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Review Article

Did you sleep well last night? Good sleep for good body, mouth and teeth- Review

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ABSTRACT

Introduction: Our body functions and so it's upto us to take care of ourselves. Sometimes we don't sleep well or don't sleep at all. It happens mostly on Monday mornings where it's anxiety, stress, fatigue and insomnia. This affects our body, mouth and teeth. Snoring or obstructive sleep apnea osa, is a serious issue. If we pay attention to it, this can be treated.

Body: Many specialities can treat this osa. Dental field also treats these patients. If proper case history, diagnosis, and treatment planning is done, then with multidisciplinary approach, great results can be achieved.

Conclusion: Osa patients need attention definitely. When such patients come to any clinician, adequate steps must be taken. Osa affects both adults and children. Depending upon the job, age, gender, daily routine, other individual conditions, treatment and surgery needs to be done. Management of osa patients seems difficlut initially but with proper decision making, these patients can certainly be managed perfectly. All it requires is some prudence of clinician, along with thorough studying of pros and cons of the case for final implementation. Also some cooperation of patient is needed to produce extraordinary outcomes.

1. Introduction

We have to take care of our routine, body, mouth and sleep. If we work all day, we need to sleep well at night and vice versa. If there's trouble to sleep then medical diseases attack as diabetes, hypertension, stroke, depression and cardiovascular diseases.[1,2] This leads us to snoring or osa which is Obstructive sleep apnea. Lack of sleep makes us feel exhausted. This negatively impacts our health, work, life and confidence. It is seen that osa is related to oral health also. Dentists are involved in treating it and so adequate information on this issue is essential for healthcare professionals.

Adults on average need 7-9 hours of sleep but sleep disturbances have been increased mostly in populations of Asia- African countries.[3–9] This maybe associated with medical/psychiatric problem or stress or can be idiopathic and this insomnia can lead to sleep disordered breathing SDB.[10,11] The impact of OSA is likely to be big in developing countries like India where medical illnesses and sedentary lifestyle makes it a significant public health problem.[12] Sleep apnea syndrome (SAS) is of 3 types- central, obstructive and complex/mixed, and Obstructive sleep apnea Osa is the commonest.[13] If OSA is untreated, it causes excessive daytime sleepiness, CVS, CNS, endocrine and periodontitis.[11] In dental, some oral examination needs to be done related to signs of mouth breathing, macroglossia,crossbite, hypotonic tongue, narrow arch, retrognathic jaws, V-shaped palate and micrognathia.[14]

Osa can be managed by conservative methods (behavioural changes, position therapy), mechanical methods, surgical methods and pharmacotherapy. Dentists can treat patients with OSA (mild to moderate) and they can be first line of defence in screening.[15] The dentist sees

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the tongue's volume and the air column obstruction with Mallampatti index's help. Also the shape and volume of uvula and soft palate and position of mandible is observed vertically and horizontally which is further checked by radiographs.[13,16] These signs of OSA by oral and radiographs are noted. It is seen that orthodontic correction with use of oral appliances therapy (OAT) is effective way in which mandible is advanced and tongue posture is changed so as to improve the airway in upper airway and decrease the supine apnea incidence.[7,17–20] OAT is indicated in patients with TMJ disturbances, poor oral hygiene,6-10 teeth or patients with less than these teeth in each arch, patients with limited mandibular movements, and in weight loss - behavioural measures or those with sleep position change.[21,22]

Different devices are given according to severity of OSA cases and underlying causes of the patients. Also type of OAT available are MAD mandibular advancement devices, TRD tongue retaining device and SPL soft palate lift.[23,24] OSA is 5 or more episodes of complete/partial upper airway obstruction per hour of sleep and it involves 24% of middle aged men, 9% of middle aged women,2-3% of children (increases to 30-40% in obesity).[25] Mostly these patients have compromised upper airway due to skeletal/ soft tissue abnormalities and tongue size, tonsils, opening of oral/ nasal airways, also neck size raises concerns on the airway's patency.[26,27] Bruxism increases muscle tone, dilates airways so these patients may have OSA also.[28,29]

The ESS Epworth sleepiness scale (others are Stopbang, Berlin assessment tools) is a simple questionnaire used by dentists and Prosthodontists for assessment of daytime sleepiness. Also in patients with Tmd temporomandibular disorders, insomnia, multiple medications, it is wise to screen for SDB OSA.[30] Also additional training and certification by AADSM American Academy of dental sleep medicine and CSS Canadian sleep society can be done.[31,32] Dentists should screen patients for OSA prior to fabrication of maxillary night guard that increases occlusal vertical dimension without mandibular protrusion. Also during treatment planning stages OSA patients must be screened as this influences the final dental treatment plan.[29,33,34]

2. Discussion

OSA causes collapse of upper airway and decrease in oxygen saturation leading to nonreparative sleep. Also due to repeated oxygen desaturation and saturation, endocrine and metabolic disturbances cause increased risk of systemic complications. In addition, these lead to arterial hypertension, CVS, cerebrovascular complications. OSA has been also related to higher mortality and traffic accidents. It is estimated that only 10% of OSA patients, get diagnosis and treatment. Recently an association between tooth wear and OSA has been reported. The diagnosis of tooth wear is immediate, cheaper than polysomnography and made by inspecting the tooth surface. Tooth wear severity may indicate presence of OSA.[35,36] It is seen that sleep disorders are linked to oral diseases like gingivitis, periodontitis, dry mouth, halitosis and throat infections. Prof Collin Sullivan has advocated for dentists that oral devices be given, upper airway be examined, orthodontic treatments be avoided and treating pediatric patients with rapid maxillary expansion, also to anticipate the need for bimaxillary osteotomy in young adults requiring maxillofacial correction. Some signs and symptoms include mobility of anterior teeth, progressive bone loss, tongue crenulations, anterior or lateral open bite relationship, dimpling of cusps that relate to GERD, others include orofacial pain, decreased jaw size, larynx/pharynx erythema.[37]

Sleep disordered breathing (SDB) is affecting children and adults. It is related to depletion of quality of life, disruptive behavior, snoring, mood disorder and orally high arched/narrow hard palate and retrognathia. Dentists/orthodontists/prosthodontists should screen such patients by ESS, Stop Bang questionnaire, Friedman tongue classification, Kushida index, Berlin questionnaire, BMI, neck size and modified Mallampati classification. OA is effective for OSA and it can decrease AHI, respiratory event index, decrease respiratory disturbance index and evaluation of OA treatment needs to be done by sleep physician with sleep testing. When an OA is given, the dentist should use a custom appliance and patients with OA should be called for follow up and possible dental-related occlusal change and any long-term effects. Dentists have an early role in such patients and have regular contact with them.[38]

Guilleminault et al in 1976 first described sleep apnea referring to Greek term apnea means without breath. Pharyngeal wall floppiness is a non-invasive testing modality in OSA assessment. Some radiographic imaging modalities as diagnostic aids of OSA are lateral cephalometry and cone beam computed tomography.[39] It is seen that many patients consulted physicians after warning from dentists about OSA. Oral protrusion devices (with or without screw), rapid maxillary expansion, mandibular advancement splints and tongue retainers are prescribed. ECG, pulse oximetry, study models should be considered and complications as TMJ deformities and musculoskeletal disorders should be avoided.[40] Awareness of OSA is increasing and so providing these patients with simple, cost effective anti-snoring device, can compromise quality of life. Dental protection recommends that dentists take documented training course for OSA screening before providing appliances. However prolonged use of these devices may increase adverse occlusal changes (mesial migration of lower teeth and distal migration of upper teeth) so further investigation has to be done in this MAA monobloc mandibular advancement appliance.[41]

Apnea is cessation of airflow lasting for at least 10 seconds while hypopnea is 30% reduction in airflow that lasts for 10 or more seconds. AASM American Academy of sleep medicine has rated average number of OSA events per hour as RDI respiratory distress index in which 0-5 is normal, 5-20 is mild, 20-40 is moderate and greater than 40 is severe. CSA central sleep apnea is seen when the brain is unable to send adequate signals to breathing muscles to start respiration and it is secondary to CNS disorders as infarction and infection. OSA occurs due to obstruction by collapse of soft tissue structures inside hypopharynx or oropharynx. OSA with excess daytime sleep is obstructive sleep apnea syndrome. Mixed sleep apnea is a mix or combination of both CSA and OSA. Also it is more often occurring than central but less than OSA.OSA general features include Xerostomia, night saliva drooling, depression, memory problems, less social interactions, excess daytime sleeping, at night gasping for breath, epilepsy, asthma and difficulty in concentration.

It is seen that 3% of the middle aged people are suffering from excess daytime sleeping as a result of these frequent night time interruptions in sleep due to upper airway disorders. These sleep interruptions make one less productive as one's health and lifestyle are affected. Simple snoring affects 45% of the adults occasionally and 25% of adults habitually. These sleep disorders are now a common medical problem and oral prosthesis therapy is now accepted by American sleep disorders as appropriate treatment modality. Treatment by dental clinicians should this be considered by medical profession over other invasive treatment options or where there is no response by patients by behavioural modifications. The dental clinicians' treatment is still successful, conservative for mild to moderate OSA. Dental professionals already can diagnose sleep related disorders and manage these cases by fabrication of oral devices. So every dentist must be aware of this issue.[42]

Use of oral appliances was first started in 1900 when the French stomatologist Pierre Robin used it for management of neonates with Pierre Robin syndrome. Advantages of these oral appliances are they decrease apneas, increase airflow, reduce snoring and have better compliance rates than with CPAP.[43]

3. Conclusion

Snoring or OSA is a serious issue. Sleep physicians mostly ptescibe a PSG polysomnography test and the final management of these patients may need input from dentists, ENT, pneumologists and surgeons. Oral appliances OA as MRD mandibular repository devices and TRD tongue retaining devices, PAP positive airway pressure, behavioural modification, sleep position and alcohol reduced intake can assist in OSA management. Surgical procedures are considered when all non-surgical methods become totally non-responsive. Also it is suggested that non-physicians get training in the treatment of uncomplicated cases in this field.[35] Overall Osa patients need intensive care. If the above mentioned methods are executed, then adequate prognosis can be obtained in the obstructive sleep apnea patients.

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None.

5. Conflict of Interest

None.

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