Journal of Cardiovascular Disease Research

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 06, 2024

Original research article

Knowledge and attitude of obstructive sleep apnea among fresh medical graduates and postgraduate residents

[1]Dr. Aneesha S, [2]Dr. Shobitha Rao, [3]Dr. Rakesh Bilagi

[1]Junior Resident, Department of Respiratory Medicine, Srinivas Institute of Medical Science and Research, Mukka, Surathkal, Karnataka, India

[2]Associate Professor, Department of Respiratory Medicine, Srinivas Institute of Medical Science and Research, Mukka, Surathkal, Karnataka, India

[3]Assistant Professor, Department of Respiratory Medicine, Srinivas Institute of Medical Science and Research, Mukka, Surathkal, Karnataka, India

Corresponding Author: Dr. Aneesha S

Abstract

Background: Obstructive Sleep Apnea (OSA) is a growing public health concern and a prevalent sleep disorder characterized by repetitive episodes of complete or partial upper airway obstruction during sleep, leading to disruptions in airflow and intermittent hypoxemia. This condition not only affects the quality of sleep but also poses significant health risks, including cardiovascular diseases, cognitive impairment, and diminished quality of life. As Medical Graduates are the primary doctors who come across such patients, their knowledge and attitude play an important part in identifying risk factors, diagnosis, treatment, and complications of OSA. The aim of this study is to access the same in Fresh Medical Graduates and Post Graduate residents in a medical college.

Methods: A cross-sectional survey was conducted among Fresh Medical Graduates and Post-Graduate residents from a medical college. Validated "Obstructive Sleep Apnea Knowledge and Attitudes Questionnaire" (OSAKA) was used for the same. The survey contained 18 questions to assess the knowledge and 5 questions to assess the attitude of the respondents.

Results: Of the 210 total participants, a majority had good knowledge and attitude of OSA. However, there were areas of the questionnaire that showed a lack of knowledge in areas of apnea and hypopnea, complications of OSA, and women of OSA presenting with fatigue. Many considered OSA and its diagnosis to be important although only some were confident to manage such patients.

Conclusion: Sound Knowledge and Attitude of Fresh Medical Graduates and Post Graduate residents are important for appropriate identification, diagnosis, and to treat such cases. It is imperative for these graduates to be educated and trained about OSA.

Keywords: Obstructive Sleep Apnea (OSA), fresh medical graduates, post graduate residents, knowledge, attitude

Introduction

One of the persistent health issues with serious consequences is obstructive sleep apnea (OSA). OSA is the most prevalent kind of Sleep Disordered Breathing (SDB) characterized by recurrent, short-lived episodes of upper airway obstruction (partial or complete) lasting longer than ten seconds when a person is asleep [1]. OSA was formerly believed to only affect the wealthy in industrialized nations but is becoming more widely acknowledged in developing nations as well. India's non-communicable disease burden is rising due to population aging, urbanization, industrialization, and the rise of lifestyle diseases. One of the non-communicable diseases that are less addressed and less talked about is OSA [2]. Despite advances in technology, most OSA patients remain underdiagnosed and untreated. The vast majority of studies conducted in Western countries indicate that OSA is still significantly underreported and, as a result, undertreated [3, 4].

Recent Indian studies show that the Prevalence of OSA in India varies from 3.7% to 21%, which indicates the need for better identification, appropriate testing, and prompt treatment of the condition [5].

Medical students' understanding of sleep disorders has been evaluated in recent research conducted in China and Saudi Arabia but such studies in India are few; however, neither study particularly investigated students' knowledge of OSA and its management [6, 7]. Despite its high prevalence, OSA is underdiagnosed; among physicians, medical graduates, and the general public. Around 90% of OSA patients go underdiagnosed because of a lack of awareness and knowledge [8]. The need for understanding OSA, its risk factors, and the associated complications is a must for physicians and medical graduates as it can help them treat and refer them to specialists when needed. Fresh Medical Graduates and Post-Graduate residents are often the first to see most patients with OSA symptoms.

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 06, 2024

These young doctors have many limitations during clinical encounters that preclude screening for OSA. These limitations include time restraints and other priorities of care. In a time when obesity is becoming more and more common and is linked to OSA, it is helpful to investigate the knowledge, attitudes, and practices of Fresh Graduates and Post-Graduate residents today [1, 9]. Studies have reported that most medical students lacked knowledge important to diagnosing and managing OSA among adults [10].
Our study's goal was to assess the attitude, knowledge, and complications of OSA among freshly passed-out graduates and post-graduate residents using the Obstructive Sleep Apnea Knowledge and Attitude Questionnaire (OSAKA Questionnaire) [11].

Materials and Method

It was a cross-sectional study conducted among Fresh Medical Graduates and Post-Graduate residents from a medical college. Fresh Medical Graduates were taken in this study who completed internship in 2024. First, Second, and Third-year Post-Graduate residents who took admission from 2022 to 2023 participating in the study from 11 various clinical departments from the medical college were considered. Inclusion criteria included all the Fresh Medical Graduates and Post-Graduate residents who volunteered to participate in this study. Exclusion criteria were all those who were unavailable and unwilling to take part in the study. Study was conducted after getting the ethical clearance from the institution and by abiding to the institutional requirements.
A validated questionnaire with three sections served as the study instrument. The Obstructive Sleep Apnea Knowledge and Attitudes (OSAKA) questionnaire served as the basis for the knowledge and attitude section [11].
A three-part, self-administered questionnaire was used for the study. Information in the first section of the questionnaire includes information on the name, gender, age, department, education, and years of practice of those taking part in the study. The subsequent section evaluates the knowledge and attitudes among the participants regarding OSA. A total of 18 questions were used for the same which covered the following essential domains:

1. Pathophysiology.
2. Epidemiology.
3. Symptoms.
4. Diagnosis.
5. Treatment.

Presented in 18 true or false statements. The third option of ‘Don’t know’ was also included in an effort to reduce guessing of answers and was considered as an incorrect score. The final and third section evaluated the participants’ views on the importance and their confidence in identifying and managing OSA through 5 questions. This survey is a reliable tool for assessing physicians' opinions and expertise regarding OSA.

Statistical Analysis

The analysis was done using SPSS version 23 (IBM Corp. Released 2015. IBM SPSS Statistics for Windows, version 23.0. Armonk, NY, USA: IBM Corp.). The proportion of subjects who provided correct responses to the questionnaire was calculated and computed. Student T-test was used to calculate the significance of probability for categorical variables.

Results

A total of 210 graduates and residents participated in this study with a fully filled valid questionnaire. Among the participants, 132 were Fresh Medical Graduates and 78 were Post Graduate residents.

Age Group (YRS)	Fresh Medical Graduates n(%)	Post Graduate residents n(%)	Total n(%)
21-25	117(88.64%)	12(15.38%)	129(61.43%)
26-30	15(11.36%)	60(76.92%)	75(35.71%)
>30	0(0.00%)	6(7.69%)	6(2.86%)
Total	**132(100.0%)**	**78(100.00%)**	**210(100.00%)**

Table 1-Age group of Fresh Medical Graduates and Post Graduate residents.

Age groups participating were from 21 years to >30 years with the more predominant age group of Fresh Medical Graduates being in 21-25 years (117) and Post Graduate Residents being in 26-30 years (60) as shown in tables 1.

Gender	Fresh Medical Graduates n(%)	Post Graduate residents n(%)	Total n(%)
Female	84(63.64%)	38(48.72%)	122(58.10%)

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 06, 2024

Male	48(36.36%)	40(51.28%)	88(41.90%)
Total	**132(100.00%)**	**78(100.00%)**	**210(100.00%)**

Table 2-Gender distribution of Fresh Medical Graduates and Post Graduate residents.

The majority of the participants were Females (122) among the total respondents with most of them being Fresh Medical Graduates (84) as shown in table 2. Male participants were more or less equal in both groups.

Response to Knowledge Section

18 questions to access the knowledge of OSA were given and correct answers were analyzed. Participants who answered "Yes" were taken as correct responses and those who answered "No" and "Don't know" were considered together and as wrongly answered. Table 3 shows the category of correct responses with their percentages to individual questions of Fresh Medical Graduates and Post Graduate residents. It was seen that both groups knew patients of OSA have snoring as their common complaint, alcohol not improving OSA, and OSA in children commonly due to large adenoids and tonsils. It was also observed that some of the respondents knew the pathophysiology of OSA being loss of airway muscle tone but still many were unsure of the same. Most of the participants answered incorrectly regarding whether women with OSA can present with fatigue alone, knowledge of apnea and hypopnea and collar size width as risk for OSA.As observed from table 3 and figure 3, the responses to the other questions showed that almost 50% in both the groups had little understanding of questions like Uvulopalatopharyngoplasty not being curative for OSA, prevalence of OSA, OSA association with hypertension (table 3, figure 1).

Table 3: Knowledge of OSA among Fresh Medical Graduates and Post Graduate residents

Questionnaire	Fresh Medical Graduates (132) n(%)	Post Graduate residents (78) n(%)	Total (210) n(%)	p-value
1. Women with obstructive sleep apnea may present with fatigue alone(t)	42(31.81%)	31(39.74%)	73(34.76%)	0.244
2. Uvulopalatopharyngoplasty is curative for the majority of patients with obstructive sleep apnea(f)	61(46.21%)	36(46.15%)	97(46.19%)	0.9935
3. The estimated prevalence of obstructive sleep apnea is between 2 and 10%(t)	71(53.78%)	44(56.41%)	115(54.76%)	0.7122
4. The majority of patients with obstructive sleep apnea snore(t)	112(84.84%)	70(89.74%)	182(86.66%)	0.3154
5. Obstructive sleep apnea is associated with hypertension(t)	64(48.48%)	48(61.53%)	112(53.3%)	0.06694
6. An overnight sleep study is the gold standard for diagnosing obstructive sleep apnea(t)	96(72.72%)	62(79.48%)	158(75.23%)	0.2739
7. CPAP (Continuous Positive Airway Pressure) therapy may cause nasal congestion(t)	62(46.96%)	44(56.41%)	106(50.47%)	0.1864
8. Laser-assisted uvuloplasty is an appropriate treatment for severe obstruvtive sleep apnea (f)	71(53.78%)	47(60.25%)	118(56.19%)	0.3613
9. The loss of upper airway muscle tone during sleep contributes to obstructive sleep apnea(t)	94(71.21%)	61(78.20%)	155(73.80%)	0.2664
10. The most common cause of obstructive sleep apnea in children is the presence of large tonsils and adenoids(t)	108(81.81%)	67(83.89%)	175(83.33%)	0.4434
11. A craniofacial and oropharyngeal examination is useful in the assessment of patients with suspected obstructive sleep apnea(t)	95(71.96%)	61(78.20%)	156(74.28%)	0.3178
12. Alcohol at bedtime improves obstructive sleep apnea(f)	121(91.66%)	68(87.17%)	189(90.00%)	0.2966
13. Untreated obstructive sleep apnea is associated with a higher incidence of automobile crashes(t)	70(53.03%)	47(60.25%)	117(55.71%)	0.3103
14. In men, a collar size 17 inches or greater is associated with obstructive sleep apnea(t)	55(41.66%)	42(53.84%)	97(46.19%)	0.08717
15. Obstructive sleep apnea is more common in women than in men(f)	77(58.33%)	41(52.856%)	118(56.19%)	0.4155
16. CPAP is the first line therapy for severe obstructive sleep apnea(t)	88(66.66%)	43(55.12%)	131(62.38%)	0.09538
17. Less than 5 apneas or hypopneas per hour is normal in adults (t)	44(33.33%)	29(37.17%)	73(34.76%)	0.5717
18. Cardiac arrhythmias may be associated with untreated obstructive sleep apnea (t)	90(68.18%)	60(76.92%)	150(71.42%)	0.1757

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 06, 2024

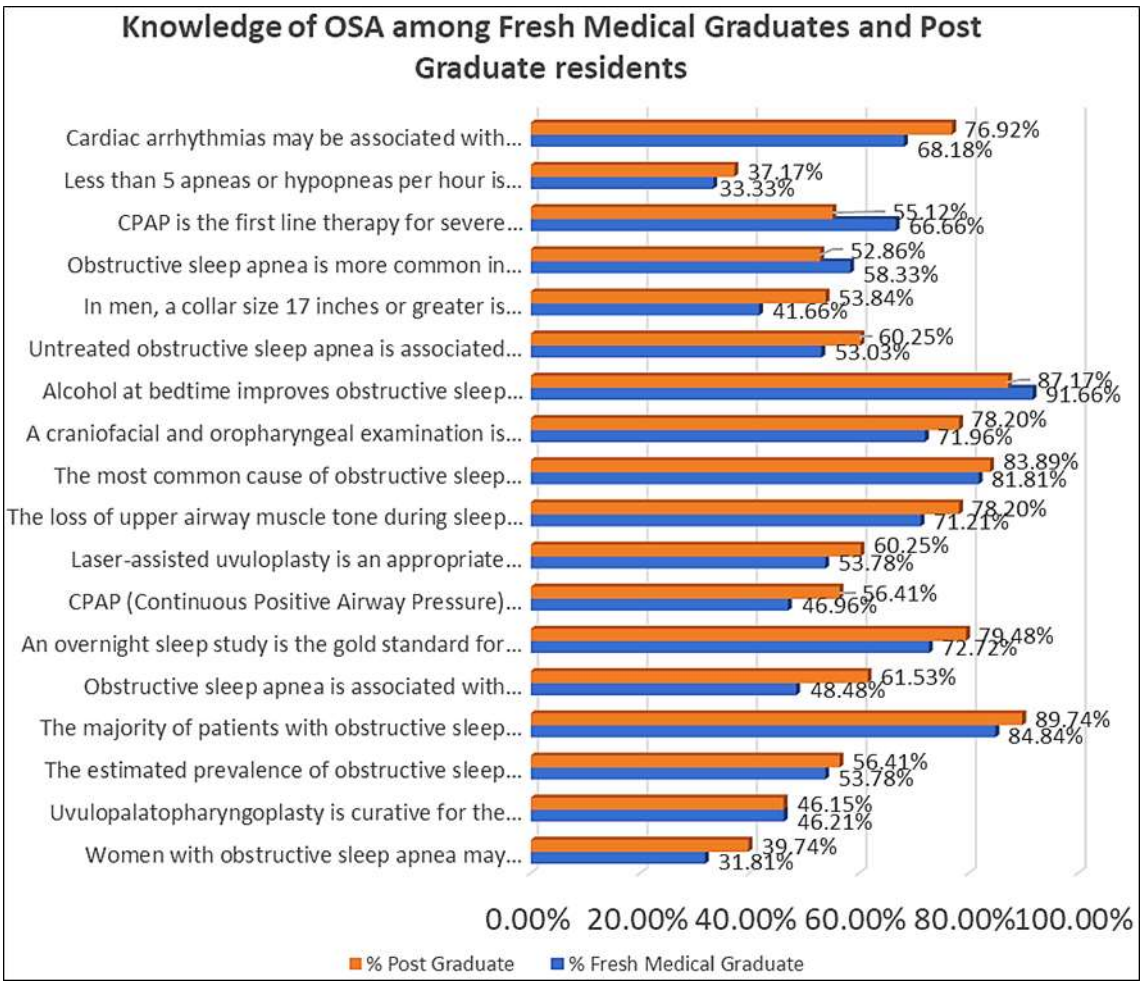

Fig 1: Knowledge of OSA among Fresh Medical Graduates and Post Graduate residents

Responses to Attitude section

To analyze the attitude of participants to OSA and their confidence, 5 questions were asked and the responses were charted. It was observed that for questions regarding the importance of OSA and identifying patients with OSA, many Fresh Medical Graduates felt they are Important i.e., 68(51.52%) and 67(50.76%) respectively. Post Graduate residents felt that OSA was Very important and identification of such patients was equally Very Important i.e., 37(47.44%) as seen in tables 4 and 5; figures 2 and 3.

Table 4: Attitude of Fresh Medical Graduate and Post Graduate residents regarding Importance of OSA

As a clinical disorder, obstructive sleep apnea is	Fresh Medical Graduates n(%)	Post Graduates residents n(%)	Grand Total (Fresh Medical Graduates + Post Graduate residents) n(%)
Extremely Important	19(14.39%)	15(19.23%)	34(16.19%)
Important	68(51.52%)	21(26.92%)	89(42.38%)
Not important	3(2.27%)	0(0.00%)	3(1.43%)
Somewhat important	5(3.79%)	5(6.41%)	10(4.76%)
Very Important	37(28.03%)	37(47.44%)	74(35.24%)
Total	132(100.00%)	78(100.00%)	210(100.00%)

Table 5: Attitude of Fresh Medical Graduates and Post Graduate residents in Identifying OSA

Identifying patients with possible obstructive sleep apnea is	Fresh Medical Graduates n(%)	Post Graduate residents n(%)	Grand Total (Fresh Medical Graduates + Post Graduate residents) n(%)
Extremely Important	20(15.15%)	13(16.67%)	33(15.71%)
Important	67(50.76%)	26(33.33%)	93(44.29%)
Not important	3(2.27%)	0(0.00%)	3(1.43%)
Somewhat important	4(3.03%)	2(2.56%)	6(2.86%)
Very Important	38(28.79%)	37(47.44%)	75(35.71%)
TOTAL	132(100.00%)	78(100.00%)	210(100.00%)

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 06, 2024

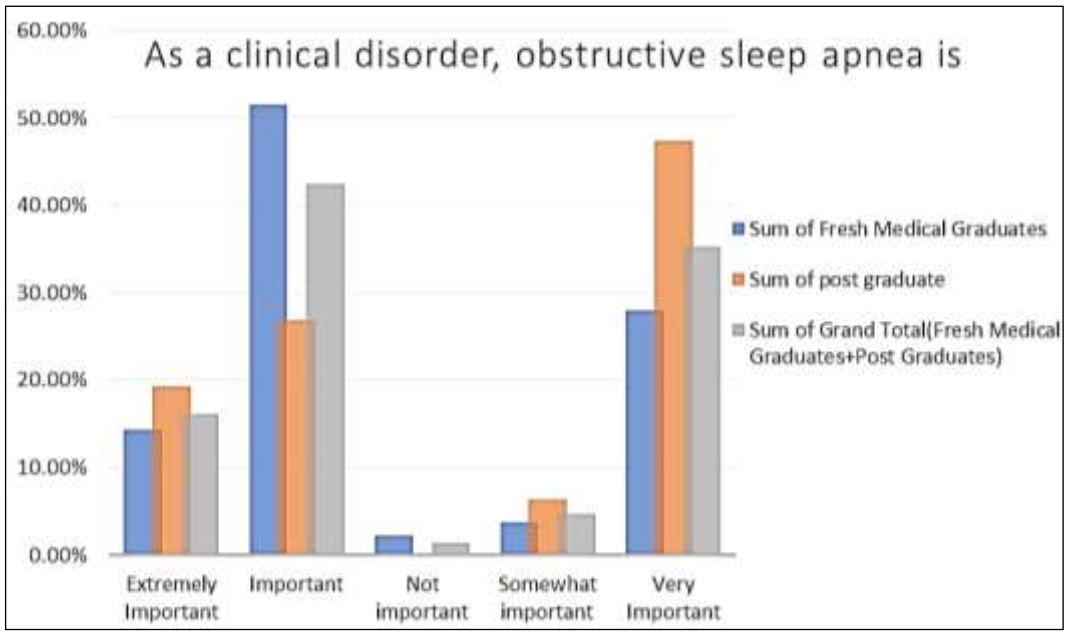

Fig 2: Attitude of Fresh Medical Graduate and Post Graduate residents regarding Importance of OSA

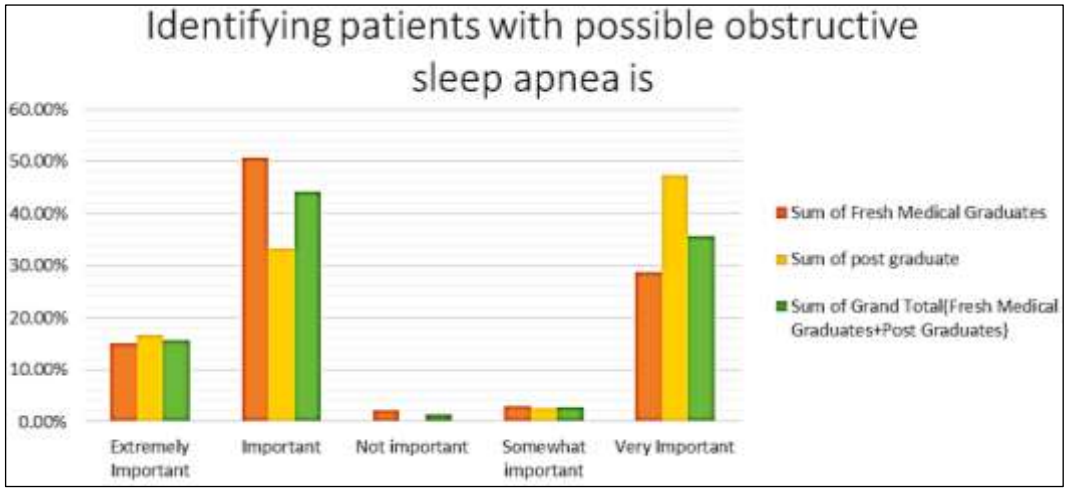

Fig 3: Attitude of Fresh Medical Graduates and Post Graduate residents in Identifying OSA

The next 3 questions evaluated the confidence of the participants in identifying at risk for OSA, treating OSA, and managing OSA patients on CPAP. Both Fresh Medical Graduates and Post Graduates agreed that they were confident in identifying at-risk patients for OSA i.e., 50(37.88%) and 43(55.13%) respectively (table 6, figure 4).

Table 6: Confidence of Fresh Medical Graduates and Post Graduate residents in identifying at risk for OSA

I feel confident identifying patients at risk for obstructive sleep apnea	Fresh Medical Graduates n(%)	Post Graduate residents n(%)	Grand Total (Fresh Medical Graduates + Post Graduate residents) n(%)
Agree	50(37.88%)	43(55.13%)	93(44.29%)
Disagree	22(16.67%)	4(5.13%)	26(12.38%)
Neither agree nor disagree	49(37.12%)	22(28.21%)	71(33.81%)
Strongly agree	10(7.58%)	7(8.97%)	17(8.10%)
Strongly disagree	1(0.76%)	2(2.56%)	3(1.43%)
TOTAL	132(100.00%)	78(100.00%)	210(100.00%)

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 06, 2024

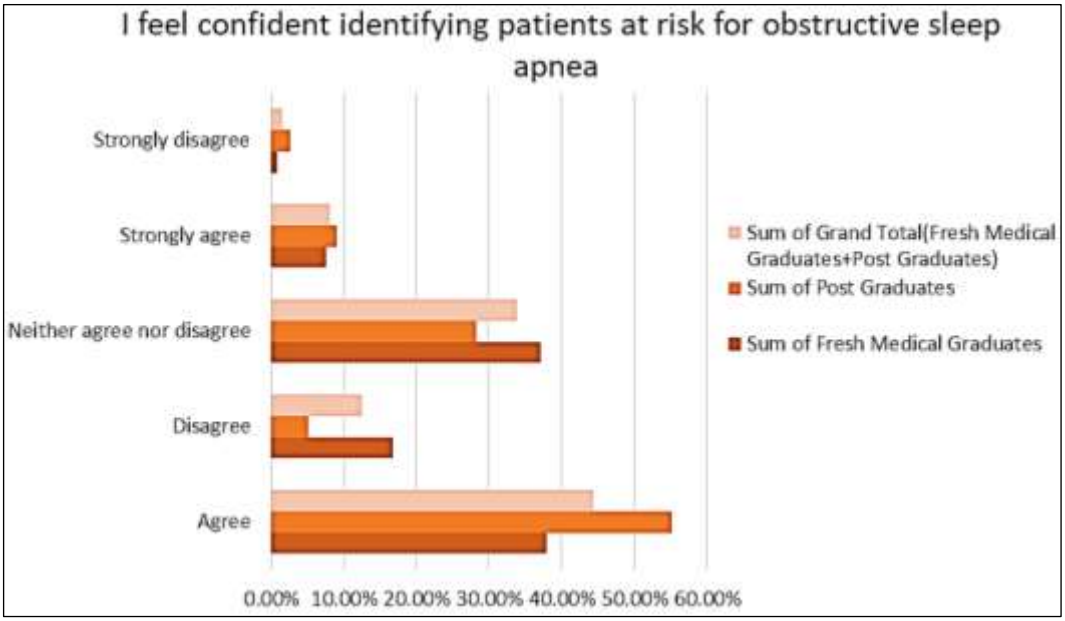

Fig 4: Confidence of Fresh Medical Graduates and Post Graduate residents in identifying at risk for OSA

When it came to managing patients with OSA, 54(40.91%) Fresh Medical Graduates and 31(39.74%) Post Graduate residents neither agreed nor disagreed (table 7, figure 5).

Table 7: Confidence in managing patients of OSA among Fresh Medical Graduates and Post Graduate residents

I am confident in my ability to manage patients with obstructive sleep apnea	Fresh Medical Graduates n(%)	Post Graduate residents n(%)	Grand Total (Fresh Medical Graduates + Post Graduate residents) n(%)
Agree	35(26.52%)	29(37.18%)	64(30.48%)
Disagree	35(26.52%)	14(17.95%)	49(23.33%)
Neither agree nor disagree	54(40.91%)	31(39.74%)	85(40.48%)
Strongly agree	7(5.30%)	1(1.28%)	8(3.81%)
Strongly disagree	1(0.76%)	3(3.85%)	4(1.90%)
TOTAL	132(100.00%)	78(100.00%)	210(100.00%)

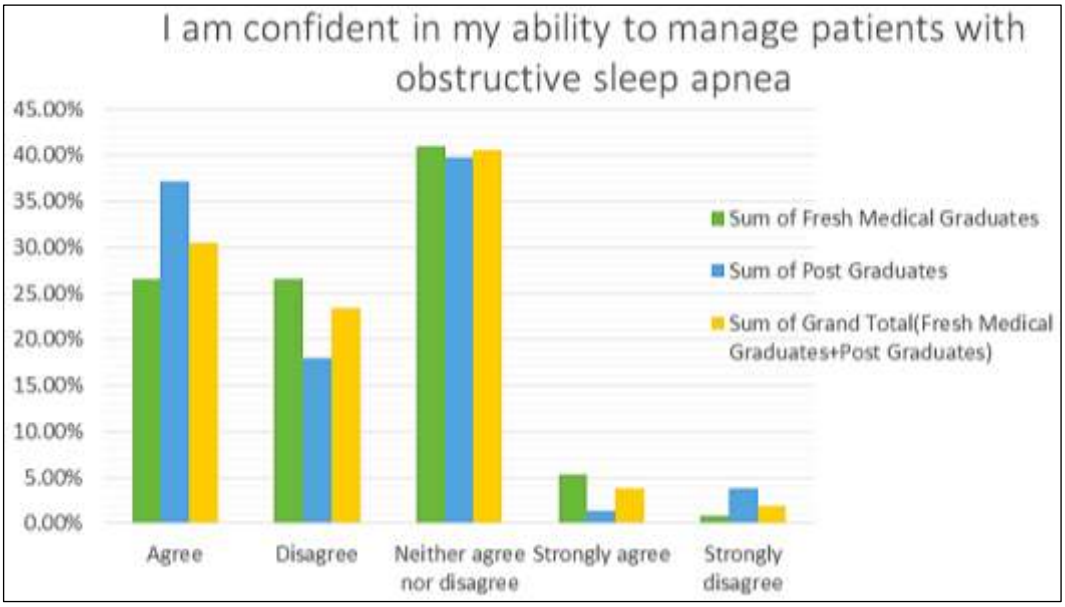

Fig 5: Confidence in managing patients of OSA among Fresh Medical Graduates and Post Graduate residents

Only 30(38.46%) of Post Graduate Residents agreed to be confident in managing OSA patients on CPAP therapy (table 8, figure 6).

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 06, 2024

Table 8: Confidence in managing OSA patients on CPAP therapy among Fresh Medical Graduates and Post Graduate residents

I am confident in my ability to manage patients on CPAP therapy	Fresh Medical Graduates n(%)	Post Graduate residents n(%)	Grand Total (Fresh Medical Graduates + Post Graduate residents) n(%)
Agree	38(28.79%)	30(38.46%)	68(32.38%)
Disagree	34(25.76%)	13(16.67%)	47(22.38%)
Neither agree nor disagree	52(39.39%)	28(35.90%)	80(38.10%)
Strongly agree	6(4.55%)	2(2.56%)	8(3.81%)
Strongly disagree	2(1.52%)	5(6.41%)	7(3.33%)
TOTAL	132(100.00%)	78(100.00%)	210(100.00%)

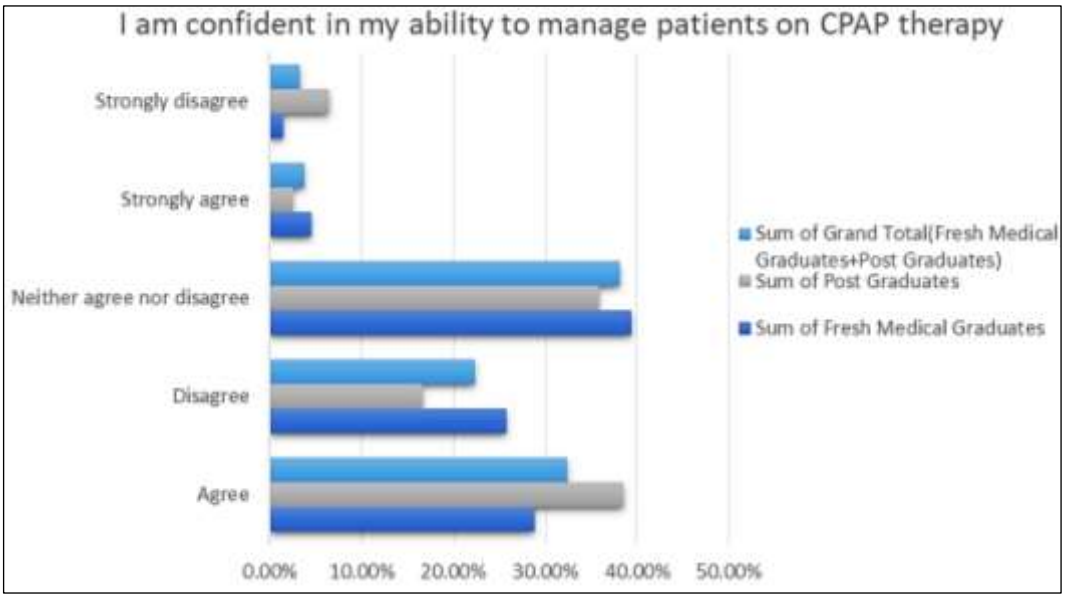

Fig 6: Confidence in managing OSA patients on CPAP therapy among Fresh Medical Graduates and Post Graduate residents

Mean and Standard deviation of the knowledge and attitude among both groups of participants were analyzed showing Fresh Medical Graduates to have a greater mean (78.9), and standard deviation (22.86) compared to the Post Graduate Residents. The combined calculation of 210 respondents showed a p-value significance of <0.001 favoring better Knowledge and Attitudes among Fresh Medical Graduates than Post Graduate Residents (table 9).

Table 9: Mean, Standard deviation and p-value of the study participants

Parameter	Mean	STD deviation	P value
Fresh Medical Graduates	78.9	22.86	<0.001
Post Graduate residents	50.055	12.79	

Discussion

Our study shows many Fresh Medical Graduates and Post Graduate residents had wide variation in Knowledge about OSA in the questionnaire, ranging from 34.76% to 90.00% though there was no single question that was answered correctly or incorrectly by all respondents.

Obstructive Sleep Apnea is characterized by upper airway collapse (mostly during the inspiratory phase of breathing) as a result of the altered airway muscle tone during sleep, resulting in sporadic bouts of hypopnea and/or apnea. The arterial oxygen saturation decreases during these episodes, which may cause autonomic dysregulation. Over time, these acute alterations give rise to chronic illnesses that impact the pulmonary, neurological, and cardiovascular systems [12]. 70% -80% of the total participants in our study knew about the loss of upper airway tone contributing to OSA same as a study done by Al-Rasheedi AN *et al*. in Tabuk city in 2023 [17]. Craniofacial and oropharyngeal examination is thus vital while assessing patients suspected of OSA which was identified by 74% of the respondents in our study. Research has found several risk factors, including both genetic and environmental factors like age, male sex, obesity, family history, cigarette smoking, and alcohol consumption, even though the exact mechanisms are unclear [13].

OSA is characterized by recurrent episodes of near-or complete respiratory cessation (apneas) and decreased airflow (hypopneas) during sleep. These events are typically accompanied by fragmented sleep, arousal, and/or decreased oxygen saturation [14]. As observed in our questionnaire only 35% of the

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 06, 2024

respondents had knowledge regarding hypopnea and apnea. Fatigue, exhaustion, excessive daytime sleepiness, loud snoring, observed apneas, sleep fragmentation, morning headaches, dry mouth, sore throat, drowsiness, and crowded pharyngeal space are clinical manifestations of OSA [15]. Frequent sleep disturbances also result in additional side effects like headaches, exhaustion, and cognitive decline [16]. A similar study done by Abhishek Goyal *et al*. in the year 2017 [8], in India, and Al-Rasheedi AN *et al*. in Tabuk City [17] also had many respondents answering correctly about snoring in OSA patients just like how we observed in our study.

Changes in gas exchange result in hypoxemia, hypercapnia, altered sleep patterns, and long-term cardiovascular consequences. Additionally, oxyhemoglobin desaturation, cortical arousals, and cardiovascular disruptions are some of the side effects of OSA that may eventually lead to cardiovascular morbidity and mortality [18]. Epidemiological evidence makes it abundantly evident that OSA acts independently as a risk factor for a poorcardiometabolic profile[1].Arrhythmias are common in untreated OSA and this was identified by a good number of Post Graduate Residents (76%) in our study. A similar finding was observed in a study done in Ecuador among fresh graduates in the year 2018 [9].

Male patients who are 40 years or older, obese, and have a neck circumference greater than 18 inches are considered high-risk factors for OSA [16]. As people age, they experience sleep-related apnea more frequently. It is more common in men than in women. Thus, men have a higher predisposition to develop OSA than females [15]. More than half the participants in our study knew that OSA is more common in men. Compared to females, men typically have a higher deposition of neck fat, which increases the risk of upper airway collapse [15]. Furthermore, a 10% weight gain can result in a six-fold increase in the risk of OSA [19]. Regarding the knowledge of collar size which is associated with OSA, respondents did not have a sound understanding of the same and many ended up answering them incorrectly with only 41% of Fresh Medical Graduates and 53% of Post Graduate residents giving the right answer. Similarly,a lack of knowledge of medical students was seen in a study done by Abhishek Goyal *et al.* [8].

In addition, compared to other people, patients with OSA have a markedly increased risk of being involved in a traffic accident. Due to decreased wakefulness, vigilance, and attention, OSA patients are more likely to be involved in occupational accidents [20]. 55% of our total participants had knowledge of the same. Truck drivers are at a significant risk for motor vehicle accidents due to sleepiness and OSA [21]. By 2030, motor vehicle accidents (MVAs) are predicted to rank as the fourth most common cause of death overall [22].

A polysomnogram is the gold standard diagnostic test for OSA and should be ordered for any patient exhibiting excessive daytime sleepiness that cannot be explained [23]. It is important for all healthcare professionals and medical graduates to know about the importance of Sleep study for diagnosis of OSA and 75% of the respondents in our study recognized its importance.

Untreated cases of OSA are linked to worse life expectancy, a higher risk of death, diabetes, cardiopulmonary disorders, and stroke [24]. Undiagnosed cases of OSA in children have been linked to poor academic performance due to impaired growth, learning, and behavioral issues [25]. Thus, it is important to see adenoids and tonsillar enlargement as it is a risk factor for OSA in children. Similar to a study done in Ecuador in 2018 [9], 80% of our participants also had sound knowledge of the same.

OSA is a developing public health concern on a global scale. This disorder affects between 2 and 5% of women and between 3 and 7% of men [1]. 75% to 80% of cases of OSA are still unidentified [26]. Over the next 30 years, OSA prevalence is expected to rise in tandem with rising obesity rates and longer life spans [15].

Moreover, several factors, including hormonal effects on the upper respiratory tract muscles, gender-specific differences in adipose tissue distribution, alterations in the shape, size, and collapsibility of the pharynx, and variations in breathing patterns, could be responsible for male predominance [27].

Obese individuals have more severe OSA. In actuality, those who have high blood pressure, congestive heart failure, coronary artery disease, heart transplants, hypothyroidism, alcoholism, gastroesophageal reflux, primary open-angle glaucoma, and autonomic neuropathy as a result of diabetes have a higher risk of developing OSA [28]. While the importance of complications of OSA was identified by 70% of our respondents, there still is a good number of graduates and residents who had little knowledge about the same.

Currently, the apnea-hypopnea index (AHI, number of apnea and hypopneas per hour of sleep) is the standard metric used to describe the severity of sleep apnea [29]. Recurrent episodes of upper airway obstruction during sleep are what characterize OSA. To define OSA, an AHI of at least 5 events/h is typically utilized with persistent complaints of excessive daytime somnolence, unrefreshing sleep, or fatigue [30].

Regardless of specialty, almost all doctors see patients with OSA symptoms. To properly refer and treat these patients, it is thought that a basic understanding of OSA is necessary [9]. Recent medical graduates' ignorance of the epidemiology, diagnosis, and treatment of OSA has an impact on patient care during residency training since it makes it more difficult to diagnose OSA promptly, refer patients to a specialist and increase the risk of complications down the road. Patients often seek consultation for hypertension; yet, studies from Nigeria, Ecuador and India have shown minimal understanding of the connection

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 06, 2024

between hypertension and OSA in medical graduates [10, 31-32]. This demonstrates that graduates have an inadequate understanding of the underlying OSA that contributes to the emergence of such complications, even though they are aware of the complications and treat them on a day-to-day basis.
The reason for Fresh Medical Graduates having better knowledge and attitude (p-value of <0.001) overall compared to the Post Graduate residents in our study was probably because of a lack of exposure among the Post Graduate residents to OSA cases in those clinical departments that primarily were not involved in diagnosis and treatment of OSA, like Ophthalmology, Dermatology, Orthopedics, etc. unlike for Fresh Medical Graduates who recently got exposed to such cases during their compulsory rotatory internship. Another possible reason for the same would be the overall low number of participants in the study.

Conclusion

The present study shows inadequacy in the knowledge and attitude of the Fresh Medical Graduates and Post Graduate residents in certain areas of OSA. There is a need for training and education about OSA in these Graduates and Residents which will help in better identification, diagnosis, and appropriate treatment. Complications of untreated OSA as discussed are important contributors to morbidity and mortality of the patients and thus identifying and treating OSA holds vital importance. Not being able to identify risk factors of OSA, and failure to appropriately refer such patients to the right physicians can be detrimental and this is where the knowledge about OSA holds importance among Fresh Medical Graduates and Post Graduate residents. Our study had many participants with good knowledge about OSA and its importance in identifying such patients. A good number of respondents had a positive attitude toward identifying and diagnosing OSA, although both groups had little confidence in managing patients with OSA.

Limitations

This study has a few limitations. A larger sample size and sampling from multiple centers would give more generalized results.

Compliance with ethical standards

Conflict of interest: There are no conflicts of interest.
Informed consent: Informed consent was obtained from all individual participants included in the study.
Funding: There is no funding.

References

1. Devaraj NK. Knowledge, attitude and practice regarding obstructive sleep apnea among primary care physicians. Sleep and Breathing. 2020 Dec;24(4):1581-90.
2. Sreedharan SE, Agrawal P, Rajith RS, Nair S, Sarma SP, Radhakrishnan A. Clinical and polysomnographic predictors of severe obstructive sleep apnea in the South Indian population. Annals of Indian Academy of Neurology. 2016 Apr;19(2):216-20.
3. Brown K. Pediatric considerations in sedation for patients with the obstructive sleep apnea syndrome. In Seminars in anesthesia, perioperative medicine and pain. WB Saunders. 2007;26(2):94-102.
4. Church GD. The role of polysomnography in diagnosing and treating obstructive sleep apnea in pediatric patients. Curr Probl Pediatr Adolesc Health Care. 2012;42(1):2-5.
5. Suri TM, Ghosh T, Mittal S, Hadda V, Madan K, Mohan A. Systematic review and meta-analysis of the prevalence of obstructive sleep apnea in Indian adults. Sleep Medicine Reviews; c2023 Jul. p. 101-829.
6. Almohaya A, Qrmli A, Almagal N, Alamri K, Bahammam S, Al-Enizi M, *et al*. Sleep medicine education and knowledge among medical students in selected Saudi Medical Schools. BMC medical education. 2013 Dec;13:1-7.
7. Luo M, Feng Y, Li T. Sleep medicine knowledge, attitudes and practices among medical students in Guangzhou, China. Sleep and Breathing. 2013 May;17:687-93.
8. Goyal A, Aswin P, Pakhare AP. Poor knowledge and attitude regarding obstructive sleep apnea (OSA) among medical students in India: a call for MBBS curriculum change. Sleep and Vigilance. 2018 Jun;2:45-50.
9. Chérrez-Ojeda I, Calderón JC, Fernández García A, Jeffe DB, Santoro I, Vanegas E, *et al*. Obstructive sleep apnea knowledge and attitudes among recent medical graduates training in Ecuador. Multidisciplinary respiratory medicine. 2018 Dec;13:1-8.
10. Wadhwa R, Jain A, Kundu K, Nebhinani N, Gupta R. Knowledge about obstructive sleep apnea among medical undergraduate students: A long way to go!. Indian Journal of Psychiatry. 2020 Nov;62(6):713-7.
11. Schotland HM, Jeffe DB. Development of the obstructive sleep apnea knowledge and attitudes (OSAKA) questionnaire. Sleep medicine. 2003 Sep;4(5):443-50.

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 06, 2024

12. Abbasi A, Gupta SS, Sabharwal N, Meghrajani V, Sharma S, Kamholz S, *et al*. A comprehensive review of obstructive sleep apnea. Sleep Science. 2021 Apr;14(2):142.
13. Levendowski DJ, Morgan T, Montague J, Melzer V, Berka C, Westbrook PR. Prevalence of probable obstructive sleep apnea risk and severity in a population of dental patients. Sleep and Breathing. 2008 Nov;12:303-9.
14. Grace W Pien, Ilene M Rosen, Barry G Fields. Chapter 98, Sleep Apnea Syndromes: Central and Obstructive: Sleep Apnea Definitions. In: Michael A. Grippi, Danielle E. Antin-Ozerkis, Charles S. Dela Cruz, Robert M. Kotloff, Camille Nelson Kotton, Allan I. Pack. Fishman's Pulmonary Diseases and Disorders, Sixth Edition, McGraw Hill, New York. Publ.; 2023;1:1700.
15. Arredondo E, Udeani G, Panahi L, Taweesedt PT, Surani S. Obstructive sleep apnea in adults: what primary care physicians need to know. Cureus, 2021 Sep, 13(9).
16. Alzahrani MM, Alghamdi AA, Alghamdi SA, Alotaibi RK. Knowledge and Attitude of Dentists towards Obstructive Sleep Apnea. Int. Dent J. 2022;72(3):315-321. Doi: 10.1016/j.identj.2021.05.004.
17. Al-Rasheedi AN, Thirunavukkarasu A, Almutairi A, Alruwaili S, Alotaibi H, Alzaid W, *et al*. Knowledge and attitude towards obstructive sleep apnea among primary care physicians in northern regions of Saudi Arabia: a multi-center study. In Healthcare. MDPI. 2022 Nov;10(12):23-69.
18. Corso RM, Sorbello M, Buccioli M, Carretta E, Nanni O, Piraccini E, *et al*. Survey of knowledge and attitudes about obstructive sleep apnoea among Italian anaesthetists. Turkish journal of anaesthesiology and reanimation. 2017 Jun;45(3):146.
19. Singh P, Bonitati A. Obstructive Sleep Apnea Syndrome-A Review for Primary Care Physicians and Pulmonologists. Rhode Island Medical Journal. 2021 Sep;104(7):10-3.
20. Culpepper L, Roth T. Recognizing and managing obstructive sleep apnea in primary care. Primary care companion to the Journal of clinical psychiatry. 2009;11(6):330.
21. Alahmari MD, Alanazi TM, Batawi AA, Al-Osaimi EA, Alrabeeah S, Jebakumar Z, *et al*. Sleepy driving and risk of obstructive sleep apnea among truck drivers in Saudi Arabia. Traffic injury prevention. 2019 Jul;20(5):498-503.
22. Alotair H, Ba Hammam A. Gender differences in Saudi patients with obstructive sleep apnea. Sleep and Breathing. 2008 Nov;12:323-9.
23. Alhodibi M, Aljubran Z, Al-Saleem M. International Journal of Current Medical and Pharmaceutical Research Knowledge and Attitude of Primary Health Care Physicians Regarding Obstructive Sleep Apnea in Al-Hasa District of Saudi Arabia. October. 2018;4:3753-3760. Doi: 10.24327/23956429.ijcmpr20180551.
24. Aurora RN, Quan SF. Quality measure for screening for adult obstructive sleep apnea by primary care physicians. Journal of clinical sleep medicine. 2016 Aug;12(8):1185-7.
25. Alharbi LN, Alsaikhan MA, Al-Haj Ali SN, Farah RF. Pediatric obstructive sleep apnea: knowledge and attitudes of medical and dental students and fresh graduates from Saudi Arabia. Children. 2021 Aug;8(9):768.
26. Ononye T, Nguyen K, Brewer E. Implementing protocol for obstructive sleep apnea screening in the primary care setting. Applied Nursing Research. 2019 Apr;46:67-71.
27. Wali SO, Abalkhail B, Krayem A. Prevalence and risk factors of obstructive sleep apnea syndrome in a Saudi Arabian population. Annals of thoracic medicine. 2017 Apr;12(2):88-94.
28. Chung SA, Jairam S, Hussain MR, Shapiro CM. How, what and why of sleep apnea. Perspectives for primary care physicians. Canadian Family Physician. 2002 Jun;48(6):1073-80.
29. Iber C. The AASM manual for the scoring of sleep and associated events: rules, terminology, and technical specification. (No Title); c2007.
30. American Academy of Sleep Medicine. International Classification of Sleep Disorders. 3rd ed. Chicago, IL: American Academy of Sleep Medicine; c2014.
31. Ozoh OB, Iwuala SO, Desalu OO, Ojo OO, Okubadejo NU. An assessment of the knowledge and attitudes of graduating medical students in Lagos, Nigeria, regarding obstructive sleep apnea. Annals of the American Thoracic Society. 2015 Sep;12(9):1358-63.
32. Mindell JA, Bartle A, Abd Wahab N, Ahn Y, Ramamurthy MB, Huong HT, *et al*. Sleep education in medical school curriculum: a glimpse across countries. Sleep medicine. 2011 Oct;12(9):928-31.