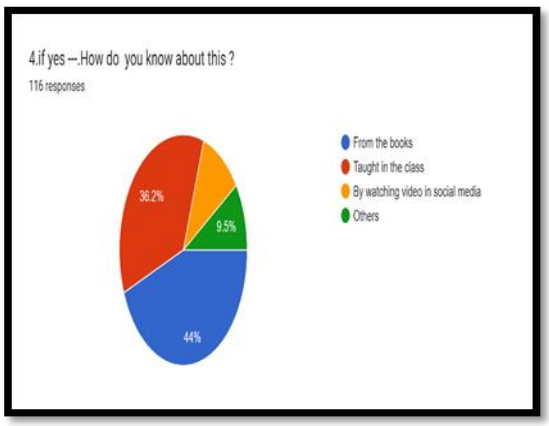

Figure IV: How do they know about this.

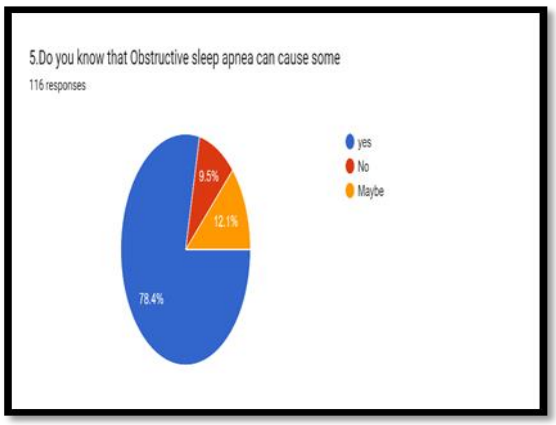

Figure V: OSA can cause some problems awareness.

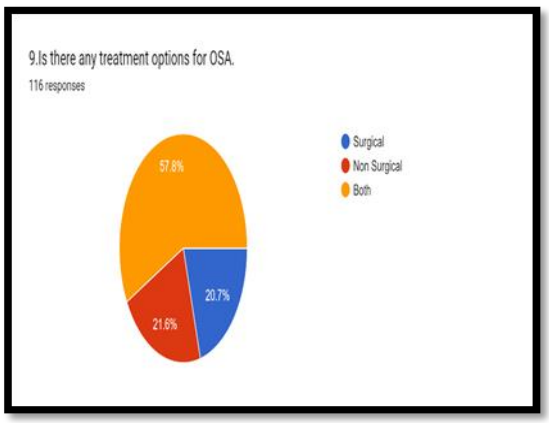

Figure IX: Treatment options for OSA.

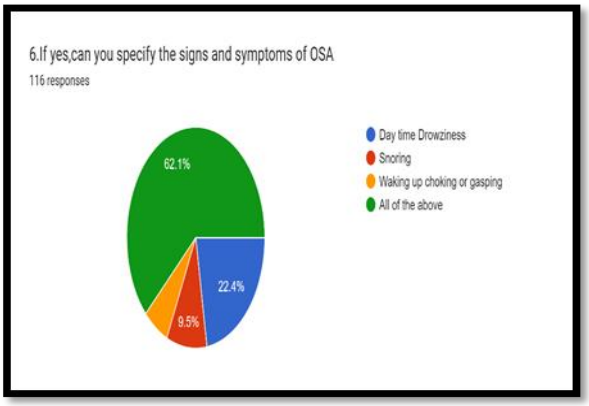

Figure VI: Signs and Symptoms of OSA.

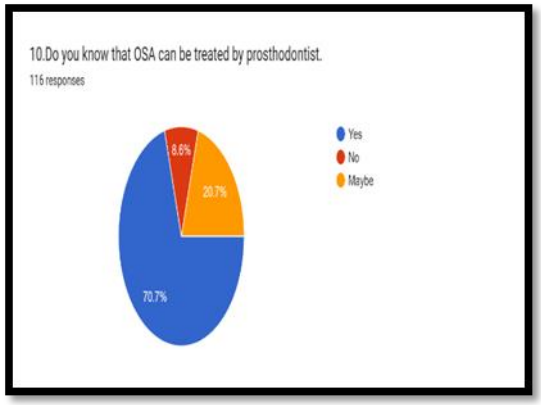

Figure X: Whether it can be treated by prosthodontist.

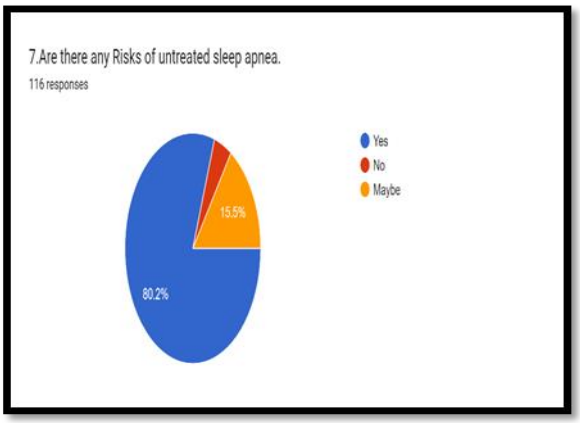

Figure VII: Risk factors of OSA.

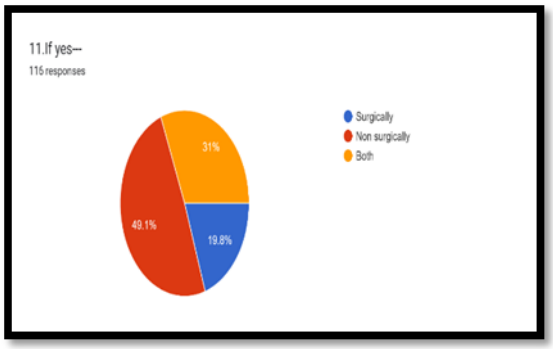

Figure XI: The prosthodontist treatment by surgically or non-surgically or both.

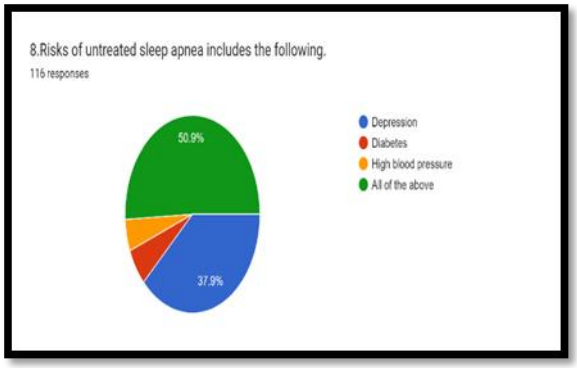

Figure VIII: List of risk factors of OSA.

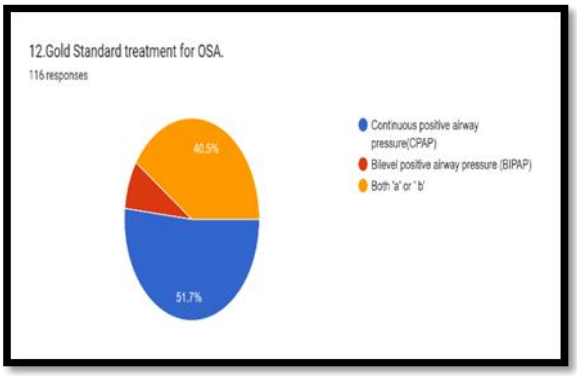

Figure XII: Gold standard treatment for OSA.

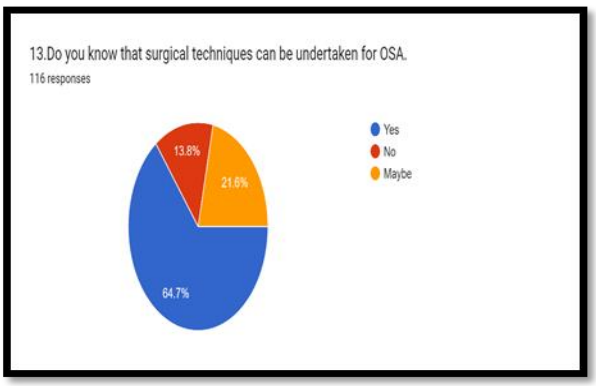

Figure XIII: Surgical techniques can be undertaken for OSA.

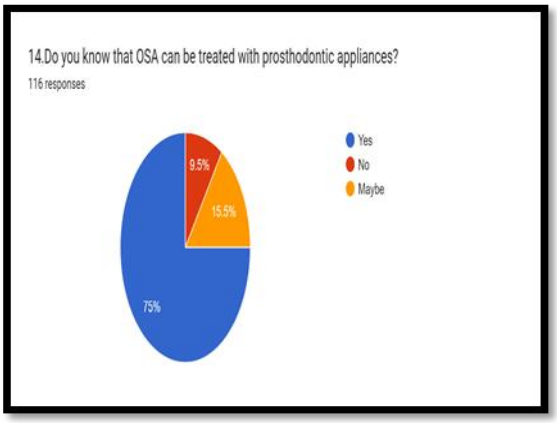

Figure XIV: About Prosthodontic appliances for OSA.

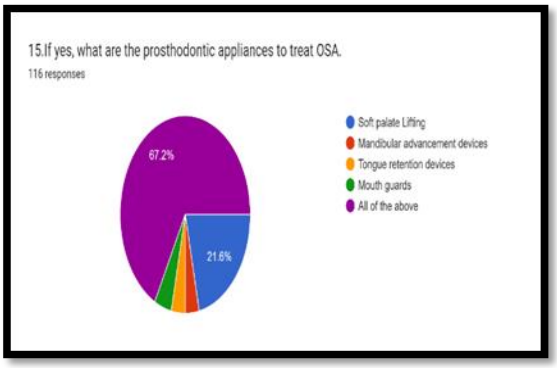

Figure XV: List of the prosthodontic appliances.

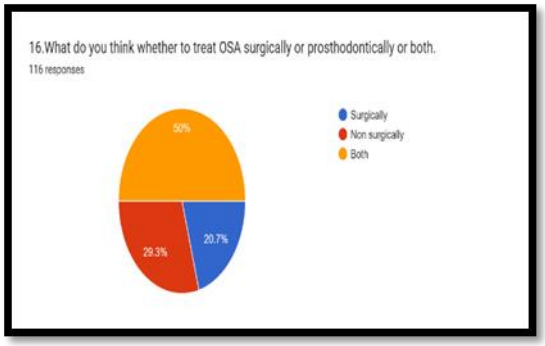

Figure XVI: To treat OSA surgically or prosthodontically or both.

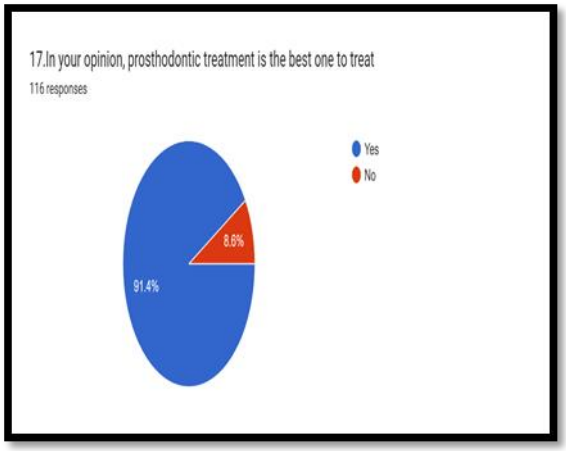

Figure XVII: Opinion on whether prosthodontic treatment is the best one to treat.

DISCUSSION

Obstructive sleep apnoea (OSA) is a common clinical condition in which the throat narrows or collapses repeatedly during sleep, causing obstructive sleep apnoea events. The syndrome is particularly prevalent in middle-aged and older adults. The mechanism by which the upper airway collapses is not fully understood but is multifactorial and includes obesity, craniofacial changes, alteration in upper airway muscle function, pharyngeal neuropathy and fluid shift towards the neck.[6] The direct consequences of the collapse are intermittent hypoxia and hypercapnia, recurrent arousals and increase in respiratory efforts, leading to secondary sympathetic activation, oxidative stress and systemic inflammation.

Chan ASL et al,[7] in the year 2010attempted to define the occurrence of OSA has also been linked to serious long-term adverse health consequences; such as hypertension, metabolic dysfunction, cardiovascular disease, neurocognitive deficits and motor vehicle accidents. There have been several advances in the field of particular clinical importance: (i) the development of portable monitoring as part of a simplified clinical algorithm for the diagnosis of OSA in selected patients; (ii) growing awareness of the cardio-metabolic health consequences of OSA and (iii) emerging evidence to support a range of non-continuous positive airway pressure (CPAP) treatment modalities, such as oral appliances.

Doff MHJ et al,[8] in the year 2013 stated that Oral appliance therapy should be considered as a viable treatment alternative to continuous positive airway pressure (CPAP) in patients with mild to moderate obstructive sleep apnea (OSA). In patients with severe OSA, CPAP remains the treatment of first choice.

Hao Ng J, Yow M in the year 2019[9] demonstrate the effectiveness of oral appliances for mandibular advancement and tongue stabilization in managing OSA, and current clinical standards of practice recommend the

use of oral appliances to treat OSA when patients cannot tolerate continuous positive airway pressure (CPAP).

Manetta IP et al,[10] in the year 2020claimed that the Continuous positive airway pressure (CPAP) therapy is still the gold standard treatment for OSA, but patient acceptance and adherence are often poor due to a multitude of factors, thereby compromising treatment success. Mandibular advancement devices (MADs) have been proposed not only as a first line therapy for symptomatic snoring patients, but also for those suffering from mild to moderate OSA, or those who refuse or do not tolerate CPAP. Yet, improved understanding of MAD regarding design, construction, and mechanisms of action is an important requirement to successfully implement MAD as a therapeutic tool.

Alrejaye NS et al in the year 2022 did[11] a research on awareness among physicians on the role of dentists in the management of OSA. They concluded that Physicians showed insufficient knowledge about OSA and a less than favourable attitude towards dentists' role in its management. Enhancing medical curriculum and clinical protocols and guidelines on the dentists' role in OSA management is recommended. In my current study awareness and knowledge was to undertaken about the prosthodontic treatment options to treat obstructive sleep apnea among undergraduates and post graduates. Results shown that post graduates have more awareness and knowledge about OSA.

SUMMARY

Obstructive sleep apnea is a common condition but a large number of patients remain undiagnosed. This online survey provides baseline information and elucidates the relationship between the awareness and knowledge of different dental students towards OSA. Among the participants the post graduates are more aware about the prosthodontic treatment options of OSA than undergraduates. Most of the respondents are post graduates indicated that they had previous knowledge of OSA in the self- assessment questions. The lack of knowledge and awareness among the prosthodontic treatment procedures for OSA among undergraduates could be due to rigorous incorporation of dental sleep medicine topics in the undergraduate curriculum raising OSA awareness and knowledge among the undergraduates.

CONCLUSION

Sleep and dreams are taken for granted by those not affected by obstructive sleep apnea. Unfortunately in around 10 million population around the world, sleep is a nightly battle which leaves it’s victims and their bed partners fatigued, stressed and much less healthy. Untreated sleep apnea is one of the major public health issues we face in common. The emergence of dental sleep medicine as a safe and effective treatment brings hope for the millions of patients looking for alternatives to CPAP treatment.

As dental professionals, we have a significant role to play in the early diagnosis, management and care of patients suffering from sleep apnea. Oral appliances play a major role in the non-surgical management of OSA and have become the first line of treatment in almost all patients suffering from OSA.

Although the role played by the prosthodontists is still in its infancy, there is much to learn and understand in the rapidly evolving field of sleep medicine. The growing interest of prosthodontists in sleep medicine has contributed immensely toward effective prevention and treatment of OSA each patient based on his/her individual requirement

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