Original Research

Sleep disturbances in Healthcare Workers During the COVID-19 Pandemic

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Abstract

Background: Many studies have reported the negative impact of the COVID-19 pandemic on the rhythms and sleep in various populations. Particularly in frontline healthcare workers, which are highly susceptible to developing sleep disturbances. Therefore, the present study was conducted to determine the prevalence and determinants of sleep disturbances in healthcare workers at the regional Hospital Hassan II in Agadir, Morocco.

Methodology: A cross-sectional study among frontline healthcare workers was conducted at the Regional Hospital in Agadir, by administering an online questionnaire using the Google Forms platform distributed through social media. The questionnaire was anonymous, and data confidentiality was assured. Data analysis was performed using SPSS version 21.

Results: A total of 54 healthcare professionals filled in the questionnaire. The mean age was 28.81±05.35, The two-thirds were female participants (59.3%), and the mean Epworth score was 07.53±04.05, High prevalence rates of sleep disorders were reported as follows; sleep onset insomnia (27.4), excessive daytime sleepiness (24.1), snoring (24.1).We found that morning headaches and concentration difficulties are factors associated with sleep disorders among healthcare workers.

Conclusions: COVID-19 has a high risk of poor sleep quality, with many consequences. Measures to improve the sleep and well-being of healthcare workers are needed.

Keywords: COVID-19; Sleep Quality; Health Personnel.

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Introduction:

Sleep is a vital process linked to neural restoration and physiological maintenance across multiple systems.[1] Since sufficient sleep is necessary for humans to sustain everyday functioning.[2] Many research studies of sleep disturbances were conducted during the COVID-19 pandemic, most using self-report data.[3]

These studies have reported an impact on the rhythms and sleep in various populations, particularly in frontline healthcare workers, who are highly susceptible to developing sleep disturbances, such as insomnia, disrupted sleep continuity, changes in the sleep-wake cycle, feelings of non-restorative sleep, and decreased sleep quality.

Frontline healthcare workers had to deal quickly with a massive surge of patients and manage a disease that was still not well known. At the same time, they were unable to provide the usual follow-up of their patients due to the closure of their departments and were reassigned to different departments unrelated to their daily practice.[4]

They were also confronted with a shortage of resources and equipment adapted to the nature of the transmission and contagiousness of this new virus, as well as with a lack of specific treatment and visibility of its characteristics and evolution.[5] Therefore, the present study was conducted to determine the prevalence and determinants of sleep disturbances in healthcare workers at the regional Hospital Hassan II in Agadir.

Methods

This is a cross-sectional study conducted between October 2020 and September 2021. It took place in the Regional Hospital Center in Agadir. Frontline healthcare workers (medical doctors and nurses) were included. Purposive sampling was used.

Taking into consideration the pandemic restrictions and since there is no professional database to distribute the questionnaire, an online auto-administered questionnaire using the Google Forms platform has been used and distributed through social media (Facebook®, WhatsApp®) to healthcare workers in the Regional Hospital Center in Agadir. It comprised three sections. The first section consisted of sociodemographic and professional data such as age, gender, professional profile. The second section consisted of medical and sleep disorders characteristics. The last section included the Epworth Sleepiness Scale (EPSS) which is a widely used tool to determine daytime sleepiness level. It is a self-assessment tool which was developed in 1991. It rates falling asleep likelihood, or dozing, in eight questions on a four-point scale from 0 which is considered as "would never doze" to 3 "high chance of dozing". 1) sitting and reading, 2) watching television, 3) Sitting, inactive in a public place, 4) As a passenger in a car for an hour without a break, 5) Lying down to rest in the afternoon when circumstances permit, 6) Sitting and talking to someone, 7) Sitting quietly after a lunch without alcohol, 8) In a car, while stopped for a few minutes in the traffic. The total score is from 0 to 24 points. A score of more than ten indicates excessive daytime sleepiness.[6, 7]

This study was conducted according to the Helsinki Declaration. The consent was obtained from all healthcare workers, at the beginning of the questionnaire, the participants were asked to give their consent before proceeding with the survey. The questionnaire was anonymous, and data confidentiality was assured.

Data was exported from Google Forms, prepared, coded, and analyzed using the Statistical Package for Social Sciences (SPSS V21). Descriptive statistics were performed to report the sociodemographic, and professional characteristics and sleep disturbances. The significance of differences between two

qualitative variables was tested using Fisher's exact test. The significance of differences between quantitative variables was assessed using the student t-test. The significance level was at $p<0.05$.

Results

A total of 54 healthcare workers participated, the mean age was 28.81±05.35. The two thirds were female participants (59.3%). The majority were medical doctors (89%). Nearly three quarters had no medical history. Other professional and medical characteristics are represented in Table 1.

Table 1: Healthcare workers' sociodemographic, professional and medical characteristics

	Effective	Percentage (%)
Age (mean ± SD*)	28.81±05.35	
Gender		
Female	32	59.3
Male	22	40.7
Profile		
Medical residents	29	53.7
Medical doctor specialist	01	01.9
Internal doctor	18	33.3
Nurses	06	11.1
Medical history		
Yes	16	29.6
No	38	70.4
History of sleep disturbances		
Yes	42	77.8
No	12	22.2
Shift work		
Yes	31	62.0
No	19	38.0
Smoking habits		
Yes	06	11.1
No	48	88.9
Body Mass Index		
Underweight	07	13.0
Normal	31	57.4
Overweight	13	24.1
Moderate obesity	03	05.6
Severe obesity	0	0
Coffee consumption		
Yes	38	70.4
No	16	29.6
Morning headache		
Yes	12	22.2
No	37	68.5
Concentration difficulties		
Yes	36	73.5
No	13	26.5

*Standard deviation

The mean Epworth score was 07.53±04.05. The prevalence of sleep disorders was high such as the sleep onset insomnia (27.4), excessive daytime sleepiness (24.1), and snoring (24.1). More sleep disorders were reported in Table 2.

Table 2: The healthcare workers sleep patterns

	Number	Percentage (%)
Sleep onset insomnia		
< 45 minutes	37	72.5
≥ 45 minutes	14	27.4
Sleep latency time		
10 minutes	09	17.6
20 minutes	15	29.4
30 minutes	13	25.5
45 minutes	05	09.8
> 1 hour	09	17.6
Afternoon nap		
Yes	26	51.0
No	25	49.0
Epworth score		
<10	41	75.9
≥ 10	13	24.1
Use of sleeping pills		
Yes	13	25.5
No	38	74.5
Sleep duration		
< 6 hours	27	50.0
> 6 hours	27	50.0
I snore while sleeping.		
Yes	13	24.1
No	37	68.5
Breathing pauses		
Yes	03	07.1
No	39	92.9
I have a sleep paralysis.		
Yes	08	16.0
No	42	84.0
I grind my teeth"Bruxism"		
Yes	09	18.0
No	41	82.0

I see nightmares		
Yes	25	46.3
No	24	44.4

The associated factors to sleep disorders among healthcare workers were morning headaches (p=0.016) and concentration difficulties (p=0.021). Other factors such as age, gender, and body mass index were not statistically significant. More details are represented in Table 3.

Table 3: The associated factors with sleep disorders among healthcare workers

Variable	Epworth score		p-value
	<10 n (%)	≥10 n (%)	
Age			0.355*
	29.19±05.22	27.61±05.81	
Gender			0.556†
Female	24(75.0)	08(25.0)	
Male	17(77.3)	05(22.7)	
Body mass index			0.094*
	23.86±04.49	21.47±04.04	
Coffee			0.174†
Yes	27(71.1)	11(28.9)	
No	14(87.5)	02(12.5)	
Morning headache			0.016†
Yes	06(50.0)	06(50.0)	
No	32(86.5)	05(13.5)	
Concentration difficulties			0.021†
Yes	25(69.4)	11(30.6)	
No	13(100)	0	
Sleep onset insomnia			0.130†
< 45 minutes	31(83.8)	06(16.2)	
> 45 minutes	09(64.3)	05(35.7)	

*Test t student; Fisher's test exact

Discussion

In Morocco, few published studies have investigated the impact of the COVID-19 pandemic on the sleep patterns of frontline healthcare workers. In France, Vallée et al [8] conducted a study on the impact of COVID-19 on the mental health of surgeons and reported insomnia symptoms in 43.1% of cases (Insomnia Severity Index [ISI] scale)

In Italy, Magnavita et al [9] reported that 36.7% of anesthesiologists suffered from insomnia (Sleep Condition Indicator [SCI] scale). In our study, 27.4% of participants experienced symptoms of insomnia, such as sleep-onset insomnia, with 35.7% of these individuals having a positive Epworth score.

Many departments in the world stopped their usual activities during the lockdown and most healthcare workers went to help in the COVID units. This was a source of significant stress, linked to the sudden discontinuation of their patient care, their reassignment to posts far from their usual duties, and exposure to COVID-19 in the COVID units.

The use of sleeping pills is an important indicator of the severity of insomnia, [10] our study reveals a prevalence of patients taking sleeping pills of 25.5%. This percentage is lower than that of the general population in France, which is 35.1%, whose high consumption of sleeping pills is explained by the high frequency of insomnia in this country.

Sleep deprivation which is defined by a sleep duration <7 hours per night,[11] was found in 50% of the staff, Stewart et al [12] reported a mean sleep duration of 6.1 hours per day in frontline healthcare workers, which is less than the recommended 7 hours of sleep.[11] In a French study, 31% of French people sleep 6 hours or less and almost half of them feel that they do not get enough sleep.

Symptoms evocative of sleep apnea, like snoring and breathing pauses were present in 24.1%, and 7,1% respectively. A French study carried out on a sample of 850 male subjects between the ages of 22 and 66 revealed that the prevalence of snoring is 34.6%.[13] The low rate of breathing pauses in our study can be explained by the low number of obese subjects in our population.

Bruxism, which is the abnormal activity of the chewing muscle observed during sleep or wakefulness,[14] was observed in 18.0%, although studies on the etiology increase day by day, it was revealed that there is a direct relationship between stress scores and bruxism. [15]

A majority of respondents also reported nightmares in 46,3%, close to 58,7% found by Giardino et al. who observed a close relationship between the presence of anxiety, nightmares, and violent dreams, in support of the association widely known between nightmares and stressful situations.[16]

The prevalence of excessive daytime sleepiness in our study is 24.1% if we consider an Epworth score greater than or equal to 10 as pathological, which is higher than the national study among health professionals who found a prevalence of 14.1%.[17] On an international scale, the prevalence ranged from 8.5% to 33%.[18-21]

The bivariate analysis shows that sleep disturbances had a significant impact on concentration, which is consistent with the study of Medic G et al. who found that lack of sleep may lead to an increase in accidents, mood changes, impaired psychological functioning, and concentration.[22]

An impact on headache was also noted, which is likely to result from fewer sleeping hours and subsequently having to compensate with erratic naps,[23] another study identified stress and sleep

disturbances as clinical factors contributing to headaches and should be carefully monitored and adequately addressed during the COVID-19

This study has some limitations. Data were obtained using an online tool and we asked participants to complete the survey during a period in which they were most clinically active in caring for patients with COVID-19. Although this approach may lead to biased results, we felt it would provide results that were most representative of the respondents' experiences while they were serving on the front lines during the COVID-19 pandemic.

Because the focus of our survey was on sleep, it is possible that healthcare workers who were more likely to experience sleep disturbances completed the survey. Our sample did not contain enough healthcare workers, which obviously reduces the power of this study. All data were self-reported, and we do not have objective measures of sleep duration and quality in this sample.

Conclusion

During the COVID-19 pandemic, healthcare workers reported poor sleep quality, with nearly half of respondents reporting sleep deprivation. Measures to improve the sleep and well-being of healthcare workers are needed to strengthen their ability to continuously meet the daily demands of the COVID-19 pandemic. Concerns regarding clinician well-being should be taken seriously, and health systems and organizations should place greater emphasis on systemic change.

It would also be beneficial to realize longitudinal research, that analyzes the evolution of these symptoms and draws longitudinal conclusions

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