

Sleep Disturbances in Healthcare Professionals During the Covid-19 Pandemic

Fahmina Nazir¹, Nida Armoghan Khan², Muhammad Awais Tahir³, Hafiz Muhammad Jahan Zaib⁴,
Tahreem Mahmood⁵, Amina Khalid⁶

^{1,2} Postgraduate Resident Ophthalmology, PIMS, Islamabad, ³Postgraduate Resident Medicine, PIMS, Islamabad

⁴Medical officer FG Polyclinic, Islamabad, ⁵House Officer PIMS, Islamabad

⁶Postgraduate Resident Ophthalmology, Holy family Hospital Islamabad

Author's Contribution

¹Concept and design, ² literature review work, ³Data Acquisition, ⁴Data analysis and manuscript editing/writing, ⁵final proof reading

Funding Source: None

Conflict of Interest: None

Received: Sept 17, 2022

Accepted: Dec 22, 2022

Address of Correspondent

Dr. Muhammad Awais Tahir

Medical officer FG Polyclinic,

Islamabad

ikhlaqbhatti1168@gmail.com

ABSTRACT

Objectives: To determine the incidence of sleep disturbances, including insomnia in healthcare professionals dealing with COVID-19 patients.

Methodology: A cross-sectional study was conducted at inpatient infectious disease units, emergency department and ICU (for COVID-19 patients), at the Pakistan Institute of Medical Sciences (PIMS) from February 2022 to April 2022. All the individuals participating in the study were healthcare professionals. Insomnia Severity Index was used for the questionnaire. The scores of the surveyed subjects were calculated and the characteristic demographics of the subjects were analyzed.

Results: An upward trend in the incidence of poor sleep quality was noted among the healthcare professionals who participated in this study. Out of 160 healthcare professionals, 93(58.1%) of the population was females, while 67(41.9%) were males. The majority of participants ($p < 0.05$) were between the ages of 20 and 30 years, followed by 31 to 40 years and 41 to 50 years. A significant proportion of the population ($p < 0.05$) belonged to the unmarried group, followed by the married, separated, and divorced with a percentage of 60.6, 36.2, 2.5 and 0.6%, respectively. Moreover, 84.4% (135/160) of healthcare professionals ($p < 0.05$) had a previous history of sleep disorders. Insomnia Severity Index (ISI) score system was used to analyze the intensity of sleep disorders and insomnia in the affected persons and it was found that most of the participants were diagnosed with subthreshold insomnia (38.8%).

Conclusion: The study elucidated that there was a significantly higher incidence of sleep disturbances and insomnia, in healthcare professionals working in Covid-19 care units.

Keywords: Covid-19; Healthcare professionals; Insomnia; Sleep disturbance.

Cite this article as: Nazir F, Khan NA, Tahir MA, Jahan Zaib HM, Mahmood T, Khalid A. Sleep Disturbances in Healthcare Professionals During the Covid-19 Pandemic. *Ann Pak Inst Med Sci.* 2022; 18(4):313-317. doi. 10.48036/apims.v18i4.728

Introduction

Significant psychological effects, including sleep problems and insomnia, were observable among healthcare workers who treated Covid-19 patients. The covid-19 pandemic has caused a profound psychological impact on frontline healthcare professionals. Frequently increased workload, irregular shifts, and the fear of dealing with a novel virus have depreciated their quality of sleep. The covid-19 pandemic has had a lasting impact on healthcare professionals mentally.¹⁻³ Dealing with a

contagious virus with a drastic fatality rate and having to be the sole caretakers of patients with no guarantee of survival has taken a mental toll on nurses and doctors working on Covid-19 wards and Intensive Care Units.⁴⁻⁶

As the SARS-CoV-2 pandemic hit back in 2019, healthcare professionals were unprepared for this novel and deadly virus. Many patients lost lives because of the lack of knowledge on proper care for them.⁷ The highly contagious virus isolated the patients from their families. Many healthcare professionals took the onus to providing emotional support to the patients as well. Working in

Covid wards and being aware of how they are also putting their family and friends at risk of catching the virus was also extremely challenging psychologically.⁸⁻¹⁰ Sleep disturbances like insomnia are one of its highly reported manifestations. Insomnia is described as a psychological and physiological disorder caused by stress. It is characterized by difficulty falling or staying asleep.¹¹⁻¹² Due to immense psychological pressure, insomnia has become a pertinent problem in healthcare professionals dealing with Covid patients. Insomnia can be triggered as a result of traumatic events.¹³

A study conducted on healthcare professionals in Poland concluded that 40% of the subjects suffered from a sleep disorder.¹⁴ Another systemic review and meta-analysis study revealed a 41.6% prevalence of sleep disturbances among healthcare professionals working on the frontlines during the pandemic.¹⁵⁻¹⁶ Moreover, Qi et al. evaluated that 71.1% of the subject healthcare professionals had poor sleep quality, of which 45.5% suffered from insomnia.¹⁷

Insomnia has become a significant issue for healthcare personnel who treat Covid patients as a result of extreme psychological pressure. Therefore, to examine the temporal impact of the pandemic on health, this study was done to assess the incidence of sleep problems and insomnia among healthcare professionals treating the Covid-19 pandemic in hospitals.

Methodology

A cross-sectional assessment study was conducted in the inpatient infectious disease units, emergency department, and ICU of Pakistan Institute of Medical Sciences (PIMS), Islamabad, Pakistan from February 2022 to April 2022.

The study included healthcare professionals i.e., nurses, doctors, and residents working in Covid Intensive Care Units (ICU) and isolation wards. Subjects who were not in direct contact with Covid patients were excluded from the study. The sample size was 160 calculated by the WHO sample size calculator. The study included a questionnaire that comprised of Insomnia Severity Index (ISI).¹⁸ ISI consists of seven valid questions that help to self-assess the sleep quality of an individual. Each question is given a value between 0-4 with increasing severity levels. The score for each subject was calculated by adding the value for all the questions and the general guidelines of the index were used for the interpretation.

According to the scores, individuals were labeled as either having a sleep disorder or without it.

The study was conducted after seeking approval from the institutional ethical committee of the hospital. The participants were briefed about the study beforehand. Informed consent was taken in written form from all the participating healthcare professionals.

After conducting the Insomnia Severity Index from the subjects, their scores were calculated by adding the values for all the 7 mentioned questions from the questionnaire (Morin et al., 2011). The scores were analyzed as per the general guidelines for interpretation (Morin et al., 2011, Yang et al., 2009). The results were then analyzed against other collected data in SPSS 28.0.1.1. Qualitative variables like gender, marital status, and subjects who have visited a psychologist or psychiatrist before were expressed as frequencies and percentages. One-way ANOVA including the Tukey HSD test was used to analyze the data and calculate the p-value.

Results

Participants' demographic information and employment status in Covid-19-related units were collected and analyzed. Participants in the study were 160 healthcare professionals. 58.1 percent of the population was female (n=93), while 41.9 percent was male (n=67). Subjects were divided into three groups based on their ages: 20 to 30 years, 31 to 40 years, and 41 to 50 years, with 124, 32, and 4 persons, respectively, in each group. The majority of participants (p0.05) were between the ages of 20 and 30 years, followed by 31 to 40 years and 41 to 50 years. A significant proportion of the population (p<0.05) belonged to the unmarried group, followed by the married, separated, and divorced with a percentage of 60.6, 36.2, 2.5 and 0.6%, respectively. Moreover, 84.4% (135/160) of healthcare professionals (p<0.05) had a previous history of sleep disorders (Table 1).

The Insomnia Severity Index (ISI) score system was used to analyze the intensity of sleep disorders and insomnia in the affected persons (Table 2). Most of the participants were diagnosed with subthreshold insomnia (38.8%), followed by clinically non-significant insomnia (37.5%), moderate (21.8%) and severe clinical insomnia (1.9%).

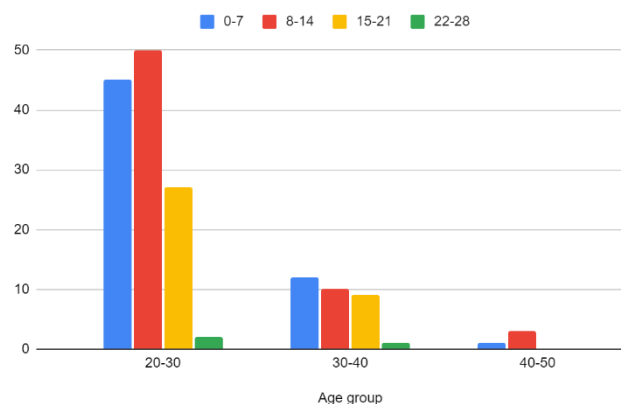
The age group with ISI score elucidates that 79 (49.3%) of the surveyed healthcare professionals showing signs of insomnia to be aged between 20-30 years. Whereas 23 (14.4%) were aged >30 years.

Table I: Demographic characteristics of the surveyed subjects

subjects		
Characteristics	N (%)	p-value
Age		
20-30	124 (77.5)	0.00001 *
31-40	32 (20.0)	
41-50	4 (2.5)	
Gender		
Male	67 (41.9)	0.03034*
Female	93 (58.1)	
Marital status		
Single	97 (60.6)	0.00001*
Married	58 (36.2)	
Separated	4 (2.5)	
Divorced	1 (0.6)	
Past medical record		
Yes	25 (15.6)	0.00001*
No	135 (84.4)	

Table II: Insomnia Severity Index score

Characteristics	Range	Score	(%)
No clinically significant insomnia	0-7	60	37.5
Subthreshold insomnia	8-14	62	38.8
Clinical insomnia (moderate)	15-21	35	21.8
Clinical insomnia (severe)	22-28	3	1.9

**Figure 1. Frequency of subjects (x-axis) in different age groups (y-axis). Legends indicate the score range as per the Insomnia Severity Index guidelines.**

Discussion

The results showed a clear indication of sleep disturbance as a pertinent problem in healthcare working in Covid units. As per the general guidelines of the Insomnia Severity Index, a score ≥ 8 is indicative of insomnia. As per our study, the mean score came out to be 9.5 with more than half (62.5%) of healthcare professionals showing signs of sleep disturbance. However, the ISI showed that out of 160 healthcare professionals surveyed, 100 scored ≥ 8 accounting for about 62.5%. Out of these 23.8% suffered from clinical insomnia. The findings

correlated with multiple previous studies.¹⁹⁻²¹ Our findings were supported by a study in which sleep disturbances and insomnia were found up to 40 percent of the general population and healthcare professionals. It was discovered that healthcare employees and the general population had a comparable prevalence of sleep disorders, with rates of 36.0% and 32.3% respectively.²²

Similar conclusions were drawn from a survey-based study that hospital personnel battling COVID-19 in Jilin reported high rates of anxiety and insomnia. The absence of personal protective equipment was a significant risk factor for both anxiety and sleeplessness. During the COVID-19 epidemic, addressing mental health issues among medical personnel is a crucial component of public health interventions.²³

Our findings were also in agreement with the study conducted in Wuhan, China, which reported that among 1257 HCWs treating COVID-19 patients in 34 hospitals in China (20 in Wuhan, 7 in other regions of Hubei province, and 7 in 7 other provinces), 44.6% of respondents had anxiety symptoms based on a 7-item General Anxiety Disorder (GAD) scale. Similar to our findings, the authors found that primary care physicians were much more likely to experience anxiety. In addition, nurses, women, and medical staff in secondary hospitals and Wuhan were more likely to experience worry.²⁴

Conclusion

The study revealed almost one-third of healthcare professionals had insomnia. With a staggering percentage of surveyed healthcare professionals showing signs of sleep disturbances, the quality of sleep has been compromised in the doctors, nurses and house residents working in Covid units. The increased workload, living in the constant fear of transmitting the virus to family members and witnessing high fatality rates among the patients has depreciated the mental well-being of the healthcare professionals. Little to no proper psychological support to healthcare professionals working on the frontlines of the deadly pandemic has impacted their quality of sleep. This, in turn, has led to sleep disturbances like insomnia to prevail. Interventions to reduce the stress level of the healthcare professionals working directly with Covid patients need to be a priority.

Recommendations: This study highly recommends that Healthcare facilities should be equipped to provide self-assessment tools and counseling to frontline healthcare workers. Moreover, a large-scale study including

participants from different areas and healthcare facilities may be conducted for further investigation into the matter.

References

1. Marvaldi M, Mallet J, Dubertret C, Moro MR, Guessoum SBJN. Anxiety, depression, trauma-related, and sleep disorders among healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis. *Neurosci Biobehav Rev*. 2021;126:252-264. <https://doi.org/10.1016/j.neubiorev.2021.03.024>
2. Wang S, Wen X, Dong Y, Liu B, Cui MJP. Psychological influence of coronavirus disease 2019 (COVID-19) pandemic on the general public, medical workers, and patients with mental disorders and its countermeasures. *WHO*. 2020;61:616-624. <https://doi.org/10.1016/j.psym.2020.05.005>
3. Anmella G, Fico G, Roca A, Gómez-Ramiro M, Vázquez M, Murru A, Pacchiarotti I, et al.. Unravelling potential severe psychiatric repercussions on healthcare professionals during the COVID-19 crisis. *J Affect Disord*. 2020;273:422-424. <https://doi.org/10.1016/j.jad.2020.05.061>
4. Greenberg N. Mental health of health-care workers in the COVID-19 era. *Nat Rev Nephrol*. 2020;16(8):425-426. <https://doi.org/10.1038/s41581-020-0314-5>
5. Vizheh M, Qorbani M, Arzaghi SM, Muhidin S, Javanmard Z, Esmaeili M. The mental health of healthcare workers in the COVID-19 pandemic: A systematic review. *J Diabetes Metab Disord*. 2020;19(2):1967-1978. <https://doi.org/10.1007/s40200-020-00643-9>
6. Yitayih Y, Mekonen S, Zeynudin A, Mengistie E, Ambelu A. Mental health of healthcare professionals during the early stage of the COVID-19 pandemic in Ethiopia. *BJ Psych Open*. 2020;7(1):e1. <https://doi.org/10.1192/bjo.2020.130>
7. Bojdani E, Rajagopalan A, Chen A, Gearin P, Olcott W, Shankar V, Cloutier A, et al. COVID-19 Pandemic: Impact on psychiatric care in the United States. *Psychiatry Res*. 2020;289:113069. <https://doi.org/10.1016/j.psychres.2020.113069>
8. Mehta S, Machado F, Kwizera A, Papazian L, Moss M, Azoulay É, Herridge M. COVID-19: A heavy toll on health-care workers. *Lancet Respir Med*. 2021;9(3):226-228. [https://doi.org/10.1016/S2213-2600\(21\)00068-0](https://doi.org/10.1016/S2213-2600(21)00068-0)
9. Rana W, Mukhtar S, Mukhtar S. Mental health of medical workers in Pakistan during the pandemic COVID-19 outbreak. *Asian J Psychiatr*. 2020;51:102080. <https://doi.org/10.1016/j.ajp.2020.102080>
10. Chenxi Z, Lulu Y, Shuai L, Simeng M, Ying W, Zhongxiang C, Hui D, et al. Survey of Insomnia and Related Social Psychological Factors Among Medical Staff Involved in the 2019 Novel Coronavirus Disease Outbreak. *Front Psychiatry*. 2020;11: 00306. <https://doi.org/10.3389/fpsy.2020.00306>
11. Roth T, Roehrs T. Insomnia: epidemiology, characteristics, and consequences. *Clin Cornerstone*. 2003;5(3):5-15. [https://doi.org/10.1016/S1098-3597\(03\)90031-7](https://doi.org/10.1016/S1098-3597(03)90031-7)
12. Morin CM. Insomnia: Psychological assessment and management. Guilford Press.
13. Martin HSA, Serrano PJ, CambrilesDT, Arias AEM, Méndez MJ, Álvarez DYMJ, Sánchez GM. Sleep characteristics in health workers exposed to the COVID-19 pandemic. *Sleep Med*. 2020;75:388-394. <https://doi.org/10.1016/j.sleep.2020.08.013>
14. Krupa S, Filip D, Mędrzycka-Dąbrowska W, Lewandowska K, Witt P, Ozga D. Sleep disorders among nurses and other health care workers in Poland during the COVID-19 pandemic. *Appl Nurs Res*. 2021;59:151412. <https://doi.org/10.1016/j.apnr.2021.151412>
15. Salari N, Khazaie H, Hosseini-FAR A, Ghasemi H, Mohammadi M, Shohaimi S, Daneshkhan A, et al. The prevalence of sleep disturbances among physicians and nurses facing the COVID-19 patients: a systematic review and meta-analysis. *BMC Heal*. 2020;16:1-14. <https://doi.org/10.1186/s12992-020-00620-0>
16. Klimkiewicz A, Schmalenberg A, Klimkiewicz J, Jasińska A, Jasionowska J, Machura W, Wojnar M. COVID-19 Pandemic Influence on Healthcare Professionals. *J Clin Med*. 2021;10(6):1280. <https://doi.org/10.3390/jcm10061280>
17. Qi J, Xu J, Li BZ, Huang JS, Yang Y, Zhang ZT, Yao DA, et al. The evaluation of sleep disturbances for Chinese frontline medical workers under the outbreak of COVID-19. *Sleep Med*. 2020;72:1-4. <https://doi.org/10.1016/j.sleep.2020.05.023>
18. Morin CM, Belleville G, Bélanger L, Ivers H. The Insomnia Severity Index: psychometric indicators to detect insomnia cases and evaluate treatment response. *Sleep*. 2011;34(5):601-8. <https://doi.org/10.1093/sleep/34.5.601>
19. Alshekaili M, Hassan W, Al Said N, Al Sulaimani F, Jayapal SK, Al-Mawali A, Chan MF, et al. Factors associated with mental health outcomes across healthcare settings in Oman during COVID-19: frontline versus non-frontline healthcare workers. *BMJ Open*. 2020;10(10):e042030. <https://doi.org/10.1136/bmjopen-2020-042030>

20. Stewart NH, Koza A, Dhaon S, Shoushtari C, Martinez M, Arora VM. Sleep Disturbances in Frontline Health Care Workers During the COVID-19 Pandemic: Social Media Survey Study. *J Med Internet Res*. 2021;23(5):e27331. <https://doi.org/10.2196/27331>
21. Secosan I, Virga D, Crainiceanu ZP, Bratu T. The Mediating Role of Insomnia and Exhaustion in the Relationship between Secondary Traumatic Stress and Mental Health Complaints among Frontline Medical Staff during the COVID-19 Pandemic. *Behav Sci (Basel)*. 2020;10(11):164. <https://doi.org/10.3390/bs10110164>
22. Erdoğan A, Berktaş DT, Oksuz AN, Sahin AR, Kocyigit BF. The impact of COVID-19 pandemic on sleep quality in healthcare workers in Turkey. *Egypt J Neurol Psychiatry Neurosurg*. 2022;58:58. <https://doi.org/10.1186/s41983-022-00489-3>
23. Dong HS, Gao JJ, Dong YX, Han CX, Sun L. Prevalence of insomnia and anxiety among healthcare workers during the COVID-19 pandemic in Jilin Province. *Brazilian J Med Bio Res*. 2021;54(9):e10602. <https://doi.org/10.1590/1414-431x2020e10602>
24. Liu CY, Yang YZ, Zhang XM, Xu X, Dou QL, Zhang WW, et al. The prevalence and influencing factors in anxiety in medical workers fighting COVID-19 in China: a crosssectional survey. *Epidemiol Infect* 2020;148:e98. <https://doi.org/10.1017/S0950268820001107>