TIME TO WAKE UP TO OBSTRUCTIVE SLEEP APNEA- A QUESTIONNAIREBASED SURVEY STUDY

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Abstract: Aim and Objectives- This survey was aimed to assess the awareness among interns, postgraduates and faculties of a dental college in Moradabad (U.P) on the basis of knowledge, diagnosis & treatment through a survey questionnaire concerning Obstructive sleep apnea

Materials and Method- A self-administered questionnaire, composed of 20 questions was designed out of which 9 questions were knowledge based and 11 were diagnosis & treatment based. The study population comprises of 140 randomly selected participants-Interns (44), Postgraduates (48) and Faculties (48).We compared the interns, postgraduates and faculties data with the data collected by using Chi-square test and frequency distribution test.
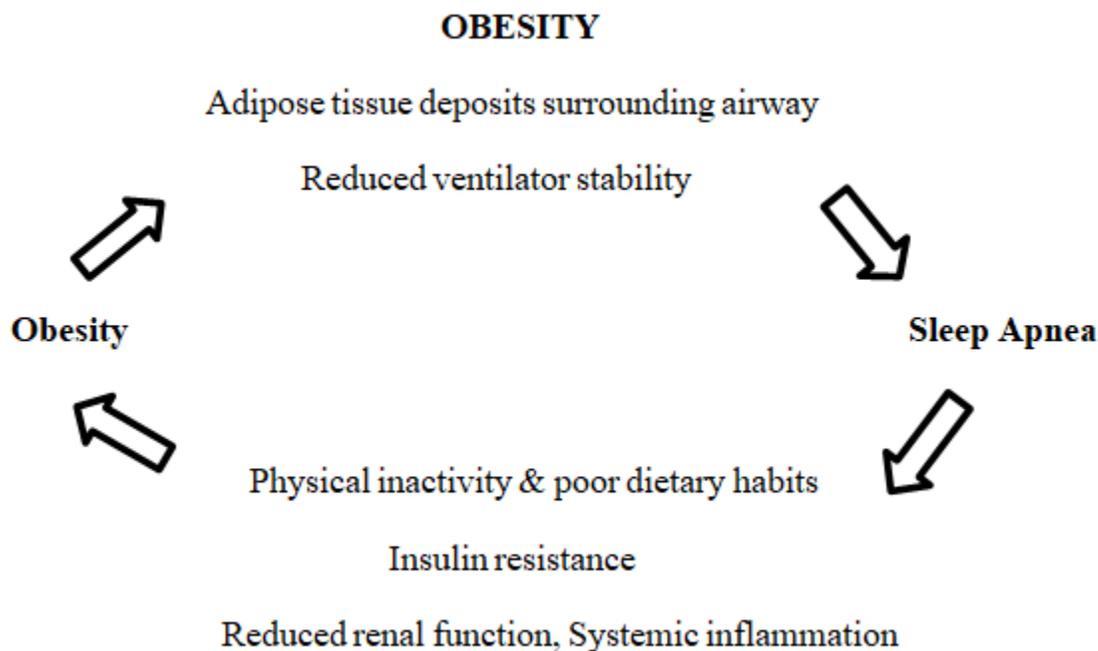
Result- Questionnaire were specified to 140 respondents through which data was collected and statistically analysed. The result which was revealed on the basis of knowledge that the mean knowledge for Interns-8.33%, Postgraduates-13.19% and Faculties- 30.12% and on to basis of diagnosis and treatment planning Interns-0%, Postgraduates-10.07% and Faculties-30.21%. The awareness was least among all the categories concerning Obstructive Sleep Apnea.

Conclusion- Educational interventions concerning OSA in medical and dental schools should help us to improve their abilities in diagnosing and treating OSA. We must recommend a greater number of hour for dental students exposure to sleep education.

Keywords- Sleep apnea, Survey study, Questionnaire, Obesity

INTRODUCTION

It is a disorder of breathing during sleep characterized by prolonged partial upper airway obstruction or intermittent complete obstruction (Apnoea / Hypopnea) that disrupts the normal ventilation during sleep and alters the sleep pattern.[1] There are three factors that contribute to Obstructive Sleep Apnea (OSA) are the anatomical structure, neuromotor tone and inflammation. The causes of airway obstruction includes the prolonged inflammation of the nasal mucosa associated with allergies or chronic infection i.e allergic rhinitis whereas it can also be produced by mechanical obstruction anywhere within the nasorespiratory system , enlarged adenoids and tonsils, deviated nasal septum (DNS) and large bulky tongue and its reduced muscle tone during deep sleep.[2] OSA is a growing chaos in modern society. Community based epidemiological studies from numerous parts of India have estimated that the occurrence of OSA is 2.4%-4.9% in men & 1-2% in women. Obesity is one of the major risk factor associated with OSA, increased incidence of obesity can further engorge the population suffering from OSA.[3]

OBESITY

Adipose tissue deposits surrounding airway

Reduced ventilator stability

Obesity   Sleep Apnea

Physical inactivity & poor dietary habits

Insulin resistance

Reduced renal function, Systemic inflammation

What signs and symptoms should prompt consideration of OSA?

The most common signs and symptoms associated with OSA are loud snoring, gasping for air during sleep, awakened with a dry mouth, morning headache, excessive daytime sleepiness etc. Atypical symptoms which are most commonly reported by women including insomnia, mood disturbance, reflux and nocturnal enuresis.[4] Poor work performance, occupational accidents and a reduction in social interactions and other aspects of quality of life.

How OSA should be diagnosed?

There are various diagnostic tools available to identify OSA beginning from the Case history, Examination, Home based portable monitoring, Epworth sleepiness scale, Malampatti score / Friedman staging, polysomnography, Drug induced sleep endoscopy etc, but polysomnography is the gold standard method to diagnose OSA and it monitors many more parameters of sleep like sleep cycle, leg movement, muscle activity, Electroencephalography (EEG) etc[5]

Why Diagnosing OSA is important?

A large number of patients with moderate or severe OSA may remain undiagnosed &untreated due to lack of awareness among the patients and the doctors. Stigma associated with snoring and poor availability of centres doing polysomnography studies are other factors that makes the diagnosis of OSA difficult. If left untreated it may lead to various complications such as cardiovascular diseases, liver problems, metabolic disorders, acute respiratory distress syndrome etc Other important cardiometabolic associations include atrial fibrillation, resistant hypertension and insulin resistance.[6]

Looking into the existing scenario it was thought to carry out a survey study to assess the awareness among Interns, Postgraduates and Faculties of a dental college in Moradabad (U.P) on the basis of knowledge, diagnosis and treatment planning regarding Obstructive sleepapnea.

MATERIALS AND METHOD

A pre-designed, self-administered questionnaire was distributed among the interns, postgraduates and faculties in a dental college. The survey had a total of 20 questions based on knowledge and treatment regarding Obstructive sleep apnea. A total of 140 participants were included in the study out of which 44 interns, 48 postgraduates and 48 faculties. The confidentiality of all the participants was maintained. The Likhert Scale was used for scoring the questions and the percentage response was obtained and the data was calculated.

RESULTS

All the survey sheet answers were statistically analysed by using frequency distribution test and chi-square test. The questions were analyzed for knowledge, diagnosis and treatment with respect to the categories and the demographic analysis showed that the study population was between the ages 22-55 years.

a) KNOWLEDGE BASED

On the basis of knowledge (Graph-1), the overall analysis reveals that only 8.33% of interns, 13.19% of postgraduates and 30.21% of faculties were aware of Obstructive sleep apnea. When it was asked which sex is more affected by OSA there was no statistically significant difference found and p value=0.164 which is >0.05, poor level of knowledge was found when it was asked whether participants were aware that OSA can affect the pediatrics and this was also statistically proven by chi-square test p=0.007 and there was statistically significant difference found. Obesity is a major predisposing factor for OSA but study participants does not have enough knowledge & p value=0.121 which is >0.05 so there was no statistically significant difference found among all the groups. When the participants were questioned whether stroke have any adverse outcome regarding OSA there was no statistically significant difference found as p=0.207. All participants agreed that OSA has been ignored by dentist due to lack of knowledge and training at dental schools and most of the study respondents want OSA to be included in the undergraduate teaching program.

b) DIAGNOSIS AND TREATMENT BASED

On the basis of diagnosis and treatment planning (Graph-1), when the study participants were asked whether snoring is associated with OSA, poor level of knowledge was found and p<0.05 i.e statistically significant difference found among all the groups. While taking history of a patient no one had ever asked whether they sleep well at nights or not but this is the must question that should be included in the case history. The study participants even didn't knew that dentist have a major role in diagnosing and treating OSA, p value =0.029 which is <0.05. 75% of the study participants have not heard of Epworth sleepiness scale that how likely the person is falling asleep in different situations in relation to OSA. Even the participants didn't knew how to evaluate malampatti score which is used to diagnose OSA. Minority of the study participants were aware that polysomnography can be used to diagnose OSA and it is the gold standard test, result were found least among all the categories. When it was asked to the participants, if patients sleeps on a dental chair while undergoing treatment during the day, can it be an indication of OSA there was a statistically significant difference found & p value=0.143 which is <0.05. Minority of study participants have heard of Continous positive airway pressure (CPAP) device. Mandibular advancement devices can also be used in patients who are intolerant to CPAP device but none of the interns, 12.5% of postgraduates & 16.67% of the faculties knew that it keeps the patient jaw forward to maintain an open airway whereas none of the intern, 10.4% of postgraduates & only 12.5% of faculties knew that OSA can be surgically treated, p=0.060 and uvulopalatopharyngeoplasty is the commonest soft tissue surgery.
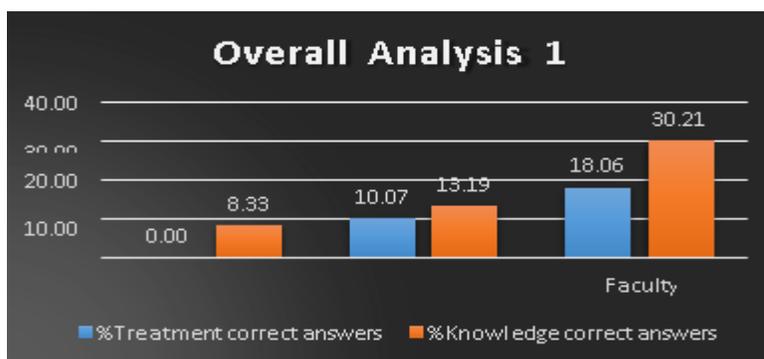
Graph-1 Overall analysis on the basis of treatment and knowledge based

Some of the study questions and the response of the participants are discussed below-

Q7. When it was asked as an intern or dentist while taking history of a patient have you ever asked, do u sleep well at night?

Yes 1%

No 99%

Yes   No
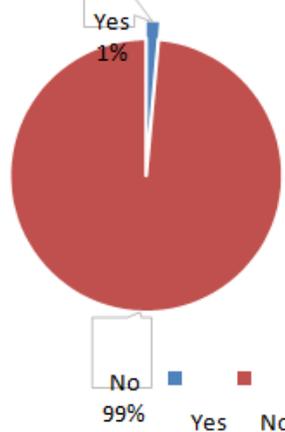
99% of the study population have never asked but this is a must question that should be included in the case history. For example-when we perform any dental procedure such as restoration, border moulding and patient is falling asleep this may give us an indication of OSA.

Q10. When it was asked have you heard of epworth scale in relation to OSA?
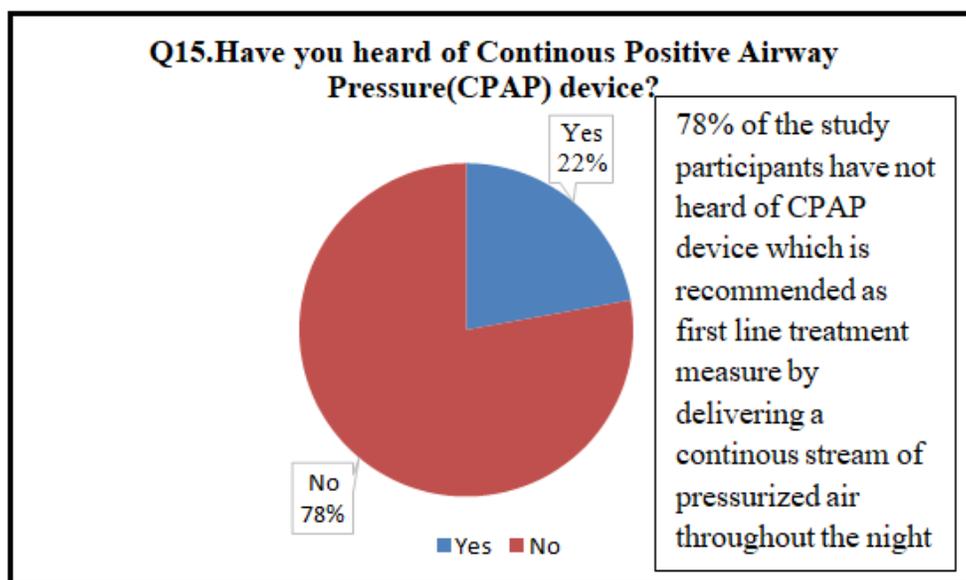
Yes 25%

No 75%

Yes   No
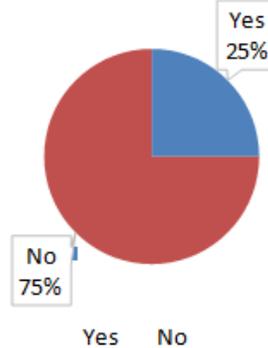
75% of the study participants were not known of Epworth sleepiness scale. The following scale determines that how likely the patient is falling asleep in different situations.

Q11. Do you know how to evaluate malampatti score?

Yes 15%

No 85%

Yes   No
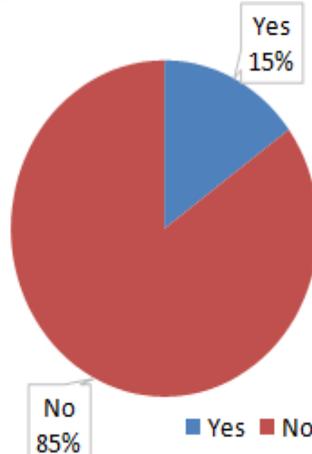
85% of the study participants didn't knew about malampatti score that it is used to predict whether the person is having OSA whereas it also predicts the ease of intubation in anaesthesia

Q15.Have you heard of Continous Positive Airway Pressure(CPAP) device?

78% of the study participants have not heard of CPAP device which is recommended as first line treatment measure by delivering a continous stream of pressurized air throughout the night

Q18.As a dentist are you trained in diagnosing and treating OSA?

98% of the study participants were not trained in diagnosing and treating patients with OSA. Dentists plays a very important role in diagnosing OSA apart from routine dental examination. Dentist and physicians should strive to a symbiotic relationship that facilitates treatment of OSA. Their team work together can identify whether CPAP device or oral appliance therapy (OAT) is the appropriate treatment for patient.

DISCUSSION

The questionnaire study was choosen as it allows to collect the information and data from a large number of respondents rather quickly. The participants were choosen erratically from the dental college in Moradabad (U.P), India. Results were found least among all the categories either by looking onto the knowledge or on the basis of diagnosis and treatment planning (Graph-2). So when compared to a study by Corso et al[15] that conducted a survey on knowledge and attitude of OSA among Italian anaesthetist and the result demonstrates lack of knowledge of OSA and its treatment, revealing the need to update the syllabus of teaching in medical practice which was closely similar to the present study.

Cherrez-Ojeda et al[12] aimed to assess the recent Latin American medical school graduates knowledge and attitude about OSA and also examined whether their knowledge and attitude about OSA differed from practicing physicians and they conclude that the overall mean knowledge was low when compared to practicing physicians. Though in our present study results were least among the interns, postgraduates and faculties but the faculties have more knowledge when compared to interns and postgraduates. Ozoh, Iwuala, Desalu et al[13] also aimed to assess the knowledge and attitudes of graduating medical students in Nigeria regarding Obstructive sleep apnea by using a validated questionnaire and it was found that the level of knowledge was not optimal among the medical students in Nigerian university which was similar

to our study. This study also demonstrates that there is a need to incorporate evaluation of sleep disorders into the medical curriculum with a clear objective of enabling recognition of clinical features of sleep disorders such as sleep apnea.

South well et al[14] conducted a study to assess the knowledge and attitude of cardiologist about obstructive sleep apnea. If OSA left undiagnosed , this may be associated with cardiovascular diseases. Cardiologist appears to lack adequate confidence in identifying OSA patients, and the overwhelming majority are not confident in managing OSA, enhancing awareness may improve screening of this condition.
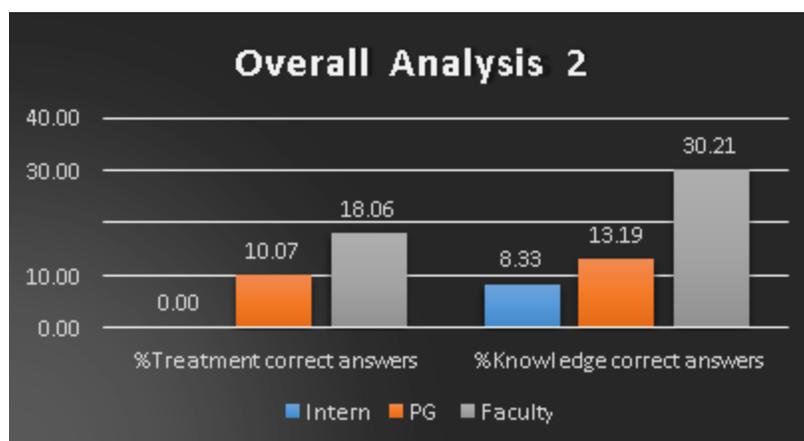
Graph-2 Overall analysis on the basis of knowledge andtreatment based

Patient with symptoms of OSA can present to nearly all doctors, irrespective of specialty hence a basic knowledge of OSA is considered essential to identify these patients for appropriate referral and treatment.[7] We must know the signs, symptoms and risk factors that prompt deliberation of obstructive sleep apnea.

DIFFERENT TYPES OF DIAGNOSTIC SLEEP TESTING AND THEIR TREATMENT MODALITIES

Diagnostic tools		
1) Home sleep study	• In clinical use there are several types of home sleep apnea testing such as Level III sleep studies that records a minimum of three channels of data while the patientsleeps at home. It usually monitors the no. of breathing, no. of snoring, oxygen saturation, Apnea Hypopnea index[9] are seen in the result	ADVANTAGES -Done in the comfort of home. -Better chance to get a near normalsleep **-Cost effective**
2) Measurement ofNeck circumference and body mass	• Neck circumference-Greater than 17 inches(43.2 cms) for men and 16 inches(40.6cms) for women Body mass index(BMI)>30	
index	• kg/m^2 is suggestive of OSA[10]	
3) Over night polysomnography	• Gold standard test • Involves collection of several data channels such as electroencephalogram, and electrooculogram for sleep staging,	

	electromyogram, electrocardiogram and respiratory channels.[11] • In adults if Apnea Hypopnea Index(AHI) value greater than 5 considered significant • In children if AHI value greater than 1 is significant	
4)Drug induced sleep endoscopy (DISE)	• First described by Croft and Pringle 1991 • Tool to evaluate upper airway obstruction under pharmacological sedation to simulate natural sleep, by utilizing fiberoptic endoscopy.[12] • Propofol is the medicine used to perform DISE. • VOTE classification – commonest classification thatreport DISE results.	
TREATMENT MODALITIES	•	
1) Continous positiveair pressure (CPAP) therapy	• Reduces Apnea hypopnea index & sleepiness • Improves the quality oflife	Benefits • Reduction in blood pressureas well as decreased riskof
	•	cardiovascularevents • Reduced the risk of motor vehiclecrashes in patients with moderate to severe OSA
2) Oral appliances	• Recommended for patients who are intolerant to CPAP Device or prefer not touse it • Either mandibular advancement devices, tongue retaining devices& soft palate lifters • The mandibular advancement devices helps by posturing and holding the mandible in a forward posture by a custom titrable appliance.[13]	Advantages ☐ Easy to fabricate ☐ Easy to titre the advancement ☐ Convenient touse Disadvantages ☐ Long term TMJissues Complianceissues

The role of dentists is becoming more significant in sleep disorders, especially in co-managing patients with simple snoring and mild to moderate obstructive sleep apnea (OSA). The practicing dental professional has the opportunity to assist patients at a variety of levels, starting with the recognition of a sleep-related disorder, referring them to a physician for evaluation, and assisting in the management of sleep disorders. Almost every discipline in dentistry needs to be aware of sleep disorders and their potential impact.

CONCLUSION

Despite recent advances and improving educational trends, large number of study participants didn't know about OSA, its risk factors and its appropriate management. Due to lack of awareness, they won't be able

to recognize and appropriately refer the patient at high risk of OSA for testing that contributes to under diagnosis of OSA and treatment. Educational interventions in dental schools could help to improve the knowledge regarding OSA, as well as greater number of hours of students exposure to sleep education could improve outcomes.

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