Original Research Article

A CROSS-SECTIONAL STUDY ON SLEEP DISTURBANCES, STRESS LEVELS AND BURNOUTS AMONG POST GRADUATE STUDENTS DURING COVID -19 PANDEMIC IN A TERTIARY CARE HOSPITAL IN TAMILNADU

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Abstract

Background: The COVID-19 pandemic significantly impacted the mental health of healthcare workers, particularly postgraduate medical students, due to heightened clinical responsibilities, fear of infection, and prolonged work hours. Sleep disturbances, stress, and burnout were prevalent concerns during this period. This study aimed to evaluate sleep quality, stress levels, and burnout among postgraduate students in a tertiary care hospital in Tamil Nadu using the Pittsburgh Sleep Quality Index (PSQI), Perceived Stress Scale (PSS), and Maslach Burnout Inventory (MBI). **Materials and Methods:** A cross-sectional study was conducted in November 2020 at a tertiary care hospital in Tamil Nadu among 151 postgraduate students who worked in COVID-19-related duties. Participants completed a structured online questionnaire comprising PSQI, PSS, and MBI scales. Descriptive and inferential statistics were performed using SPSS software. Associations between demographic variables, stress, sleep quality, and burnout were analyzed using chi-square tests. **Result:** The study revealed that 95.4% of participants reported poor sleep quality, 75.5% experienced moderate stress, and 81.5% exhibited burnout symptoms. A significant association was found between age and stress levels (P = 0.03), with participants aged 31–40 years reporting higher severe stress levels. Additionally, a significant correlation was observed between poor sleep quality and stress (P = 0.03), indicating the interdependence of these factors. Gender and specialty did not show significant associations with stress or sleep quality. **Conclusion:** The findings highlight the substantial mental health burden on postgraduate students during the COVID-19 pandemic. Institutions must prioritize mental health support systems, ensure adequate rest, and provide pandemic-specific training to address these challenges and prepare for future crises.

INTRODUCTION

The COVID-19 pandemic has been an unprecedented global health crisis, placing immense physical, emotional, and mental demands on healthcare professionals, particularly postgraduate medical students.[1] These individuals, already burdened with rigorous academic and clinical responsibilities, faced additional challenges as frontline workers during the pandemic. Prolonged exposure to high-pressure environments, fear of infection, and lack of adequate rest have significantly impacted their mental health, making it imperative to study the effects of this crisis on their well-being.[2-4]

Sleep disturbances are a prevalent concern among healthcare workers during such crises, affecting their ability to perform optimally in clinical and academic settings.[5,6] The Pittsburgh Sleep Quality Index (PSQI) is a validated tool that has been widely used to assess sleep quality in healthcare professionals. Previous studies have demonstrated a strong correlation between sleep disturbances and adverse mental health outcomes, including increased stress and burnout.[7,8]

Stress levels among postgraduate students during the pandemic were significantly heightened due to

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factors such as fear of infection, increased workload, and disrupted work-life balance. The Perceived Stress Scale (PSS) is a reliable instrument used to measure the levels of perceived stress. Previous research has shown that high stress levels not only impair mental well-being but also have a cascading effect on physical health and professional performance.[9,10]

Burnout, a state of emotional, physical, and mental exhaustion caused by excessive and prolonged stress, is particularly relevant during the pandemic. The Maslach Burnout Inventory (MBI) is a well-established tool to evaluate burnout in healthcare settings, focusing on emotional exhaustion, depersonalization, and personal accomplishment. Several studies have reported high levels of burnout among healthcare professionals during the COVID-19 pandemic, underscoring the need for targeted strategies to mitigate its impact.[11,12]

Existing literature highlights the interplay between sleep disturbances, stress, and burnout among healthcare professionals, particularly during crises like the COVID-19 pandemic. For instance, poor sleep quality has been linked to heightened stress and burnout, creating a vicious cycle that exacerbates mental health challenges. This study builds on previous research by simultaneously evaluating these three critical aspects using validated tools, thereby providing a comprehensive understanding of the mental health burden faced by postgraduate students during the pandemic.[13-16]

By focusing on postgraduate medical students in a tertiary care hospital in Tamil Nadu, this study aims to fill the gap in existing research specific to this population. Understanding the mental health challenges faced by postgraduate students during the COVID-19 pandemic will not only provide insights into their experiences but also inform institutional policies and interventions to enhance their well-being and preparedness for future health crises.

Objectives
- To assess the subjective sleep quality using Pittsburg Sleep Quality Index (PSQI) among postgraduate students during COVID 19 pandemic in a tertiary care hospital in Tamilnadu,
- To determine stress levels using Perceived Stress Scale (PSS) among postgraduate students during COVID 19 pandemic in a tertiary care hospital in Tamilnadu,
- To measure the burnout levels using Maslach Burnout inventory (MBI) among post graduates students during COVID 19 pandemic in a tertiary care hospital in Tamilnadu.

MATERIALS AND METHODS

This cross-sectional study was conducted among postgraduates of Madras Medical College and Rajiv Gandhi Government General Hospital, along with its associated institutions. The study population included postgraduates who had attended COVID-19 duty in various settings such as COVID outpatient clinics, inpatient clinics including the Severe Acute Respiratory Infection (SARI) ward, COVID inpatient block, COVID Intensive Care Unit (ICU), isolation wards, and COVID care centers from April 2020. Postgraduates who performed COVID-related duties such as data collection and compilation without direct exposure to COVID-19 patients were excluded from the study.

The study was conducted in Madras Medical College and Rajiv Gandhi Government General Hospital, Chennai, over a period of one month in November 2020. The primary objectives of the study were to assess the subjective sleep quality of participants using the Pittsburgh Sleep Quality Index (PSQI), determine stress levels using the Perceived Stress Scale (PSS), and measure burnout levels using the Maslach Burnout Inventory (MBI) among postgraduates. The sample size was determined based on a prevalence rate of 75% for sleep quality, with an absolute precision of 7% and a z-value corresponding to a 95% confidence level. This calculation yielded a sample size of 146 participants. 151 participants were included in the study.

Data collection involved sending a personal invitation to the postgraduate participants, along with detailed information about the study and a Google Forms-based questionnaire. The questionnaire included sections to evaluate subjective sleep quality using PSQI, stress levels using PSS, and burnout levels using MBI. The responses were recorded and compiled for further analysis. Data entry was performed using Microsoft Excel, and analysis was conducted using SPSS Version 16. Descriptive statistics were presented in percentages, and inferential statistics were performed using the chi-square test. Ethical clearance for the study was obtained from the Institutional Ethics Committee of Madras Medical College. Informed oral consent was obtained from all participants, and confidentiality of their personal information was strictly maintained throughout the study.

RESULTS

Ninety-seven participants (64.2%) were males, while 54 (35.8%) were females. A majority, 127 participants (84.1%), belonged to medical specialties, whereas 24 (15.9%) were from surgical specialties. In terms of age distribution, 105 participants (69.5%) were under 30 years, 44 (29.1%) were aged between 31 and 40 years, and only 2 participants (1.3%) were above 40 years. [Table 1]

The Perceived Sleep Quality Index (PSQI) among postgraduates on COVID duty revealed that 144 participants (95.4%) reported poor quality of sleep, while 7 participants (4.6%) reported good quality of sleep. [Table 2 & Figure 1]

The Perceived Stress Scale among postgraduates on COVID duty revealed that 16 participants (10.6%) experienced low stress, 114 participants (75.5%) experienced moderate stress, and 21 participants

(13.9%) experienced severe stress. [Table 3 & Figure 2]

Burnout among postgraduates on COVID duty was assessed using multiple indicators. A majority of participants (n = 125, 82.8%) reported feeling emotionally drained from their work, while 26 participants (17.2%) did not share this sentiment. Similarly, 133 participants (88.1%) stated that working with people was always a strain for them, compared to 18 participants (11.9%) who disagreed. Regarding overall burnout, 123 participants (81.5%) expressed feeling burned out from their work, while 28 participants (18.5%) did not. Additionally, 115 participants (76.2%) reported worrying that their job was hardening them emotionally, whereas 36 participants (23.8%) did not. Furthermore, 130 participants (86.1%) acknowledged difficulty in dealing calmly with emotional problems at work, while 21 participants (13.9%) reported otherwise. [Table 4]
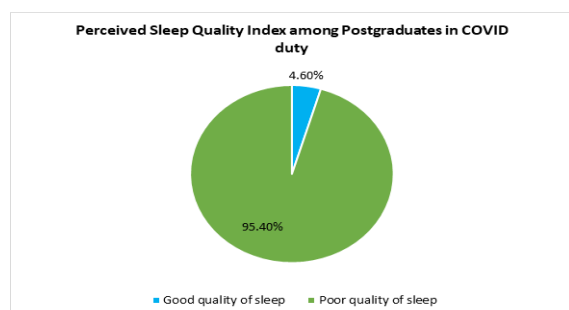

Figure 1: Perceived Sleep Quality Index among Postgraduates in COVID duty
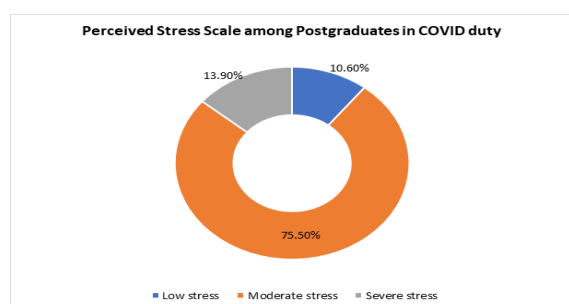

Figure 2: Perceived Stress Scale among Postgraduates in COVID duty

The association between gender and the Perceived Stress Scale (PSS) and Perceived Sleep Quality Index (PSQI) was analyzed. For PSS, among males, 12 participants (12.4%) reported low stress, 71 (73.2%) reported moderate stress, and 14 (14.4%) reported severe stress. Among females, 4 participants (7.4%) reported low stress, 43 (76.9%) reported moderate stress, and 7 (13%) reported severe stress, with no statistically significant association observed (P = 0.600). For PSQI, 6 males (6.1%) reported good sleep

quality compared to 1 female (1.9%), while 91 males (93.8%) and 53 females (98.1%) reported poor sleep quality, with no statistically significant association observed (P = 0.422). [Table 5]

The association between specialty and the Perceived Stress Scale (PSS) and Perceived Sleep Quality Index (PSQI) was analyzed. For PSS, among those in medical specialties, 15 participants (11.8%) reported low stress, 95 (74.8%) reported moderate stress, and 17 (13.4%) reported severe stress. Among those in surgical specialties, 1 participant (4.2%) reported low stress, 19 (79.2%) reported moderate stress, and 4 (16.7%) reported severe stress, with no statistically significant association observed (P = 0.600). For PSQI, 7 participants (5.5%) from medical specialties reported good sleep quality, while none (0%) from surgical specialties reported good sleep quality. Poor sleep quality was reported by 120 participants (94.5%) from medical specialties and all 24 participants (100%) from surgical specialties, with no statistically significant association observed (P = 0.598). [Table 6]

The association between age categories and the Perceived Stress Scale (PSS) and Perceived Sleep Quality Index (PSQI) was analyzed. For PSS, among participants under 30 years, 12 (11.4%) reported low stress, 82 (78.1%) reported moderate stress, and 11 (10.5%) reported severe stress. Among those aged 31 to 40 years, 3 participants (6.8%) reported low stress, 32 (72.7%) reported moderate stress, and 9 (20.5%) reported severe stress. In the above 40 years category, 1 participant (50%) reported low stress, none reported moderate stress, and 1 (50%) reported severe stress. A statistically significant association was observed (P = 0.03*). For PSQI, 5 participants (4.8%) under 30 years and 2 participants (4.5%) aged 31 to 40 years reported good sleep quality, while none in the above 40 years category reported good sleep quality. Poor sleep quality was reported by 100 participants (95.2%) under 30 years, 42 participants (95.5%) aged 31 to 40 years, and all 2 participants (100%) in the above 40 years category. No statistically significant association was observed (P = 1.000). [Table 7]

The association between the Perceived Sleep Quality Index (PSQI) and the Perceived Stress Scale (PSS) was analyzed. Among participants with good sleep quality, 3 (42.9%) reported low stress, 4 (57.1%) reported moderate stress, and none (0.0%) reported severe stress. Among those with poor sleep quality, 13 (9.0%) reported low stress, 110 (76.4%) reported moderate stress, and 21 (14.6%) reported severe stress. A statistically significant association was observed between PSQI and PSS (P = 0.03*). [Table 8]

Table 1: Socio Demographic Details of Study participants.

Socio Demographic Details		Frequency (n=151)	Percentage (%)
Gender	Male	97	64.2
	Female	54	35.8
Specialty	Medical specialty	127	84.1

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	Surgical specialty	24	15.9
Age category	Less than 30 years	105	69.5
	31 to 40 years	44	29.1
	Above 40 years	2	1.3

Table 2: Perceived Sleep Quality Index among Postgraduates in COVID duty

PSQI Scale	Frequency (n=151)	Percentage (%)
Good quality of sleep	7	4.6
Poor quality of sleep	144	95.4

Table 3: Perceived Stress Scale among Postgraduates in COVID duty

Perceived Stress Scale	Frequency (n=151)	Percentage (%)
Low stress	16	10.6
Moderate stress	114	75.5
Severe stress	21	13.9

Table 4: Burnout among Postgraduates in COVID duty

Burnout		Frequency (n=151)	Percentage (%)
I feel emotionally drained from my work	No	26	17.2
	Yes	125	82.8
Working with people always strain for me	No	18	11.9
	Yes	133	88.1
I feel burnout my work	No	28	18.5
	Yes	123	81.5
I worry this job is hardening me emotionally	No	36	23.8
	Yes	115	76.2
In my work deal with emotional problems very calmly	No	21	13.9
	Yes	130	86.1

Table 5: Association between gender with PSS and PSQI

Scale	Category	Gender		P value
Perceived Stress Scale		Male	Female	0.600
	Low	12 (12.4%)	4 (7.4%)	
	Moderate	71 (73.2%)	43 (76.9%)	
	Severe	14 (14.4%)	7 (13%)	
Perceived Sleep Quality Index	Good	6 (6.1%)	1 (1.9%)	0.422
	Poor	91 (93.8%)	53 (98.1%)	

Table 6: Association between specialty with PSS and PSQI

Scale	Category	Specialty		P value
		Medical specialty	Surgical specialty	
Perceived Stress Scale	Low	15 (11.8%)	1 (4.2%)	0.60
	Moderate	95 (74.8%)	19 (79.2%)	
	Severe	17 (13.4%)	4 (16.7%)	
Perceived Sleep Quality Index	Good	7 (5.5%)	0 (0.0%)	0.598
	Poor	120 (94.5%)	24 (100%)	

Table 7: Association between Age category with PSS and PSQI

Scale	Category	Age category			P value
		Less than 30 years	31 to 40 years	Above 40 years	
Perceived Stress Scale	Low	12 (11.4%)	3 (6.8%)	1 (50.0%)	0.03*
	Moderate	82 (78.1%)	32 (72.7%)	0 (0.0%)	
	Severe	11 (10.5%)	9 (20.5%)	1 (50.0%)	
Perceived Sleep Quality Index	Good	5 (4.8%)	2 (4.5%)	7 (0.0%)	1.000
	Poor	100 (95.2%)	42 (95.5%)	2 (100%)	

*- statistically significant by Chi square test

Table 8: Association between PSQI and PSS

Scale	Category	Perceived Stress Scale			P value
		Low	Moderate	Severe	
Perceived Sleep Quality Index	Good	3 (42.9%)	4 (57.1%)	0 (0.0%)	0.03*
	Poor	13 (9.0%)	110 (76.4%)	21 (14.6%)	

*- statistically significant by Chi square test

DISCUSSION

The COVID-19 pandemic has posed unprecedented challenges to healthcare professionals worldwide, including postgraduate medical students who faced immense physical and emotional demands. This study sought to evaluate the prevalence of sleep disturbances, stress levels, and burnout among

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postgraduate students working in a tertiary care hospital during the pandemic. Using validated tools such as the Pittsburgh Sleep Quality Index (PSQI), Perceived Stress Scale (PSS), and Maslach Burnout Inventory (MBI), the study highlights the significant mental health burden experienced by this group. The findings are compared with prior research to contextualize the extent of sleep disturbances, stress, and burnout in relation to demographic factors, work responsibilities, and pandemic-related stressors.

In our study, 95.4% of postgraduate students reported poor sleep quality, as measured by the Pittsburgh Sleep Quality Index (PSQI). These findings align with Rahim et al,[7] who observed poor sleep quality among postgraduate students during the COVID-19 pandemic, with a statistically significant association between poor sleep and stress (p=0.05). Similarly, Kaur et al9 reported that 29.4% of medical students experienced poor sleep quality during the second wave of the pandemic, highlighting the pandemic's impact on sleep patterns. In contrast, Jafri et al8 reported a higher prevalence of poor sleep quality (p<0.001) among postgraduate students compared to undergraduates during the lockdown period. This may be due to increased responsibilities and heightened stress among postgraduates. Das et al10 further corroborated these findings, demonstrating a significant correlation between poor sleep quality and burnout among healthcare workers during the pandemic.

The majority (75.5%) of our participants experienced moderate stress, with only 10.6% reporting low stress. These findings are consistent with Kaur et al,[9] who reported that 72.2% of medical students experienced moderate stress during the pandemic, with stress directly impacting their sleep quality. Rahim et al,[7] similarly found a positive correlation between stress and sleep disturbances among healthcare professionals, with postgraduate students exhibiting the highest stress levels. Mukherjee et al2 emphasized the role of significant stressors, such as fear of infection and impaired socialization, in contributing to moderate-to-high stress levels among postgraduate students. Jafri et al,[8] also identified postgraduate students as having significantly higher stress levels compared to undergraduates, with stress strongly linked to lockdown duration and job-related challenges.

Our study revealed that 81.5% of participants experienced overall burnout, with 82.8% feeling emotionally drained and 88.1% reporting strain from interpersonal interactions. These findings are comparable to those of Sriperambudoori et al,[5] who reported high levels of personal, work-related, and client-related burnout among resident doctors, with burnout negatively associated with resilience. Mukherjee et al,[2] reported higher mean scores for emotional exhaustion (30.65±5.56) among postgraduate students, attributing burnout to factors such as inadequate training and blurred boundaries between personal and professional lives. Similarly, Jezzini et al,[3] identified burnout symptoms in 54.2%

of students, with high emotional exhaustion (79.6%) and cynicism (57.3%), emphasizing the pandemic's role in exacerbating burnout. Das et al,[10] also reported a strong correlation between burnout and depression, underscoring the urgent need for psychological interventions.

Our study found a statistically significant association between poor sleep quality and stress levels (p=0.03). This aligns with the findings of Rahim et al,[7] who reported a significant positive correlation between stress and sleep disturbances among healthcare professionals. Kaur et al,[9] similarly observed that increased stress and anxiety directly impacted sleep quality during the second wave of the pandemic. The association between age and stress was statistically significant in our study (p=0.03), with participants aged 31–40 years experiencing the highest levels of severe stress (20.5%). This is consistent with Mukherjee et al,[2] who found that postgraduate year and age significantly influenced burnout and stress levels. Das et al,[10] reported similar findings, with older healthcare workers experiencing greater stress and burnout due to additional responsibilities during the pandemic.

The high prevalence of poor sleep quality, stress, and burnout among postgraduate students underscores the need for targeted interventions to support their mental health. Measures such as resilience-building workshops, peer support programs, and stress management training could help mitigate these challenges. Further research is essential to explore the long-term impact of the pandemic on the mental health of postgraduate students and healthcare workers.

The present study identified several significant associations between key variables. A statistically significant association was observed between age and stress levels (P = 0.03), with participants aged 31–40 years reporting the highest levels of severe stress (20.5%). Similarly, the relationship between sleep quality and stress levels was significant (P = 0.03), as participants with poor sleep quality were more likely to experience moderate to severe stress compared to those with good sleep quality. However, no statistically significant associations were found between gender or specialty with stress levels and sleep quality, indicating that these factors did not strongly influence the mental health outcomes in this cohort.

This study was limited by its cross-sectional design, which restricts the ability to establish causation between variables. The use of self-reported questionnaires may have introduced response bias, potentially affecting the accuracy of the data. Additionally, the study was conducted in a single tertiary care hospital, limiting the generalizability of the findings to other settings or populations.

Given that this study was conducted during the COVID-19 pandemic, the recommendations emphasize addressing challenges specific to crisis periods while enhancing preparedness for future public health emergencies. Institutions should

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establish robust mental health support systems, including crisis counseling, psychological first aid, and peer support networks tailored to high-stress scenarios. Flexible work schedules and adequate rest periods should be implemented to reduce fatigue and burnout during periods of high patient load. Pandemic-specific training programs are essential to equip students with skills for infection control, stress management, and handling high-stakes environments. Ensuring the availability of adequate protective equipment and workplace safety measures can mitigate anxiety and fear of infection. Additionally, technology-based platforms for remote monitoring of stress, sleep quality, and burnout should be utilized to enable timely interventions. Developing institutional policies that prioritize the well-being of healthcare workers during emergencies is crucial for sustaining their mental and physical health in similar future crises.

CONCLUSION

This study highlights the profound impact of the COVID-19 pandemic on the mental health of postgraduate medical students, revealing high levels of sleep disturbances, stress, and burnout. Overall, 95.4% of participants reported poor sleep quality, 75.5% experienced moderate stress, and 81.5% expressed feelings of burnout. Significant findings included a statistically significant association between age and stress levels, with those aged 31–40 years reporting higher levels of severe stress (P = 0.03). Additionally, a significant correlation was observed between poor sleep quality and higher stress levels (P = 0.03), indicating the interdependence of these variables. Institutions should establish robust mental health support systems, flexible work schedules, and adequate rest periods to mitigate stress and burnout during crisis periods like the COVID-19 pandemic. Additionally, providing pandemic-specific training, ensuring workplace safety, and utilizing technology for remote monitoring of well-being can enhance resilience and preparedness for future public health emergencies.

REFERENCES

1. Ghosh P, Dutta N, Hussain A. Burnout in Postgraduate Medical Students during COVID-19 Pandemic: A Cross-Sectional Study. Indian Journal of Social Psychiatry. 2023 Apr 1;39(2):116-21.
2. Mukherjee S, Mishra B, Tripathy CS, Sahu BK. Burnout and happiness among post graduate students during COVID-19 pandemic: A mixed method study in the tertiary care hospital of southern Odisha. Indian Journal of Psychiatry. 2022 Mar 1;64(Suppl 3):S609.
3. Jezzini-Martinez S, Martinez-Garza JH, Quiroga-Garza A, Quiroz-Perales XG, Gil-Flores L, de la Fuente-Villarreal D, Salinas-Alvarez Y, Guzman-Avilan K, Elizondo-Omaña RE,
4. Guzman-Lopez S. Assessment of burnout syndrome and associated factors among medical students during the COVID-19 pandemic. Journal of Affective Disorders Reports. 2023 Dec 1;14:100616.
5. Sriperambudoori V, Pingali S, Molanguri U, Deekshith T, Joopaka AK. Burnout and resilience among resident doctors working at a COVID-19 nodal center in India. Archives of Mental Health. 2023 Jul 1;24(2):95-101.
6. Srikrishna N, Vinnakota A, Srinivas S, Shvetha C, Abhilash GV, Vidya S, Rao L. Burnout and its impact on mental health of physicians during the COVID-19 pandemic: A cross-sectional study from South India. Telangana Journal of Psychiatry. 2020 Jul 1;6(2):160-5.
7. Rahim A, Farooq F, Ali S, Nazir SN. Perceived stress and sleep quality among health care faculty and postgraduate students during COVID-19 pandemic lockdown. Foundation University Journal of Rehabilitation Sciences. 2023 Jan 29;3(1):22-8.
8. Jafri K, Jeshna M, Daral A, Islam MA, Bhargava R. Impact of COVID-19 outbreak on mental health of undergraduate and postgraduate medical students. Indian Journal of Mental Health and Neurosciences. 2024 Mar 29;7(1):17-23.
9. Kaur N, Dwivedi D, Tripathi S, Bhatt S, Sethi H. Sleep Quality and Psychological Parameters: A Cross-sectional Study on Medical Students during Second Wave of COVID-19 Pandemic. Journal of Clinical and Diagnostic Reseach. 2021; 15(12): 10-13.
10. Das N, Goswami S, Mondal A. The Relation of Depression, Stress, Anxiety, and Burnout among Healthcare Workers during the Second Wave of COVID-19 Pandemic in India. Academic Bulletin of Mental Health. 2023 Sep 15;1(1):13-8.
11. Shekhar A, Philip S, Chaturvedi SK, Bhugra D. Stress and Burnout Amongst Medical Students in India. The Mental Health of Medical Students: Supporting Wellbeing in Medical Education. 2024 Jan 4:148.
12. Kousouri M, Mabiala CN, Nahmani A. Prevalence of Psychological Distress and Burnout among Physicians, Nurses, and Health Professionals during the COVID-19 Pandemic: A Comparative Cross-Sectional Multicentre Study. Int J Psychiatr Res. 2024;7(1):1-8.
13. Menon GR, Yadav J, Aggarwal S, Singh R, Kaur S, Chakma T, Periyasamy M, Venkateswaran C, Singh PK, Balachandar R, Kulkarni R. Psychological distress and burnout among healthcare worker during COVID-19 pandemic in India—A cross-sectional study. PLoS One. 2022 Mar 10;17(3):e0264956.
14. Mishra MN, Dana S, Kurup P, Kureshi U, Vijayan S, Dave N. Anxiety, stress, depression and burnout among health care worker during covid wave: a retrospective study. Medical Research Archives. 2024 Jan 30;12(1).
15. Rani S, John N. A Study to Assess the Occupational Burnout and Level of Stress among Frontline Health Professionals during COVID-19 Pandemic in Selected Hospital of New Delhi. Chettinad Health City Medical Journal. 2022 Dec 31;11(4):2-8.
16. Singh S, Chaudhary D, Kumar V, Singh V, Kumari P. Perceived Stress, Depression, Anxiety, and Stress Among Frontline Healthcare Workers Working in COVID-19 Level 2 Hospital. Indian Journal of Behavioural Sciences. 2024;27(01):37-43.

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