Original Article / *Özgün Makale*

An assessment of the knowledge and attitudes of medical students about obstructive sleep apnea syndrome via obstructive sleep apnea knowledge and attitudes questionnaire

Tıp öğrencilerinin obstrüktif uyku apnesi sendromu hakkında bilgi ve tutumlarının tıkayıcı uyku apnesi bilgi ve tutumlar anketi yoluyla değerlendirilmesi

Mustafa Çelik ®

Department of Otolaryngology, Kafkas University Faculty of Medicine, Kars, Turkey

ABSTRACT

Objectives: This study aims to investigate the knowledge levels and attitudes of Turkish medical faculty students regarding obstructive sleep apnea syndrome (OSAS).

Patients and Methods: A total of 94 students (58 males, 36 females; mean age 21.6±1.9 years; range, 19 to 33 years) were included in this cross-sectional questionnaire-based study conducted between July 2018 and December 2018. All participants were asked to fill the obstructive sleep apnea knowledge and attitudes (OSAKA) questionnaire. Participants were divided into three groups according to their years at the medical faculty and the responses of these groups to OSAKA questionnaire were compared.

Results: There was no statistically significant difference between the groups in the mean total knowledge scores (p=0.057). The mean total importance score was 6.4±1.5, whereas the mean total confidence score was 8.9±1.8 and the mean total attitude score was 14.4±2.4. There was no statistically significant difference between the groups in terms of total importance score, total confidence score, and total attitude score (all *p* values >0.05). There was no statistically significant correlation between total attitude score and total knowledge score (r=0.156, p=0.134).

Conclusion: Although the level of knowledge of Turkish medical students regarding OSAS is relatively better than the previous studies, it is not at the expected level.

Keywords: Attitude, knowledge, medical, obstructive, sleep apnea, students.

ÖZ

Amaç: Bu çalışmada Türk tıp fakültesi öğrencilerinin tıkayıcı uyku apnesi sendromu (TUAS) hakkında bilgi düzeyleri ve tutumları araştırıldı.

Hastalar ve Yöntemler: Temmuz 2018 - Aralık 2018 tarihleri arasında yapılan bu kesitsel anket temelli çalışmaya toplam 94 öğrenci (58 erkek, 36 kadın; ort. yaş 21.6±1.9 yıl; dağılım, 19-33 yıl) dahil edildi. Tüm katılımcılardan tıkayıcı uyku apnesi bilgi ve tutumlar (TUABT) anketini doldurmaları istendi. Katılımcılar tıp fakültesindeki sınıflarına göre üç gruba ayrıldı ve bu grupların TUABT anketine yanıtları karşılaştırıldı.

Bulgular: Gruplar arasında ortalama toplam bilgi skorlarında (p=0.057) istatistiksel olarak anlamlı farklılık yoktu. Ortalama toplam önem skoru 6.4±1.5 iken ortalama toplam güven skoru 8.9±1.8 ve ortalama toplam tutum skoru 14.4±2.4 idi. Gruplar arasında toplam önem skoru, toplam güven skoru ve toplam tutum skoru açısından istatistiksel olarak anlamlı farklılık yoktu (tüm *p* değerleri >0.05). Toplam tutum skoru ve toplam bilgi skoru arasında istatistiksel olarak anlamlı ilişki yoktu (r=0.156, p=0.134).

Sonuç: Türk tıp fakültesi öğrencilerinin TUAS hakkında bilgi düzeyi önceki çalışmalardan göreceli olarak daha iyi olsa da beklenen düzeyde değildir.

Anahtar sözcükler: Tutum, bilgi, tıbbi, tıkayıcı, uyku apnesi, öğrenciler.

Sleep medicine is a rapidly developing medical field that involves various types of diseases that affect almost all age groups. The International Classification of Sleep Disorders has identified more than 80 sleep disorders that can be treated effectively.[1]

Obstructive sleep apnea syndrome (OSAS) is a complex group of diseases characterized by partial or complete obstruction of the upper airways and oxygen desaturation during sleep.[2] Obstructive sleep apnea syndrome is significantly associated with cardiovascular morbidity and mortality such as hypertension, heart failure, coronary heart disease, arrhythmia, sudden death, and cerebrovascular disease.[3,4]

Male gender, obesity, adenotonsillar hypertrophy, old age, and smoking are among the main risk factors for OSAS.[5,6] However, although obesity is a major risk factor for OSAS, obesity is not detected in some patients with OSAS. The gold standard diagnostic method for the diagnosis of OSAS is the polysomnographic examination performed in the sleep laboratory.[7] The gold standard treatment method is the use of continuous positive airway pressure (CPAP).[8] There are different surgical options for patients who do not prefer to undergo CPAP.[9]

Although OSAS is seen frequently, comorbid diseases may develop due to delayed diagnosis of OSAS. When considering the severity of this disease and its negative effects on the quality of life, the importance of early diagnosis becomes prominent. In addition, although there are advancements in medical technology and treatment options, physicians often remain insufficient in the diagnosis and treatment of sleep disorders.[10,11] The main reason for this is the lack of an adequate medical education for sleep disorders.

In the literature, although there are studies that measured the knowledge levels about OSAS among anesthetists, cardiologists, general practitioners, and dentists, there is only a limited number of studies evaluating the knowledge and attitudes of medical faculty students concerning OSAS.[12-16] Moreover, to our knowledge, no study has been performed on the knowledge level and attitude of Turkish medical students about OSAS. Therefore, in this study, we aimed to investigate the knowledge level and attitudes of Turkish medical faculty students regarding OSAS.

PATIENTS AND METHODS

This cross-sectional questionnaire-based study was performed on students of Kafkas University Medical Faculty between July 2018 and December 2018. The study protocol was approved by the Kafkas University Medical Faculty Ethics Committee (decision no: 2018/09, date: 26 June 2018). A written informed consent was obtained from each participant. The study was conducted in accordance with the principles of the Declaration of Helsinki and the Guideline for Good Clinical Practice.

The sample size was not calculated for the study and all students in the third, fourth, and fifth years of medical faculty were tried to be reached. The entire universe (90.3%) was reached except 10 students. A total of 94 students (58 males, 36 females; mean age 21.6±1.9 years; range, 19 to 33 years) were included.

All participants were asked to fill the obstructive sleep apnea knowledge and attitudes (OSAKA) questionnaire developed by Schotland and Jeffe.[17,18] This questionnaire was created in the USA to evaluate the physicians' knowledge and attitudes for the identification and management of patients with OSAS.[17] Turkish version of the OSAKA questionnaire is a forward- and backward-translated version of the OSAKA. Translation and cultural adaptation of the OSAKA were carried out in accordance with the criteria of Guillemin et al.[19] The original English version of the questionnaire was translated into Turkish by two native Turkish translators fluent in English. Then, these two translations were compared and mutual agreement was reached on a common translation. This final translation was then translated into English from Turkish by two different translators. These two translations were compared with each other and a final translation was formed. This translation was compared with the original version and differences were corrected. The questionnaire was filled out by 20 healthy volunteers in order to control the intelligibility of the questionnaire in the cultural adaptation phase and it was seen that the questionnaire was intelligible (Appendix 1).

The OSAKA questionnaire is composed of 18 questions measuring the level of knowledge regarding OSAS and five questions assessing the attitudes of clinicians concerning OSAS. The questions measuring the level of knowledge are related to epidemiology, pathophysiology, symptoms, diagnosis, and treatment. Three options as "true", "false", and "don't know" are offered for the answer to the knowledge questions, and the option of "don't know" was evaluated as wrong in our study. For the calculation of the total knowledge score, the answer of "true'" was calculated as 1 point and 0 point was given to the answers of "false" and "don't know". The total knowledge score was calculated as the percentage by dividing the correct answers given to 18 knowledge questions by 18.

The first two of the five questions related to the attitudes regarding OSAS are associated with the clinical importance of OSAS disease. The answers to these questions were scored on a five-point Likert scale between one (not important) and five (extremely important). The other three questions assessing the attitude toward OSAS are related to the confidence of the participant in the diagnosis and treatment of OSAS, and the answers were scored between one (strongly disagree) and five (strongly agree).

Demographic characteristics of the participants were recorded. They were divided into three groups according to their years at the medical faculty, and the responses of these groups to the OSAKA questionnaire were compared.

Statistical analysis

The IBM SPSS version 22.0 (IBM Corp., Armonk, NY, USA) software was used for the statistical analysis. Mean, standard deviation, median lowest and maximum,

	Table 1					
	Comparison of correct responses to knowledge items on obstructive sleep apnea knowledge and attitudes questionnaire between groups					
		Total	3rd academic year (n=45)	4th academic year (n=35)	5th academic year (n=14)	
	Knowledge items on the OSAKA	%	%	%	%	p^*
1	Women with OSA may present with fatigue alone (true)	70.2	73.3	71.4	57.1	0.511
2	Uvulopalatopharyngoplasty is curative for the majority of patients with OSA (false)	59.6	77.7	40.0	50.0	0.002
3	The estimated prevalence of OSA among adults is between 2% and 10% (true)	60.6	68.9	54.2	28.6	0.74
4	The majority of patients with OSA snore (true)	86.2	86.6	85.7	85.7	0.991
5	OSA is associated with hypertension (true)	54.3	60.0	42.8	64.2	0.229
6	An overnight sleep study is the gold standard for diagnosing OSA (true)	56.4	28.8	82.8	78.5	0.0001
7	CPAP therapy may cause nasal congestion (true)	58.5	75.5	40.0	50.0	0.004
8	Laser-assisted uvuloplasty is an appropriate treatment for severe OSA (false)	55.3	84.4	37.2	60.3	0.0001
9	The loss of upper airway muscle tone during sleep contributes to OSA (true)	72.3	66.7	77.1	78.5	0.505
10	The most common cause of OSA in children is the presence of large tonsils and adenoids (true)	67.0	57.7	77.1	71.4	0.179
11	A craniofacial and oropharyngeal examination is useful in the assessment of patients with suspected OSA (true)	60.6	62.2	60.0	57.1	0.941
12	Alcohol at bedtime improves OSA (false)	66.0	73.3	54.3	71.4	0.187
13	Untreated OSA is associated with a higher incidence of automobile crashes (true)	63.8	60.0	68.6	64.3	0.737
14	In men, a collar size 17 inches or greater is associated with OSA (true)	43.6	53.3	34.3	35.7	0.195
15	OSA is more common in women than men (false)	55.3	55.5	62.8	35.7	0.231
16	CPAP is the first therapy for severe OSA (true)	64.9	77.8	54.3	50.0	0.041
17	Less than 5 apneas or hypopneas per hour is normal in adults (true)	43.6	51.1	37.1	35.7	0.380
18	Cardiac arrhythmias may be associated with untreated OSA (true)	85.1	86.7	82.9	85.7	0.894
	Mean total knowledge score	61.1	64.6	58.9	55.9	0.057

OSAKA: Obstructive sleep apnea knowledge and attitudes questionnaire; OSA: Obstructive sleep apnea; CPAP: Continuous positive airway pressure; * One-way analysis of variance test.

Table 2
Comparison of attitude scores between groups

| | Groups | | | Total | p^* | Post-hoc | | |
	3rd academic year	4th academic year	5th academic year			3rd–4th	3rd–5th	4th–5th
Importance of subscale score	6.3±1.5	6.5±1.5	6.7±1.5	6.4±1.5	0.683	0.906	0.666	0.856
Cofidence subscale score	8.8±1.6	9.0±1.8	8.8±2.4	8.9±1.8	0.872	0.877	0.982	0.927
Overall attitude score	14.2±2.2	14.6±2.5	14.2±2.9	14.4±2.4	0.793	0.796	0.907	0.999

* One-way analysis of variance test.

frequency, and ratio values were used in the descriptive statistics of the data. The distribution of variables was measured by Kolmogorov-Smirnov test. Mann-Whitney U test was used in the analysis of the independent quantitative data. Wilcoxon test was used to analyze the dependent quantitative data. Chi-square test was used for the analysis of qualitative independent data. One-way analysis of variance and post-hoc analysis were used to compare the mean of the groups' test scores. Spearman correlation analysis was used in the correlation analysis. Statistical significance was accepted as p<0.05.

RESULTS

The mean age of the students was 20.5±0.9 in the third academic year, 21.6±1.0 in the fourth academic year, and 22.3±2.8 in the fifth academic year.

While the mean total knowledge score was 61.1% in all participants, it was 64.6% in the third year, 58.9% in the fourth year, and 55.9% in the fifth year. There was no statistically significant difference between the groups in the mean total knowledge scores (p=0.057). The answers given to the questions measuring the level of knowledge are summarized in Table 1.

There was no question answered correctly by all participants. Less than 50% of the participants gave the correct answer to the 14th and 15th questions.

When the answers given to the second question were evaluated, it was found that the fourth-year students gave the correct answer at a lower rate compared to the third- and fifth-year students (p=0.002).

When the answers given to the sixth question were evaluated, it was detected that the third-year students gave the correct answer at a lower rate compared to the other students (p=0.0001).

The rate of the correct answers given to the seventh and eighth questions by the fourth-year students was

Table 3
Spearman correlation coefficients among mean scores of each attitude item, each attitude subscale, and total knowledge on obstructive sleep apnea knowledge and attitudes questionnaire

	1	2	3	4	5	6	7	8
Importance of								
1. OSA as a clinical disorder								
2. Identifying patients with OSA	1.000*							
3. Importance of subscale score	1.000*	1.000*						
Confidence in								
4. Identifying at-risk patient	0.582*	0.582*	0.582*					
5. Managing patients with OSA	0.026	0.026	0.026	0.018				
6. Managing patients on CPAP	0.122	0.122	0.122	0.089	0.617*			
7. Confidence subscale score	0.317*	0.317*	0.317*	0.544*	0.736*	0.767*		
Total attitude and knowledge scores								
8. Overall attitude score	0.503*	0.503*	0.503*	0.465*	0.573*	0.795*	0.869*	
9. Overall knowledge score	0.180	0.180	0.180	0.092	0.064	0.169	0.120	0.156

* Correlation is significant at 0.05 level (two-tailed). OSA: Obstructive sleep apnea; CPAP: Continuous positive airway pressure.

statistically lower compared to the other students (p=0.004 and p=0.0001, respectively).

The rate of the correct answer given to the 16th question was statistically higher in the third-year students compared to the other students (p=0.041).

There was no statistically significant difference between the groups in terms of the correct answers given to the other questions (all *p* values for other questions >0.05).

In terms of attitude, 79.8% of the participants reported that OSAS was a very important or extremely important clinical disorder and identifying potential OSAS patients was very important or extremely important. Of the participants, 63.6% reported that they did not feel confident in identifying the patients with OSAS risk and 81.9% reported that they did not feel confident in managing the patients with OSAS, while 21.3% reported that they felt confident in managing the patients with CPAP therapy. The mean total importance score was 6.4±1.5, whereas the mean total confidence score was 8.9±1.8, and the mean total attitude score was 14.4±2.4. There was no statistically significant difference between the groups in terms of total importance score, total confidence score, and total attitude score (all p values >0.05) (Table 2).

There was no statistically significant correlation between the total attitude score and total knowledge score (r=0.156, p=0.134). While there was a significant correlation between the total importance score and the total confidence and attitude scores, there was no significant correlation between the total importance score and total knowledge score (r=0.180, p=0.082) (Table 3).

DISCUSSION

In this study, the knowledge and attitudes of Turkish medical faculty students concerning OSAS were evaluated. According to the data of this study, the knowledge level of Turkish medical students on OSAS was low, although it was relatively good compared to previous studies performed in different countries.[12-16] When the knowledge level was evaluated according to the years of education, there was no difference between the students. We believe that the knowledge of sleep medicine before graduation can show the quality of medicine in countries where there is no compulsory postgraduate medical education, such as Turkey.

While previous studies evaluated the knowledge levels and attitudes of clinicians regarding OSA, there are very few studies on the knowledge levels of medical students about this issue. In a study measuring the

knowledge level of the medical students in Nigeria performed by Ozoh et al.,[20] while it was found that the mean knowledge level on OSAS was 43%, the ratio of students who had a correct answer score higher than 50% was 40%. A study performed by Chérrez-Ojeda et al.[21] reported that the mean knowledge level score of medical students regarding OSAS was 53%. Furthermore, another study evaluating Saudi medical students reported that the knowledge of students on OSAS was quite low.[12] Also, a study conducted by Luo et al.[11] showed that the Chinese medical faculty students had insufficient knowledge about sleep medicine.

The present study detected that Turkish medical students had a relatively better level of knowledge concerning the epidemiology, diagnosis, and treatment of OSAS (61%). Although the students reported that the OSAS is a clinically important disease, it was seen that the self-confidence of students in the diagnosis, treatment, and management of this disease was quite low. This situation was confirmed by their responses to the questions on OSAS treatment (2nd and 8th questions). However, the information that CPAP treatment was the first choice for severe OSAS cases was answered correctly by more than 50% of the students. When the students were evaluated according to the years of education, it was detected that there was no significant difference between the students in terms of knowledge and attitude. This situation is in line with the current literature.[20,21] Therefore, the knowledge level of medical faculty students regarding OSAS during the education period can provide insight on their future medical practices. According to the results of the present study, approximately 50% of our students may be effective in diagnosis, treatment, and management with clinical suspicion for the diagnosis of OSAS. In Turkey, we believe that this situation may contribute to the reduction of the number of OSAS patients who may otherwise have been undiagnosed in the future.

Several studies determined that the knowledge level of clinicians on OSAS was low in the developing countries. A study by Rosen et al.[22] showed that clinicians providing primary healthcare services did not fully know the importance and effect of sleep disorders. Moreover, a study by Papp et al.[23] reported that the majority of primary care clinicians evaluated their knowledge of sleep disorders as moderate or poor. The absence of advanced sleep laboratories, the lack of sufficient number of physicians interested in sleep disorders, and the lack of adequate sleep medicine education in medical faculties are among the main causes of this situation in these countries. According to a report on Medical Education in Sleep and Sleep Disorders, the mean license period focusing on sleep

disorders is 2.1 hours.[24] A study investigating the sleep medicine education in the medical faculty curriculums in 12 countries located in the Asia-Pacific region and in North America and conducted by Mindell et al.[25] reported that the total period of sleep medicine education was less than 2.5 hours. In addition, it was reported that there was no sleep medicine education in 27% of the medical faculties in this study. It was found that sleep medicine education was given for more than three hours only in the USA, Canada, and Australia.[25] Sleep medicine education that usually lasts for only several hours in medical faculties around the world highlights the widespread need for more courses on sleep medicine in medical faculty curriculums. To our knowledge, there is no study showing how long the education for sleep medicine lasts in the curriculum of all medicine faculties in Turkey. In addition, Turkish medical students learn sleep medicine primarily in the courses of chest diseases, psychiatry, and otorhinolaryngology. They receive an education lasting two to four hours on average for OSAS and other sleep disorders. When the other developing countries are taken into consideration, it may be concluded that the education for sleep medicine lasts relatively longer in the medical curriculum of our country. Still, we believe that the current course time should be increased. In addition, it is obvious that the existence of sleeping clinics in medical faculties will increase the knowledge and awareness level of medical students about this issue. There is a sleep laboratory in our faculty, and our students have the opportunity to practice sleep medicine. We assume that this situation allowed us to obtain relatively higher scores compared to the other studies in the literature. It is known that physicians with theoretical and practical education for sleep medicine better identify the sleep disorder.[11,14] Another reason why clinicians and medical school students have low levels of knowledge and attitude regarding OSAS is that the basic textbooks do not include adequate information for sleep disorders. A study by Teodorescu et al.[26] evaluating 31 basic textbooks reported that only 2% of the book contents were related to sleep medicine. Thus basic textbooks should provide further information on sleep medicine. In order to follow-up the current information on OSAS and have self-learning opportunities, directly accessible resources are required for clinicians and medical student.[11,26] Particularly in the preclinical period, students should be taught and encouraged to ask questions about sleep disorders with an emphasis on not ignoring the diagnosis of OSAS in medical practice. During clinical internships, short-term rotations in hospitals with sleep clinics may increase the awareness of students concerning OSAS and increase the quality of postgraduate medical practices.

Although this is an important study evaluating the knowledge levels and attitudes of Turkish medical students regarding OSAS, the facts that our faculty was newly established and the relatively low number of students can be considered as the major limitations of this study. These limitations prevent the results of this study to be generalized to overall Turkish medical students.

In conclusion, although the knowledge level of the Turkish medical students concerning OSAS detected in this study is relatively better than the previous studies, it is not at the expected level. The condition of OSAS should be included in broader scales in medical school curriculums. Increasing the knowledge and awareness of students on OSAS during medical education will enable early diagnosis and treatment of OSAS. Therefore, we believe in the benefit of organizing further courses regarding OSAS for family physicians after graduation.

REFERENCES

1. American Academy of Sleep Medicine: International classification of sleep disorders: Diagnostic and coding manual. 3rd ed. Westchester, IL: American Academy of Sleep Medicine; 2014.

2. Rivera-Pérez SJ, Martinez D, Araujo GN, Goncalves SC, Lazzaretti LK, Wainstein RV, et al. Severity of obstructive sleep apnea and extension of coronary artery disease. Sleep Breath 2019;23:747-52.

3. Patel SV, Gill H, Shahi D, Rajabalan A, Patel P, Sonani R, et al. High risk for obstructive sleep apnea hypopnea syndrome predicts new onset atrial fibrillation after cardiac surgery: a retrospective analysis. Sleep Breath 2018;22:1117-24.

4. Aaronson JA, van Bennekom CA, Hofman WF, van Bezeij T, van den Aardweg JG, Groet Eet al. The effect of obstructive sleep apnea and treatment with continuous positive airway pressure on stroke rehabilitation: rationale, design and methods of the TOROS study. BMC Neurol 2014;14:36.

5. Jennum P, Riha RL. Epidemiology of sleep apnoea/ hypopnoea syndrome and sleep-disordered breathing. Eur Respir J 2009;33:907-14.

6. Koren D, Chirinos JA, Katz LE, Mohler ER, Gallagher PR, Mitchell GF, et al. Interrelationships between obesity, obstructive sleep apnea syndrome and cardiovascular risk in obese adolescents. Int J Obes (Lond) 2015;39:1086-93.

7. Dutt N, Janmeja AK, Mohapatra PR, Singh AK. Quality of life impairment in patients of obstructive sleep apnea and its relation with the severity of disease. Lung India 2013;30:289-94.

8. Giles TL, Lasserson TJ, Smith BH, White J, Wright J, Cates CJ. Continuous positive airways pressure for obstructive sleep apnoea in adults. Cochrane Database Syst Rev 2006;3:CD001106.

9. Yegïn Y, Çelik M, Kaya KH, Koç AK, Kayhan FT. Comparison of drug-induced sleep endoscopy and Müller's maneuver in diagnosing obstructive sleep apnea using the VOTE classification system. Braz J Otorhinolaryngol 2017;83:445-50.

10. Lamberg L. Sleep disorders, often unrecognized, complicate many physical illnesses. JAMA 2000;284:2173-5.

11. Luo M, Feng Y, Li T. Sleep medicine knowledge, attitudes, and practices among medical students in Guangzhou, China. Sleep Breath 2013;17:687-93.

12. 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 Med Educ 2013;13:133.

13. Talaat W, AlRozzi B, Kawas SA. Sleep medicine education and knowledge among undergraduate dental students in Middle East universities. Cranio 2016;34:163-8.

14. Cherrez Ojeda I, Jeffe DB, Guerrero T, Mantilla R, Santoro I, Gabino G, et al. Attitudes and knowledge about obstructive sleep apnea among Latin American primary care physicians. Sleep Med 2013;14:973-7.

15. 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. Turk J Anaesthesiol Reanim 2017;45:146-52.

16. Saleem AH, Al Rashed FA, Alkharboush GA, Almazyed OM, Olaish AH, Almeneessier AS, et al. Primary care physicians' knowledge of sleep medicine and barriers to transfer of patients with sleep disorders. A cross-sectional study. Saudi Med J 2017;38:553-9.

17. Schotland HM, Jeffe DB. Development of the obstructive sleep apnea knowledge and attitudes (OSAKA) questionnaire. Sleep Med 2003;4:443-50.

18. Schotland HM, Jeffe DB. Development of the obstructive sleep apnea knowledge and attitudes (OSAKA) questionnaire. Sleep Med 2008;9:705.

19. Guillemin F, Bombardier C, Beaton D. Cross-cultural adaptation of health-related quality of life measures: literature review and proposed guidelines. J Clin Epidemiol 1993;46:1417-32.

20. 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. Ann Am Thorac Soc 2015;12:1358-63.

21. 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. Multidiscip Respir Med 2018;13:5.

22. Rosen RC, Zozula R, Jahn EG, Carson JL. Low rates of recognition of sleep disorders in primary care: comparison of a community-based versus clinical academic setting. Sleep Med 2001;2:47-55.

23. Papp KK, Penrod CE, Strohl KP. Knowledge and attitudes of primary care physicians toward sleep and sleep disorders. Sleep Breath 2002;6:103-9.

24. Rosen R, Mahowald M, Chesson A, Doghramji K, Goldberg R, Moline M, et al. The Taskforce 2000 survey on medical education in sleep and sleep disorders. Sleep 1998;21:235-8.

25. Mindell JA, Bartle A, Wahab NA, Ahn Y, Ramamurthy MB, Huong HT, et al. Sleep education in medical school curriculum: a glimpse across countries. Sleep Med 2011;12:928-31.

26. Teodorescu MC, Avidan AY, Teodorescu M, Harrington JJ, Artar AO, Davies CR, et al. Sleep medicine content of major medical textbooks continues to be underrepresented. Sleep Med 2007;8:271-6.

Appendix 1			
Turkish version of obstructive sleep apnea knowledge and attitudes questionnaire.			
TIKAYICI UYKU APNE BİLGİSİ VE TUTUMLARI ANKETİ (TUABTA)			
Lütfen aşağıdaki soruları; doğru, yanlış veya bilmiyorum (B) şeklinde yanıtlayınız;			

Doğru	Yanlış	Bilmiyorum	Sorular
			1. Tıkayıcı uyku apnesi, kadınlarda yalnızca yorgunluk şeklinde ortaya çıkabilir.
			2. Uvulopalatofaringoplasti, tıkayıcı uyku apne sendromu olan hastaların çoğu için tedavi edicidir.
			3. Tıkayıcı uyku apnesinin yetişkinlerdeki tahmini görülme sıklığı %2-10'dur.
			4. Tıkayıcı uyku apne sendromu olan hastaların çoğunda horlama görülür.
			5. Tıkayıcı uyku apnesi hipertansiyon ile ilişkilidir.
			6. Tıkayıcı uyku apne sendromunun tanısı için altın standart, gece uyuma halinde yapılacak bir uyku çalışmasıdır.
			7. CPAP (sürekli pozitif havayolu basıncı) tedavisi, burun tıkanıklığına neden olabilir.
			8. Lazer destekli uvuloplasti, ciddi tıkayıcı uyku apne sendromu için uygun bir tedavi yöntemidir.
			9. Uyku sırasında üst solunum yolunda oluşan kas tonusu kaybı, tıkayıcı uyku apne sendromunun gelişimine katkıda bulunur.
			10. Çocuklarda en sık görülen tıkayıcı uyku apne nedenleri, büyük bademcikler ve lenf bezlerinin varlığıdır
			11. Tıkayıcı uyku apnesinden şüphelenilen hastalar için, kraniyofasiyal veya orofarenjiyal değerlendirme faydalıdır
			12. Yatmadan önce alkol tüketmek tıkayıcı uyku apnesinde iyileşme sağlar
			13. Tedavi edilmemiş tıkayıcı uyku apnesi, trafik kaza oranlarında artış ile ilişkilidir
			14. Erkeklerde 17 inç (43.18 cm) ve daha büyük yaka boyu, tıkayıcı uyku apnesi ile ilişkilidir
			15. Tıkayıcı uyku apnesi kadınlarda, erkeklerden daha yaygındır
			16. Ciddi tıkayıcı uyku apnesi için ilk tedavi CPAP'dır.
			17. Yetişkinlerde saatte 5 apne veya hipoapneden daha azı normaldir
			18. Kardiyak aritmiler, tedavi edilmemiş tıkayıcı uyku apnesi ile ilişkili olabilir

Her madde için sağlanan seçenekleri kullanarak, lütfen cevabınızı en iyi tanımlayan kutuyu işaretleyin;

A. Bir klinik bozukluk olarak tıkayıcı uyku apnesi;

☐Önemli değil ☐Biraz önemli ☐Önemli ☐Çok önemli ☐Son derece önemli

B. Olası tıkayıcı uyku apnesi olan hastaların belirlenmesi;

☐Önemli değil ☐Biraz önemli ☐Önemli ☐Çok önemli ☐Son derece önemli

C. Tıkayıcı uyku apnesi riski olan hastaları belirleme konusunda kendime güveniyorum

☐Kesinlikle katılmıyorum ☐Katılmıyorum ☐Ne katılıyorum ne katılmıyorum ☐Katılıyorum ☐Kesinlikle katılıyorum

D. Tıkayıcı uyku apnesi olan hastaları yönetme konusunda kendime güveniyorum.

☐Kesinlikle katılmıyorum ☐Katılmıyorum ☐Ne katılıyorum ne katılmıyorum ☐Katılıyorum ☐Kesinlikle katılıyorum

E. CPAP tedavisi alan hastaların yönetimi konusunda kendime güveniyorum.

☐Kesinlikle katılmıyorum ☐Katılmıyorum ☐Ne katılıyorum ne katılmıyorum ☐Katılıyorum ☐Kesinlikle katılıyorum