A questionnaire survey among Turkish physicians about sleep disorders

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ÖZET

Türk hekimlerinin uyku hastalıklarına bakışı

Bu çalışma ile Türkiye'deki hekimlerin uyku hastalıklarına bakışlarını ve bu konudaki tıbbi bilgilerini tespit etmeyi amaçladık. Yedi tanesi hekimlerin bu konuya bakış açılarını, 17 tanesi ise bu konudaki tıbbi bilgilerini ölçmeyi hedefleyen 24 soruluk bir anket formu hazırladık. Anketi Türkiye'nin başkenti ve ikinci en büyük kenti olan Ankara'daki üniversite ve eğitim hastanelerinde uyguladık. Beş farklı uzmanlık alanından 215 hekime ulaştık ve bunlardan 168 (%78)'i anket formunu tamamladı. Hekimlerin %47'si uyku hastalıkları hakkında çok az bilgi sahibi olduklarını belirttiler, %45'i ise bu konuda yeterli bilgi sahibi olduklarını ifade ettiler, ancak başarı oranları yüksek değildi. Soruların yalnızca %45.3'ü doğru olarak cevaplandırıldı. Bu anketin ışığında, Türkiye'deki uyku hastalıkları tıbbının kalitesini arttırmak için bu konudaki tıp eğitiminin hem süre hem de içerik olarak daha iyi hale getirilmesi gerektiği sonucuna vardık.

Anahtar Kelimeler: Anket, uyku hastalıkları, hekimler, Türkiye.

SUMMARY

A questionnaire survey among Turkish physicians about sleep disorders

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We aimed to assess the knowledge of Turkish physicians about sleep disorders and the attitude of the physicians towards sleep medicine. We prepared a 24-item-questionnaire, 7 of the questions were about the attitudes of the physicians and 17 of them were about the knowledge of the physicians. We applied the questionnaire in all university and educational hospitals in Ankara, which is the capital city and the second largest city of Turkey. Two-hundred-fifteen medical doctors from 5 different specialties accepted to answer the questionnaire, and 168 (78%) of them completed the questionnaire. 47% of the physicians rated themselves as they had little knowledge about sleep disorders, and 45% as they had enough knowledge about sleep disorders, however, the overall score was not high. They answered only 45.3% of the questions correctly. In the light of this survey, we concluded that medical education on sleep disorders should be extended both in length and in content to improve the quality of sleep disorders medicine in Turkey.

Key Words: Questionnaire, sleep disorders, physicians, Turkey.

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Medical disorders related to sleep are not new, but sleep disorders medicine is quite new. Although the specialty of sleep medicine has experienced an exponential growth recently; there is still skepticism about it. Hospital administrators question whether limited resources should be invested in the development of a costly sleep center. The answer to this question depends on several factors but the most important ones are the physicians having the necessary knowledge about sleep disorders and, the number of the qualified sleep physicians.

In developing countries, the number of the sleep specialists is few, for instance in Turkey, there are only 35 physicians who have received the necessary medical education about sleep disorders. Because of these reasons, most of the sleep-disorder-patients are being seen mainly by psychiatrists and neurologists at first. Patients who snore or have signs and symptoms of obstructive sleep apnea usually see pulmonologists or ear-nose-throat (ENT) specialists. Although we don't think that any patient who has a sleep problem would apply to an urologist, urologists are also related with sleep disorders because of nocturnal penile tumescence application.

In the United States, statewide studies are uncovering the endemic somnolence that underlies automobile and commercial vehicle accidents, and the pervasive sleep deprivation that undermines shift workers, people who work an excessive number of hours, and, in general, individuals who do not follow a proper sleep hygiene (1). Numerous studies have demonstrated that sleep-disordered breathing (SDB) is both a prevalent phenomenon and associated with or causal of serious chronic illness (2,3).

There is no doubt that the proper evaluation of a sleep disorder patient requires an appropriate clinical diagnosis on the basis of history and physical examination (4-6). If the physicians are inadequately trained about sleep disorders, they could not even suspect a sleep disorder (7-10). Moreover, recognition of sleep apnea is important because treatments exist that reduce the risk of fall-asleep crashes and cardiovascular risk produced by the sleep disruption (11). The-

refore, we aimed to evaluate the sleep disorders knowledge of the Turkish physicians from these five specialties, in order to have an idea about sleep disorders' condition in Turkey.

MATERIALS and METHODS

We prepared a questionnaire which contained 24 questions, 7 of them were designed to get the opinion of the physicians about sleep disorders medicine and 17 of them to assess the knowledge of the physicians about sleep disorders. Sleep-knowledge questions included in the survey questionnaire are in the Appendix. Insomnia and obstructive sleep apnea are two conditions which are encountered commonly in the general population. 10% of the adults are troubled by chronic insomnia, and 4% of middle-aged adults have sleep apnea (1,12). Because of this fact, we emphasized on these disorders while preparing the questions. The questions in the questionnaire were prepared by two physicians; an associate and assistant professors, both of them had received medical education about sleep disorders in the United States.

We applied the questionnaire in all university and educational hospitals in Ankara, which is the capital city and the second largest city of Turkey. The university hospitals were Ankara University Hospital, Gazi University Hospital, Gülhane Military Medical Science Academy and Hacettepe University Hospital. Educational hospitals were Ankara Numune Hospital, Atatürk Sanatorium Hospital, and SSK Ankara Educational Hospital. We applied the questionnaire to 215 physicians including residents, fellows, and faculty in these hospitals. For various reasons, only 168 of them responded to the questionnaire.

RESULTS

Table 1 summarizes the data from the questionnaires for the physicians' attitude toward sleep disorder. First of the seven attitude questions was "Do you have any idea about sleep disorders?". 45% of the physicians responded as they had enough knowledge on sleep disorders, while 47% of physicians as they had a little knowledge and 4% as they knew nothing about sleep disorders. 3% of the participants did not reply to this question.

Table 1. Survey's attitude questions and the physicians' answers.

Question number	Answers			
1 Do you have any idea about sleep disorders?	Yes (76)* [45.2%]**	No (7) [4.2%]	A little (80) [47.6%]	No response (5) [3.0%]
2 What do you understand by sleep disorder?	Extreme urge of sleep (31) [18.5%]	Extreme insomnia (13) [7.7%]	Diseases that emerge during sleep (112) [66.7%]	No response (12) [7.1%]
3 When did you get the medical education about sleep disorders for the first time?	Medical school preclinical term (22) [13.1%]	Medical school clinical term (65) [38.7%]	Residency education (57) [33.9%]	After residency education (19) [11.3%]	No response (5) [3.0%]
4 Do you think that sleep disorders can be considered as medical division?	Yes (97) [57.7%]	No (17) [10.1%]	I have no idea (37) [22.1%]	No response (17) [10.1%]
5 What is the first sleep disorder which you have heard of?	Sleep apnea (95) [56.6%]	Insomnia (36) [21.4%]	Narcolepsy (26) [15.5%]	Other (1) [0.6%]	No response (10) [5.9%]
6 Have you ever diagnosed any sleep disorder?	Yes (97) [57.7%]	No (71) [42.3%]		
7 Have you ever treated any sleep disorder?	Yes (51) [30.4%]	No (117) [69.6%]		

* Number of the physicians who chose this option,

** Percentage of the physicians who chose this option.

Second question in the questionnaire was: "What do you understand by sleep disorder?". 18% of the participants replied to this question as "extreme urge of sleep", 7% of the participants as "extreme insomnia" and 66% them as "diseases that emerge during sleep".

Third question was: "When did you get the medical education about sleep disorders for the first time?". 52% of the physicians declared that they had sleep disorder education in the medical school, 34% declared that they had it during residency education, and 11% said that they had it during fellowship education.

Fourth question was "Do you think that sleep disorders can be considered as medical division?". Of respondents, 58% of the participants agree that sleep disorders is a medical division, while 10% of them don't agree. A substantial proportion (22%) of the physicians declared that they had no idea about this subject.

Another question was "What is the first sleep disorder which you have heard of?" 57% of respondents replied as obstructive sleep apnea, 21% as insomnia, and 15% as narcolepsy. Half percent of them declared that they have heard some sleep disorders other than these 3 disorders.

Besides that, we asked the physicians whether they had diagnosed and treated any sleep disorder (6th and 7th questions). Among the participants, 58% stated that they had diagnosed at least one sleep disorder and 30% had treated at least one sleep disorder.

We asked 17 questions to assess the physicians sleep knowledge. Data were analyzed using the SPSS for Windows 10.0 statistical package. They are presented as mean and SEM. The data were tested for normal distribution with the Kolmogorow-Smirnov test. The arithmetic mean of the correct answers of all physicians was calculated as 7.7 ± 4.0. Physicians were classified according to their medical specialties, and these medical specialty groups were compared to each other from the point of view of correct answer score. One-way ANNOVA was used for statistical analysis. Among the medical specialties, psychiatry had the maximum score, which was 10.8 ± 4.0. Neurology, pulmonary medicine, ENT, and urology had the following scores, 10.1 ± 2.9, 8.2 ± 3.7, 6.5 ± 3.2, and 4.3 ± 3.2 respectively. The results are shown in Table 2. Tukey-Kramer multiple comparisons test was used to assess the significance between groups. The results are shown in Table 3.

The results were re-interpreted according to the academic degree of the physicians. The physicians were classified into five groups as residents, fellows, assistant professors, associate professors, and professors. One-Way ANNOVA was used for statistical analysis. Among these, the associate professors received the maximum score, which was 9.4 ± 4.7 Scores of the other groups were 8.8 ± 4.4 for the professors, 8.7 ± 3.7 for the assistant professors, 7.6 ± 4.1 for the fellows, and 7.0 ± 3.7 for the residents. We couldn't find any statistically significance among groups. The results are shown in Table 4. Tukey-Kramer Multiple Comparisons Test was used to assess the significance between groups. The results are shown in Table 5.

Table 2. Distribution of the correct answers according to medical specialties.

Medical specialty	Number of the physicians*	Mean score ± SEM
Psychiatry	21	10.8 ± 0.8
Neurology	20	10.1 ± 0.6
Pulmonary medicine	65	8.2 ± 0.4
ENT	30	6.5 ± 0.5
Urology	32	4.3 ± 0.5
Total	168	7.7 ± 0.3

* Number of the physicians who completed the questionnaire.

Table 3. Tukey-Kramer multiple comparisons test for medical specialties*.

Comparison	Mean difference	q	p
Psychiatry vs neurology	0.7095	0.9095	NS p> 0.05
Psychiatry vs ENT	4.243	5.972	p< 0.001
Psychiatry vs urology	6.466	9.220	p< 0.001
Psychiatry vs pulmonary medicine	2.594	4.139	* p< 0.05
Neurology vs ENT	3.533	4.902	p< 0.01
Neurology vs urology	5.756	8.087	p< 0.001
Neurology vs pulmonary medicine	1.885	2.952	NS p> 0.05
ENT vs urology	2.223	3.503	NS p> 0.05
ENT vs pulmonary medicine	-1.649	2.991	NS p> 0.05
Urology vs pulmonary medicine	-3.872	7.180	p< 0.001

* If q> 3.910 then the p< 0.05.
NS: Non significant.

Table 4. Distribution of the correct answers according to the academic degrees.

Academic degree	Number of the physicians*	Mean score ± SEM
Professor	11	8.8 ± 1.3
Associate professor	20	9.4 ± 1.0
Assistant professor	9	8.7 ± 1.2
Fellow	56	7.6 ± 0.5
Resident	72	7.0 ± 0.4

* Number of the physicians who completed the questionnaire.

Table 5. Tukey-Kramer multiple comparisons test for academic degrees*.

Comparison	Mean difference	q	p
Professor vs associate professor	-0.6318	0.5901	NS p> 0.05
Professor vs assistant professor	0.1515	0.1182	NS p> 0.05
Professor vs fellow	1.175	1.249	NS p> 0.05
Professor vs resident	1.777	1.924	NS p> 0.05
Associate professor vs assistant professor	0.7833	0.6842	NS p> 0.05
Associate professor vs fellow	1.807	2.432	NS p> 0.05
Associate professor vs resident	2.408	3.340	NS p> 0.05
Assistant professor vs fellow	1.024	0.9995	NS p> 0.05
Assistant professor vs resident	1.625	1.611	NS p> 0.05
Fellow vs resident	0.6012	1.183	NS p> 0.05

* If q> 3.910 then the p< 0.05.
NS: Non significant.

DISCUSSION

Some of the sleep authors think that the greatest challenge for the future is the cost-effective expansion of sleep medicine so that its benefits will be readily available throughout society. The major barrier to this availability currently is the failure of sleep research and sleep medicine to effectively penetrate the educational system at any level (13). Several studies have shoved the need to develop an educational strategy in an attempt to improve the diagnosis of sleep disorders (14,15).

According to our survey, 47% of total physicians declared that they had little knowledge about sleep disorders, and 8% of them declared that they had no knowledge about it. 57% of the physicians admitted that their knowledge about sleep disorders was inadequate. Although 45% of the physicians declared that they had enough knowledge about sleep disorders, the overall score was not so high (they answered only 45.3% of the questions correctly).

Our survey shows that half of the participants did not get any medical education on sleep disorders during medical school. For this reason, first of all, we must include the sleep disorders in the medical school curriculum. The second step must be to increase the education quality during residency training, since the residents had the lowest score.

57% of the physicians admitted that their knowledge about sleep disorders was inadequate. Even only this finding is enough to re-evaluate the medical education regarding to the sleep disorders. In summary, our survey points that the knowledge of the Turkish physicians about sleep disorders is not adequate. We suggest that the medical education on sleep disorders should be extended both in duration and in content.

In Turkey, the sleep disorders medicine is in an early stage of development. Scientific research related to sleep disorders is scarce. Principally, psychiatrists, neurologists and, pulmonary medicine specialists are carrying out main action on this subject. There is few printed material in Turkish, and there is only one book about the sleep disorders, which is "Obstruktif Sleep Apne Sendromu" (16). If sleep problems are to be prioritized, major changes in physician education and behaviors are essential. Focused instruction about sleep influences physician behavior (17,18). We conclude that unless we make the required amendments in our educational system, it will not possible to catch up with the developed countries in both clinical and in basic research fields.

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APPENDIX
SLEEP KNOWLEDGE QUESTIONS

1. Which one of the following is the most useful in diagnosing a sleep disorder?

   a. Medical history and physical examination
   b. 24-hour follow-up by Holter monitor
   c. Electroencephalography (EEG)
   d. Polysomnography
   e. None of the above

2. Which of the following can not be sacrificed in diagnosis of a sleep disorder?

   a. EEG
   b. Electrooculography (EOG)
   c. Electromyelography (EMG)
   d. All of the above
   e. None of the above

3. In which of the following disorders, sleep starts with rapid eye movement (REM) sleep.

   a. Sleep apnea syndrome
   b. Insomnia
   c. Sleepwalking
   d. Narcolepsy
   e. None of the above

4. How is the chin EMG wave amplitude during REM sleep?

   a. Increased
   b. Decreased
   c. No change

5. Which stage is the longest in an insomniac patient?

   a. REM stage
   b. Stage I and II
   c. Stage III
   d. Stage IV
   e. None of the above

6. How does an insomniac patient feel himself, when he wakes up in the morning?

   a. Refreshed but restless
   b. Refreshed
   c. Sleepy
   d. None of the above

7. What is the most characteristic wave form of stage II sleep?

   a. Delta waves
   b. K-complexes and sleep spindles
   c. Alfa waves
   d. Theta waves
   e. None of the above

8. Which of the following statements is true for sleep apnea syndrome?

   a. Duration of apnea must be longer than 10 seconds and it should happen more than 5 times in an hour
   b. It is sufficient to have a few apneas to diagnose
   c. Although its name is sleep apnea, it is not related to apnea
   d. All of the above is true
   e. None of the above is true

9. What is the relationship between sleep apnea severity and probability of patient's having an accident?

    a. It is directly proportional
    b. It is inversely proportional
    c. There is no relationship between two of them

10. Which of the following is the most appropriate treatment for sleep apnea syndrome?

    a. Tracheostomia
    b. Uvulopalatopharyngoplasty (UPPP)
    c. Continuous positive airway pressure (CPAP)
    d. None of the above

11. For a narcoleptic patient, which of the following is highly possible to observe?

    a. Insomnia
    b. Cataplexy
    c. Oxygen desaturation
    d. Apnea

12. Which polisomnography channel(s) give(s) diagnostic information in sleep apnea patient?

    a. EEG + EOG + EMG
    b. Chin EMG
    c. Oximeter
    d. Airflow, chest and abdominal belts
    e. c + d

13. How do you determine that a sleep apnea patient is deprived of slow wave sleep?

    a. Stage I and II sleep have been increased
    b. Stage III and IV sleep have been decreased
    c. REM sleep has been increased
    d. It is not possible to detect this finding by polysomnography

14. By which procedure do you detect oxygen desaturation in sleep apnea and why does it develop?

    a. By EEG, and because of sleep deprivation
    b. By EEG, and because central nervous system uses too much oxygen in sleep
    c. By oximeter, because of frequent arousals
    d. By oximeter, because of frequent apneas

15. Which of the following disease has excessive daytime sleepiness as a symptom?

    a. Sleep apnea
    b. Narcolepsy
    c. Insomnia
    d. All of the above
    e. None of the above

16. Which of the following is the result of oxygen desaturation in sleep?

    a. Systemic hypertension
    b. Pulmonary hypertension
    c. Secondary polycytemia
    d. All of the above
    e. None of the above

17. Which stage(s) of sleep can be determined by polysomnography?

    a. Stage I
    b. Stage II
    c. Stage III and IV
    d. REM stage
    e. All of the above