

Sleep quality & prevalence of restless legs syndrome among healthcare professionals

Sağlık çalışanlarında uyku kalitesi ve huzursuz bacaklar sendromu sıklığı

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Abstract

Aim: Healthcare professionals constitute a high-risk group for occupational stress as a consequence of difficult working conditions and therefore, they are prone to sleep disorders. The present study aimed to determine the prevalence of poor sleep quality and restless legs syndrome among healthcare professionals working daytime duty at a tertiary center, and to identify potential factors influencing sleep quality.

Methods: A total of 150 participants including physicians, nurses and other health professionals were included in this questionnaire-based cross-sectional study. All participants completed a self-administered questionnaire comprised of the Pittsburgh Sleep Quality Index (PSQI), Beck Depression Inventory (BDI) and Restless Legs Syndrome (RLS) Study Group Diagnostic Criteria, as well as demographic characteristics.

Results: Global PSQI score was 6.8 and the mean BDI score was 11.8. A PSQI score of >5, which indicates poor sleep quality, was noted in 69 participants (46%), while Restless legs syndrome was found in 31 (21%) and depression in 40 (26%) of the participants. Workplace violence, working at an intensive care unit, working in the operating room, and BDI scores were found to be factors that independently contributed to poor sleep quality. Furthermore, age, occupational experience, working at intensive care unit, work environment unrest and BDI scores were predictors of RLS.

Conclusions: In a substantial proportion of healthcare professionals, sleep quality is somewhat impaired and RLS and depressive symptoms are also frequent in this population. Work environment unrest, working conditions and intensity of depressive symptoms are determinants of sleep disorders in healthcare professionals. Healthcare professionals should be regularly screened for the presence of sleep disorders to recognize and treat the underlying causative conditions.

Keywords: Healthcare professional, Sleep quality, Restless legs syndrome, Depression, Occupational stress

Öz

Amaç: Sağlık çalışanları, zor çalışma koşullarının bir sonucu olarak mesleki stres için yüksek riskli bir grup oluşturmaktadır ve bu nedenle uyku bozukluklarına eğilimlidirler. Bu çalışma, üçüncü basamak bir merkezde gündüz hizmet veren sağlık çalışanları arasında kötü uyku kalitesi ve huzursuz bacaklar sendromu prevalansını belirlemeyi ve uyku kalitesini etkileyen potansiyel faktörleri belirlemeyi amaçlamıştır.

Yöntemler: Anket tabanlı kesitsel özellikte olan bu çalışmaya hekimler, hemşireler ve diğer sağlık profesyonelleri dahil toplam 150 katılımcı dahil edildi. Tüm katılımcılar, Pittsburgh Uyku Kalitesi İndeksi (PSQI), Beck Depresyon Envanteri (BDI) ve Huzursuz Bacaklar Sendromu (RLS) Çalışma Grubu Tanı Kriterleri ve demografik özelliklerden oluşan kendi kendine uygulanan bir anket doldurdu.

Bulgular: Global PSQI skoru 6,8 ve ortalama BDI skoru 11,8 idi. 69 hastada (%46) kötü uyku kalitesini gösteren, >5 PSQI skoru, 31 hastada Huzursuz bacaklar sendromu saptandı (%21) ve depresyon katılımcılarının 40'ında (%26). İşyerinde şiddet, yoğun bakım ünitesinde çalışma, ameliyathanede çalışma ve BDI skorları bağımsız olarak düşük uyku kalitesine katkıda bulunan faktörler olarak bulundu. Ayrıca yaş, mesleki deneyim, yoğun bakım ünitesinde çalışma, çalışma ortamı huzursuzluğu ve BDI skorları RLS'nin prediktörleridir.

Sonuçlar: Sağlık çalışanlarının önemli bir kısmında uyku kalitesi bir miktar bozulmakta ve bu popülasyonda RLS ve depresif belirtiler de sık görülmektedir. Çalışma ortamındaki huzursuzluk, çalışma koşulları ve depresif belirtilerin yoğunluğu sağlık uzmanlarında uyku bozukluklarının belirleyicisidir. Sağlık uzmanları, alta yatan nedensel durumları tanımak ve tedavi etmek için uyku bozukluklarının varlığı açısından düzenli olarak taranmalıdır.

Anahtar kelimeler: Sağlık uzmanı, Uyku kalitesi, Huzursuz bacaklar sendromu, Depresyon, Mesleki stres

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Introduction

Sleep is a temporary and superficial state of unconsciousness with distinctive electrophysiological features, in which the response to external stimuli level is elevated. Sleep disorders are a common problem; however, a high proportion of these disorders remain undiagnosed, which is largely due to underestimation of the problem by those who suffer these conditions [1]. Restorative sleep is closely related to day-time performance, psychological stress and social interactions; therefore, they may adversely affect mental and physical health [2].

Healthcare professionals constitute a high-risk group for occupational stress as a consequence of working conditions; often translating into development of adverse results such as, loss of personal accomplishment at work, burnout and depression [3]. Sleep disorders may play an important role in the emergence of such problems, as healthcare workers are known to have high frequency of sleep disorders [4,5]. When a healthcare worker is exposed to excessive occupational stress for a long period of time, a wide variety of psychological problems including anxiety, depression and sleep disorders might occur [6]. Moreover, sleep disorders and other problems existing in healthcare professionals not only influence their physical and mental health, but may also affect their work efficiency and could endanger the quality of healthcare provided to patients. Other factors such as working in demanding positions (such as the intensive care unit and operating room), being subject to violence by patients and patient relatives, and having psychiatric problems or chronic diseases may also contribute to sleep disorders. Thus, sleep quality and sleep disorders in healthcare professionals should not be underestimated in order to improve healthcare professionals' physical and mental health in addition to preventing low performance at work.

The purpose of the present study was to determine the prevalence of poor sleep quality and restless legs syndrome among healthcare professionals working daytime duty at a tertiary center, and to identify potential factors influencing sleep quality.

Materials and methods

This study was conducted on healthcare professionals working in a tertiary center in İstanbul, Turkey, in November 2019. In the study, the population of the research is 850 health personnel working in the hospital. By taking 95% confidence level and 8% sample error, the minimum sample number was determined as 128. In this context, taking into consideration that there may be incorrect data, a survey was conducted with 150 health personnel. A total of 150 participants including physicians, nurses and other health professionals who responded to the self-administered questionnaire consisting of questions regarding demographic data, sleep quality, RLS and depression were included in the study. Those with known sleep disturbances, RLS and depression, or those receiving treatment for these conditions were excluded. Ethics committee approval and necessary permissions were obtained for the study.

To assess sleep quality, we used the Pittsburgh Sleep Quality Index (PSQI) which is a reliable, valid and standardized

measure of sleep quality [7]. The PSQI consists of seven components scored from 1 to 3 including the following: 1) subjective sleep quality (very good to very bad); 2) sleep latency (≤ 15 minutes to > 60 minutes); 3) sleep duration (≥ 7 hours to < 5 hours); 4) sleep efficiency ($\geq 85\%$ to $< 65\%$ ratio of hours of sleep/hours in bed); 5) sleep disturbances (from 'none during the past month' to ' ≥ 3 times per week'); 6) use of sleeping medications (none to ≥ 3 times a week); and 7) daytime dysfunction ('not a problem' to 'a very big problem'). Scores for all components are summed to provide a global score ranging between 0 and 21 points. It is widely accepted that a PSQI score > 5 indicates poor sleeping quality and a PSQI score < 5 indicates good sleeping quality [8].

Presence of RLS was based on the International Restless Legs Syndrome Study Group Diagnostic Criteria consisting of the following 4 criteria: 1) having an urge to move the legs, generally accompanied by unpleased sensation in the legs, 2) RLS symptoms activated by rest, 3) RLS symptoms alleviated by moving, in particular, by walking; 4) RLS symptoms being worse in the evening or night, either currently or in the past. Patients fulfilling these 4 criteria were diagnosed with RLS [9].

Depressive symptoms were assessed using the Beck depression inventory (BDI), which is an instrument used for the purpose of diagnosing depression consisting of 21 items on symptoms and attitudes, with intensities ranging between 0-3 [10]. The items refer to sadness, pessimism, sense of failure, lack of satisfaction, guilt, feeling of punishment, self-deprecation, self-accusation, suicidal ideation, crying spells, irritability, social withdrawal, indecisiveness, distortion of body image, inhibition to work, sleep disorder, fatigue, loss of appetite, weight loss, somatic concern, and decreased libido. Depression was defined as having a BDI score of ≥ 16 .

Statistical analysis

Statistical analysis was performed using SPSS for Windows, version 17 (SPSS, Chicago, IL, USA). The Kolmogorov-Smirnov test was used to assess normality of distribution in continuous variables. Continuous variables were presented as mean (standard deviation, while categorical variables were presented as frequency (n) and percentage (%). Correlation analyses were performed to investigate the association between PSQI scores and selected variables. Logistic regression analyses were carried out to identify the predictors of poor sleep quality and RLS. Two-sided P -value ≤ 0.05 was accepted to show statistical significance.

Results

A hundred and fifty participants (mean age: 33.5 (10.2) years) who responded to the questionnaire and met the inclusion criteria were recruited in this study. Among these, 103 (68%) were female and 47 (32%) were male; 66 (44%) were single, 73 (49%) were married and 11 (7%) were divorced. There were 30 (20%) physicians and 33 (22%) nurses enrolled in the study. 44 (29%) of the participants had a chronic disease. The mean coffee and tea consumption per day was 3.5 (2.4) cups and alcohol consumption and smoking were recorded in 53 (35%) and 51 (34%) individuals of the study group, respectively. A PSQI score of > 5 , indicating poor sleep quality, was noted in 69 (46%) participants. Global mean PSQI score was 6.8 (4.7) and the mean

BDI score was 11.8 (8.3). Restless legs syndrome was noted in 31 (21%) and a BDI score ≥ 16 , indicating depression, was noted in 40 (26%) of the participants (Table 1). The BDI score was correlated positively with the PSQI score ($r = 0.546$, $P < 0.001$, Figure 1). Logistic regression analysis revealed that work environment unrest (OR:0.217, 95% CI: 0.057-0.830, $P = 0.026$), working at an intensive care unit (OR:0.047, 95% CI:0.004-0.527, $P = 0.013$), working in operating room (OR:0.091, 95% CI:0.013-0.614, $P = 0.014$), and BDI scores (OR:1.159, 95% CI:1.053-1.275, $P = 0.003$) were independently predictive for poor sleep quality (Table 2). Independent predictors for presence of RLS were age (OR:1.072, 95% CI:1.016-1.132, $P = 0.012$), occupational experience (OR:1.148, 95% CI:1.007-1.309, $P = 0.039$), working at an intensive care unit (OR:0.246, 95% CI:0.074-0.819, $P = 0.022$), work environment unrest (OR:5.520, 95% CI:1.697-17.957, $P = 0.005$) and BDI scores (OR:1.084, 95% CI:1.009-1.165, $P = 0.026$), as determined by logistic regression analysis (Table 3).

Table 1: Demographics, occupational features and sleep quality of the study population

	n=150
Gender	
Male, n (%)	47 (32 %)
Female, n (%)	103 (68 %)
Age	33.5 (10.2)
Marriage	
Single, n (%)	66 (44 %)
Married, n (%)	73 (49 %)
Divorced, n (%)	11 (7 %)
Working unit	
Radiology Unit, n (%)	2 (1.5 %)
Intensive Care Unit, n (%)	20 (13 %)
Operating Room, n (%)	11 (7.5 %)
Other n (%)	38 (25 %)
Unit below ground level, n (%)	71 (47.3 %)
Unit over ground level, n (%)	79 (52.7 %)
Experience (years)	11 (10.5)
Position	
Physician, n (%)	30 (20 %)
Nurse, n (%)	33 (22 %)
Technician, n (%)	19 (12.7 %)
Other, n (%)	68 (44 %)
Presence of chronic diseases, n (%)	44 (29 %)
Daily tea and coffee consumption (cups)	3.5 (2.4)
Alcohol consumption, n (%)	53 (35 %)
Smoking, n (%)	51 (34 %)
Work environment unrest, n (%)	94 (63 %)
Global PSQI score	6.8 (4.7)
PSQI > 5 points, n (%)	69 (46 %)
Mean BDI score	11.8 (8.3)
BDI > 16 points, n (%)	40 (26 %)
Restless Leg Syndrome, n (%)	31 (21 %)

BDI: Beck depression inventory, PSQI: Pittsburgh sleep quality index

Table 2: Predictors of poor sleep quality in healthcare professionals

	OR	95 % CI	P-value
Age	0.989	0.909-1.077	0.799
Gender	1.105	0.492-2.480	0.809
Marriage	0.855	0.207-3.526	0.828
Tea/coffee consumption	1.620	1.140-2.301	0.007
Chronic diseases	1.642	0.424-6.361	0.473
Occupational experience	0.978	0.842-1.137	0.774
Alcohol consumption	0.902	0.271-3.002	0.866
Smoking	0.370	0.110-1.239	0.107
Workplace violence	0.217	0.057-0.830	0.026
Intensive care unit staff	0.047	0.004-0.527	0.013
Operating room staff	0.091	0.013-0.614	0.014
BDI score	1.159	1.053-1.275	0.003

BDI: Beck depression inventory

Table 3: Predictors of restless legs syndrome in healthcare professionals

	OR	95 % CI	P-value
Age	1.072	1.016-1.132	0.012
Gender	0.930	0.287-3.014	0.903
Marriage	1.280	0.412-3.981	0.670
Tea/coffee consumption	1.132	0.864-1.483	0.370
Occupational experience	1.148	1.007-1.309	0.039
Alcohol consumption	0.974	0.338-2.805	0.961
Smoking	0.755	0.275-2.078	0.587
Workplace violence	5.520	1.697-17.957	0.005
Operating room staff	1.159	0.314-4.271	0.825
Intensive care unit staff	0.246	0.074-0.819	0.022
BDI score	1.084	1.009-1.165	0.026

BDI: Beck depression inventory

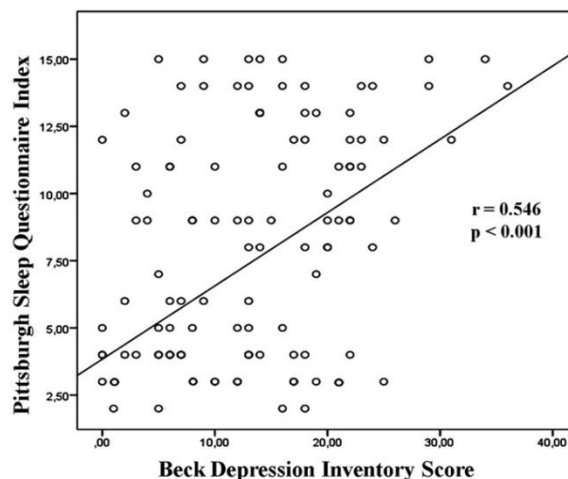


Figure 1: The BDI score was correlated positively with the PSQI score

Discussion

Poor sleep quality occurs in a wide spectrum including narcolepsy, restless legs syndrome and insomnia, and drowsiness occurring during the day causes various malfunctions. This is an important public health problem that reduces physical capacity, cognitive functions and mental capacity, and can often progress to impaired concentration, weakness, anxiety and even depression [8]. Considering the individual effort of the healthcare worker in the provision of healthcare, it is obvious that the sleep problems that will arise in this population will adversely affect both the healthcare provided and the patient group benefiting from this service [9]. Therefore, the sleep problems that may arise in healthcare professionals should be approached seriously and their causes should be investigated, and measures to be taken in order to ensure the quality of sleep should be implemented quickly.

In this study, the prevalence of poor sleep quality of healthcare professionals was 46% and this result is generally in compliance with previous studies performed on nurses and doctors. Ghalichi et al. administered Pittsburgh Sleep Quality scale to 925 healthcare workers, and sleep quality was found poor in 43.1% of the participants [10]. In the study conducted by Yasin et al. on a group of young doctors, the frequency of sleep withdrawal, intense insomnia findings during the day, weakness and insufficient sleep sensation were present in almost half of the participants [11]. In a study conducted on nurses, the prevalence of sleep disorder was 50% in nurses working in daytime, while this rate reached 66% in nurses working at night [12]. In another study conducted on the intensive care unit nurses, 62.9% of the participants reported that their sleep quality was bad [13].

Tough working conditions and troubles showing up at work make health workers vulnerable for sleep disorders [14]. On the other hand, impaired sleep quality may also be associated with decreased compassion satisfaction, increased burnout and secondary traumatic stress in the healthcare worker [15]. In summary, poor sleep quality reduces the satisfaction of the healthcare worker working with devotion. Female gender, divorce, shift work, and age may be taken among the other factors that impair sleep quality [16]. In a conducted study, a significant positive correlation was found interestingly between the sleep quality level and spiritual health scores of 170 intensive care nurses [17]. When we look at the results of our study,

depressive symptoms are closely related to sleep quality. This relationship has also been shown in previous studies conducted on military personnel, nurses and caregivers who take care of dementia and Alzheimer's patients [18-20]. These findings suggest that there is a two-way relationship between depression and sleep quality. To put it in different way, sleep disorders can cause depressive symptoms, and vice versa also occurs frequently. Considering that depressive symptoms are also present often in healthcare professionals, it would not be wrong to claim that depression is directly related to poor sleep quality. In the light of all these data, our results show that high BDI scores, which are indicators of depression, are an independent marker for poor sleep quality in healthcare workers. In addition, smoking, working in the intensive care unit or operating room and work environment unrest have emerged as independent indicators of poor sleep quality in our study. These findings reveal how workplace troubles and depressive symptoms have an impact on sleep quality as shown in the study conducted by Sun et al. [21]. The possible explanation for this is that pressure on healthcare professionals working in critical units and anxiety cause depression over time, and intense depressive symptoms also result in insomnia.

In this study we conducted, the frequency of restless legs syndrome, which we evaluated according to four criteria, was also determined in 21% of healthcare professionals. In another study conducted previously in healthcare professionals, Civi et al. [22] found the frequency of restless leg syndrome at a rate of 15%. In a study conducted in our country with a methodology similar to ours, this rate was found to be 12.8% [23]. In our study, the reason for the higher frequency of restless leg syndrome in healthcare workers may be that our working environment trouble rates are high. Civi et al. [22] found that age and gender are not important markers for restless leg syndrome. Contrary to these findings, our results show that age, professional experience are independent markers for the presence of RLS. According to the results of our study, working in the intensive care unit, working environment troubles and intensity of depressive symptoms are also independent markers for the presence of RLS.

Limitations

The present study has some limitations to be mentioned. The cross-sectional design of this study is not adequate to reach a causal relationship between poor sleep quality and several demographic features and working conditions of the healthcare professionals. However, the strong and independent relation between sleep quality and working conditions, as presented here, give rise to the consideration that some occupational risk factors might be a reason for poor sleep quality. Additionally, data regarding the safety outcomes and medical service quality (which might be adversely affected by sleep disorders) were not assessed. Lastly, we did not question the severity of RLS in this study. Although our results indicate that RLS presence is associated with several important factors studied here, future studies may benefit from assessing the relationship between these factors and the severity of RLS.

Conclusion

In summary, the results of the present study provide significant data regarding the relationships between sleep quality,

RLS and depressive symptoms in healthcare professionals. In this study, we demonstrated that sleep quality was impaired in a substantial proportion of healthcare professionals and RLS and depressive symptoms are also frequent in this population. We also identified workplace, work environment unrest and intensity of depressive symptoms as determinants of poor sleep quality. With this background in mind, we suggest that healthcare professionals should be regularly screened for the presence of poor sleep quality to recognize and treat the underlying causative conditions. Measures to improve sleep quality should also be taken to enhance their health-related quality of life and occupational productivity, in order to preserve the quality of medical care provided to the public.

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