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The Awareness Level of Obstructive Sleep Apnea Syndrome Among Primary Care Medical Staff

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Abstract

BACKGROUND/AIMS: Despite obstructive sleep apnea syndrome (OSAS) being a prevalent condition, it is under-recognized and underestimated by many workers in the medical field. We aimed to assess the awareness level of primary care medical staff towards OSAS during daily practice in a tertiary referral university hospital.

MATERIALS AND METHODS: A prospective study was conducted among medical staff. The participants were asked to answer a 24-question survey regarding the risk factors, symptoms and complications of OSAS. One sleep expert reviewed and approved the checklist questionnaire. The demographic data of the participants, their background regarding OSAS, their recognition of the symptoms, diagnostic tests and consequences including cardiovascular, neurobehavioral and urologic diseases were investigated. The OSAS points were calculated for each participant in order to assess their awareness levels. The OSAS points were compared between different occupation, age and gender groups.

RESULTS: Data was available from 137 participants of whom 39% were males and 61% were females. The median age was 25 (22-33) years. Of the participants, 26.8% were medical doctors, 20% were medical students working as intern doctors, 15.2% were nurses and 37.5% were other occupations. Only 1.9% of them had never heard about OSAS. The most common source of information regarding OSAS was during their medical or paramedical training and research (61.7%). Only 12.5% of the participants attended lectures or conferences about sleep disorders during their postgraduate training or practice. Of the participants, only 38.3% of the participants identified male gender as being a risk factor. More than half of the participants identified smoking (80.8%), alcohol (59.5%) and obesity (82.8%) as non-structural risk factors for OSAS. Only 40.6% of the participants had information that enlarged neck circumference (men: >43 cm; women: >37 cm) was a characteristic physical finding. The recognition level of the symptoms were as follows: snoring (74.2%), respiratory breaks (86.7%), daytime somnolence (57.4%), daytime fatigue (33.8%) and morning headache (66.1%). Of the participants, 77.9% identified the need for polysomnography for the evaluation of patients. The recognition level of serious consequences were as follows; motor vehicle accidents (51.4%), hypertension (28%), diabetes (19%), cardiac arrhythmia (62.5%), stroke (43%), dementia (26%), nocturia (17%) and sexual dysfunction (37%). The mean OSAS awareness point was 10.77±4.86. The medical doctors' and medical students' OSAS awareness points were statistically significant higher than the other occupation groups. There was a positive weak correlation between participants' ages and their awareness levels.

CONCLUSION: According to these results, although most of medical staff have some idea about the common symptoms and risks of sleep apnea, they do not have enough knowledge about its possible consequences. It is necessary to develop education programs in order to increase OSAS awareness among practicing primary care staff, especially among non-doctor groups, in order to enhance their daily patient encounters.

Keywords: Awareness, medical staff, obstructive sleep apnea syndrome

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INTRODUCTION

Obstructive sleep apnea syndrome (OSAS) is a prevalent condition well characterized by the recurrent collapse of the upper airway and repetitive episodes of desaturations and arousals during sleep.[1]

It is typically characterized by symptoms of loud snoring, witnessed apneas, excessive daytime sleepiness, fatigue and morning headache.[2,3]

The complications related with OSAS include neurocognitive, cardiovascular, metabolic and urogenital consequences such as daytime sleepiness, depression, stroke, dementia, hypertension, diabetes and impotence.[1]

Despite high prevalence rates of about 7% in middle-aged adults, up to 90% of patients do not receive a diagnosis, thus suggesting that many remain unrecognized and untreated.[4,5] Treatment reduces long term complications and so recognition of these patients is crucial.

Increased awareness of the presenting symptoms and the possible consequences of this syndrome by healthcare providers is expected to decrease the number of undiagnosed and untreated cases.

To date, there has been no survey examining the levels of awareness and knowledge of OSAS among health care providers. In this study, we aimed to assess the awareness levels of primary care medical staff towards OSAS during their daily practice in our region and our hospital.

MATERIALS AND METHODS

A prospective study was conducted in January and February, 2019 at a training and educational hospital. Ethical approval was obtained from University of Kyrenia Ethics Committee (approval number: RY-2018-08). The subjects included the medical staff consisting of medical doctors, supervisors, dieticians, nurses, call center workers, pharmacists, physiotherapists, health and emergency technicians, all of whom were actively working in our hospital.

The paper version of the questionnaire was handed out to participants by the authors. The subjects were made aware of the aims of this study and that the survey was voluntary.

The participants were asked to answer a 24-question survey regarding the risk factors, symptoms and complications of OSAS. The questionnaire was based on the guidelines for clinical practice in OSAS which mainly included the risk factors, common symptoms and consequences of the disease. The survey questions were prepared by the authors themselves. One sleep expert reviewed and approved the checklist questionnaire. The participants were asked to select either "*true*", "*false*" or "*don't know*" as their answers.

The demographic data of the participants, their background and postgraduate education (if present) about OSAS, their recognition of the symptoms, their knowledge of diagnostic tests and consequences including cardiovascular, neurobehavioral and urologic diseases were investigated.

OSAS points were calculated by using the correct number of questions answered by the participants in order to assess their awareness level. One point was given for each correct question so the maximum awareness point was 22 (out of 22 questions).

Statistical Analysis

The SPSS Statistics for Windows, version 22.0 (SPSS Inc., Chicago, Ill., USA) was used as the statistical analysis program. Descriptive statistics were used for the demographic and clinical characteristics. The data were stated as mean ± standard deviation, n (%) and median (25th percentiles-75th percentiles). Histograms, Q-Q graphics and the Shapiro-Wilk tests of normality were used to assess the normal distribution of means. Continuous data variables are presented as the median and interquartile range (25th-75th quartiles). Categorical variables are presented as n (%). Chi-square analysis was performed for the analysis of categorical variables. The two Independent samples t-test was used to compare OSAS points and gender. The ANOVA test was used to compare OSAS points and occupation. The Tukey test was used for multiple comparisons. The relation between the OSAS point and age was evaluated by Spearman correlation analysis and scatter plot. A **p**-value of <0.05 was considered to be statistically significant.

RESULTS

Data was available from 137 participants of whom 39% were males and 61% were females. The median age was 25 years (22-33) and the range 22-66 years. Of the participants, 26.8% were medical doctors, 20% were faculty of medicine students working as intern doctors in the same hospital, 15.2% were nurses and 37.5% were other occupations such as pharmacists, laboratory and emergency technicians (Table 1).

The most common source of information about OSAS was during their medical or paramedical education and training (61.7%, n=84). Only 12.5% (n=17) of the participants attended lectures or conferences about sleep disorders during their postgraduate training or practice. All of these participants were medical doctors.

Of the participants, only 38.3% of the participants identified male gender as being a risk factor. More than half of the participants identified smoking (80.8%) alcohol consumption (59.5%) and obesity (82.8%) as non-structural risk factors for OSAS. Only 40.6% of the participants had information regarding enlarged neck circumference (men: >43 cm; women: >37 cm) being a characteristic physical finding. The results for the risk factors are shown in Table 2.

The recognition level of the symptoms were as follows: respiratory breaks (86.7%), snoring (74.2%), morning headache (66.1%), daytime somnolence (57.4%) daytime fatigue (33.8%) and nocturia (17.7%).

Table 1. Descriptive statistics of the participants	
Variables	**Descriptive statistics**
Age	25.0 (22.0-33.0)
Gender	
Female	54 (39)
Male	83 (61)
Occupation	
Medical doctors	30 (26.8)
Medical students	23 (20.5)
Nurses	17 (15.2)
Others	42 (37.5)
OSAS points	10.77±4.86
The data is stated as; mean ± standard deviation, n (%) and median (25th percantiles-75th percentiles), OSAS: Obstructive sleep apnea syndrome.	

Of the participants, 77.9% identified the need for polysomnography for the evaluation of patients. The recognition level of serious consequences were as follows; motor vehicle accidents (51.4%), hypertension (28.6%), diabetes (19.8%), cardiac arrhythmia (62.5%), stroke (43.3%), dementia (26%), and sexual dysfunction (37.7%). The results for the awareness of symptoms and complications of OSAS are shown in Figure 1.

For the consequences including hypertension, diabetes, stroke, dementia, nocturia and sexual dysfunction more than 50% of the participants answered "*don't know.*"

The mean OSAS awareness point was 10.77±4.86 among all participants (Table 1). The medical doctors' and medical students' OSAS awareness points were statistically significant higher than the nurses and the other occupation groups. The nurses' awareness scores were similar to both groups. There was no difference between gender and awareness points (Table 3).

There was a positive weak correlation between the participants' age and their OSAS awareness levels (Figure 2).

DISCUSSION

Obstructive sleep apnea is a common disorder of repetitive pharyngeal collapse leading to oxygen desaturation, hypercapnia and sleep fragmentation which may contribute to cardiovascular, metabolic and neurocognitive effects. It is regarded as a global health problem with increasing prevalence.[3]

According to different studies from Canada, Oklahoma and Australia which surveyed primary care and sleep clinic patients, it was found that

primary care providers do not routinely screen for symptoms of OSAS or refer high-risk patients to sleep specialists.[6-9]

We assessed the awareness and attitudes towards OSAS of primary care medical staff who were actively working in our hospital.

One of the major results of our study was that primary medical staff do not have enough awareness on overall OSAS. According to the overall mean OSAS awareness points, less than half of the questions were answered correctly. Although more than half of the participants recognized the common risk factors of obesity, smoking and alcohol consumption, the least known risk factor was enlarged neck circumference. Another important result was that the awareness level was highest among the medical doctors and medical students when compared to the others.

The symptoms which were best known included respiratory breaks, snoring, morning headache and daytime somnolence. In the study by Arous et al.[4], the general population was investigated in Lorraine, France.

Table 2. The responses of the participants regarding to the risk factors of OSAS

(n=136)	Yes	No	Don't know
Smoking	80.8% (n=110)	3.6% (n=5)	15.4% (n=21)
Alcohol consumption	59.5% (n=81)	7.3% (n=10)	33% (n=45)
Obesity	82.3% (n=112)	7% (n=10)	10.2% (n=14)
Enlarged neck circumference	40.6% (n=54)	6.01% (n=8)	53.3% (n=71)

OSAS: Obstructive sleep apnea syndrome.

Table 3. The comparison of total OSAS points according to gender and occupation

Variables	OSAS points	p
Gender		
Female (n=53)	10.87±4.62	0.776
Male (n=83)	10.62±5.25	
Occupation		
Medical doctor (n=30)	13.70±4.43[a]	<0.001
Medical student (n=23)	11.96±3.74[a]	
Nurse (n=17)	10.59±4.06[a,b]	
Others (n=42)	8.98±4.75[b]	

The data is stated as mean ± standard deviation. The same letters in the same column represent the similarity between occupations whereas different letters represent difference. OSAS: Obstructive sleep apnea syndrome.
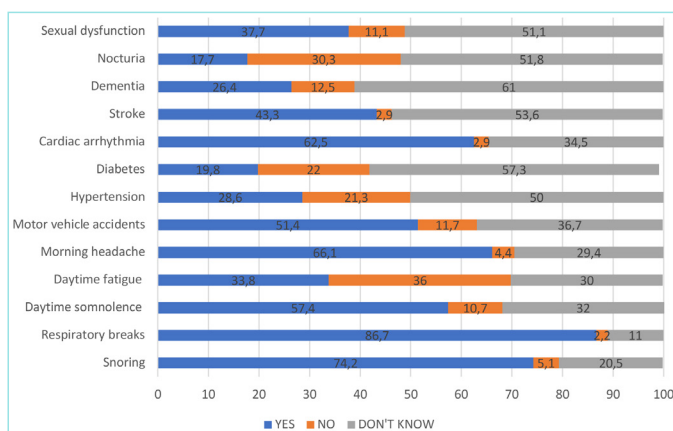

Figure 1. The results for the awareness level of symptoms and complications of OSAS in percentages.

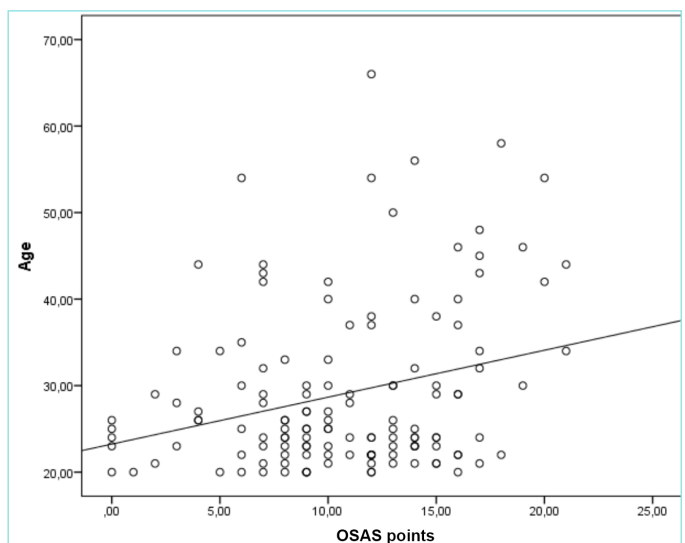OSAS: Obstructive sleep apnea syndrome.

Figure 2. Scatter plot showing the relation between the OSAS points and age. There is a statistically significant (p=0.001) relation between age and OSAS points. This relation was weak positive (r=0.273).

OSAS: Obstructive sleep apnea syndrome.

More than 75% were well-aware of these symptoms. In another study by Sia et al.[1] from Singapore, 60% of the participants were aware of these symptoms.

It is known that nocturia is high among OSAS patients. The least-known symptom in our study was nocturia, which is parallel to the study by Arous et al.[4].

Of the participants, the majority identified the need for polysomnography for the evaluation of patients.

The least known complications of OSAS in our study group were hypertension, diabetes, stroke, dementia and sexual dysfunction. These were not recognized by the majority of the participants. Motor vehicle accidents and cardiac arrhythmia were recognized by the majority of the participants.

Therefore, it is an important finding in the present study that medical staff are not sufficiently aware of the link between OSAS and cardiovascular and neurobehavioral complications, especially dementia and diabetes. Another interesting finding was that cardiac arrhythmia was correctly identified by a large number in both our study and the study by Arous et al.[4].

Another alarming awareness shortfall was the lack of information about dementia. Only 26% of the participants were aware of this, whereas in the study by Arous et al.[4], this rate was 17.88% and in the study by Sia et al.[1], it was 0.6%.[1]

Only a small percentage of the participants had attended lectures or conferences about sleep disorders during their postgraduate practice. All of these participants were medical doctors. According to these results, developing postgraduate educational programs especially targeting non-doctor medical staff groups is crucial.

Study Limitations

The present study had certain limitations. One limitation was the multiple-choice design with a "*don't know*" option in which the respondents may avoid answering definitively in order to get better scores for awareness. Additionally, we examined behaviors at a single institution and our findings may not be generalizable to other busy primary care practices. Larger-scale studies are needed to extrapolate the awareness of OSAS to a wider population.

CONCLUSION

According to these results, although most of medical staff had some idea regarding the common risk factors and symptoms, they did not have enough knowledge about important consequences, including hypertension, diabetes, stroke, dementia, nocturia and sexual dysfunction. According to these results, it is necessary to develop educational programs and information campaigns in order to increase OSAS awareness among practicing primary care staff, especially in non-medical doctor groups in order to enhance their patient encounters. Routine screening and assessment for OSAS in primary care settings will be another important precaution, with this being currently recommended widely in the literature.

MAIN POINTS

- The doctors' and medical students' OSAS awareness scores were higher than the nurses and the other occupation groups.

- The least known risk factor for OSAS was enlarged neck circumference.

- The consequences of OSAS including dementia and sexual dysfunction were not recognized by the majority of the participants.

ETHICS

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