An investigation of the incidence of post-traumatic stress disorder, turnover intention and psychological resilience among medical staff in a public hospital in China during the outbreak of the omicron variant in the COVID-19 pandemic in 2022

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Objective: To investigate the incidence of post-traumatic stress disorder (PTSD), turnover intention and psychological resilience of medical staff during the Outbreak of the Omicron Variant in the COVID-19 pandemic in 2022 and to provide a basis for adopting relevant psychological interventions to reduce medical staff turnover.

Methods: Using the PTSD Checklist-Civilian Version (PCL-C) and a total score ranging from 17 to 85 points, a total score ≥ 38 indicates significant PTSD symptoms and a diagnosis of PTSD. The Chinese version of the Turnover Intention Scale (TIS) has a total score of 6 to 24 points; the higher the score, the stronger the turnover intention. The Chinese version of the Connor-Davidson Resilience Scale (CD-RISC) has a total score of 0 to 100 points, with higher scores indicating a better level of psychological resilience. A total of 443 front-line medical staff working in Chinese public hospitals and still treating all patients normally during COVID-19 were invited via the internet to complete a survey from 15 May to 30 May 2022 in China.

Results: The incidence of PTSD was 14.4%, the total turnover intention score was 13.38 ± 4.08, and the total psychological resilience score was 87.16 ± 18.42. The prevalence of PTSD was higher among medical staff who were married, had children, and were worried about being infected; in addition, the PTSD group had a higher level of education, higher turnover intention, and lower psychological resilience than the non-PTSD group. The total scores for turnover intention and fear of being infected were risk factors for PTSD, while a high total psychological resilience score and high education...
level were protective factors for PTSD; the differences were statistically significant (all \( P < 0.05 \)).

**Conclusion:** Post-traumatic stress disorder among Chinese medical personnel was associated with the marital status, childbirth, education level, turnover intention, and psychological resilience. Among these factors, psychological resilience might be exploited as a protective factor.

**KEYWORDS**
COVID-19, incidence, post-traumatic stress disorder, turnover intention, psychological resilience

**Introduction**

Post-traumatic stress disorder (PTSD) is conceptualized as the “overconsolidation of memories” of prolonged or repeated traumatic events and is defined as a debilitating memory disorder, especially during an outbreak of illness or disaster (1). Its development can affect neuroendocrine disorders and psychiatric symptoms such as immune deficiency, absenteeism, insomnia and nightmares, depression, and even suicide (2, 3). The detection and treatment of PTSD in people after a disaster has become a major concern in medical psychology (4). During the SARS epidemic, medical staff were more susceptible to stress disorders than executives due to the need to cope with the potential risk of infection to themselves and their families (5) and the threat of a shortage of personal protective equipment (6), and some medical staff were afraid to go home after work or even considered quitting (7). COVID-19 has been spreading worldwide over the past 2 years, and the global impact is now growing rapidly with the discovery of the SARS-CoV-2 Omicron variant (B.1.1.529) (8). The Omicron variant has a mutation rate that exceeds other variants by approximately 5–11 times, and preliminary studies suggest that this variant causes an increased risk of human reinfection with the virus compared to other strains of concern (9). Fear of COVID-19 is associated with job dissatisfaction and an increased propensity to leave among healthcare workers (10). The high turnover rate of healthcare workers might have disastrous consequences for international efforts to contain the COVID-19 pandemic, but the possible role of PTSD in increasing the propensity to leave has not been examined.

Psychological resilience is the ability to mobilize one’s own or surrounding protective resources when faced with difficulty or adversity and thus to recover quickly and achieve good adaptation, protecting against negative mental health during challenging times (11). Participation in psychological resilience workshops potentially promotes engagement in positive health behaviors and reduces the incidence of mental health symptoms, especially when implemented prior to repeated trauma exposure (12). In this critical situation, this questionnaire study was performed to understand the incidence of PTSD, turnover intention and psychological resilience among medical personnel in China in the context of the Omicron epidemic, to develop appropriate psychological interventions for the mental health of frontline medical personnel fighting the epidemic and to provide a basis for reducing medical personnel attrition.

**Materials and methods**

**Participants**

The study was conducted anonymously at the Second People’s Hospital of Gansu Province from 15 May to 30 May 2022 and was approved by the Ethics Committee of the Second People’s Hospital of Gansu Province. The approval number was GSSEY2022-KY014-01. An online questionnaire, including a demographic profile questionnaire, the PTSD Checklist-Civilian Version (PCL-C), the Connor-Davidson Resilience Scale (CD-RISC), and Turnover Intention Scale (TIS), was distributed via WeChat, one of the most commonly used chat tools in China. Inclusion criteria were an age >18 years, understanding and consent to participate in the study, voluntary signing the informed consent form, ability to answer the questionnaire using WeChat, and employed as a staff member in a formally designated position who are working in Chinese public hospitals and still treating all patients normally during COVID-19.

**Measurement**

**Demographic information questionnaire**

This portion of the question assessed the participants’ gender, age, marital status, fertility status, education level, job title, nature of work, annual household income, experience in the treatment or care of COVID-19, and fear of being infected.
Post-traumatic stress disorder
Checklist–Civilian Version

The PCL-C, a 17-item self-report PTSD scale, is an internationally accepted screening questionnaire for PTSD. It is divided into 3 dimensions, namely, trauma re-experiencing (5 items), numbness and avoidance (7 items), and increased alertness (5 items). The responses are scored on a 5-point Likert scale, with each entry being scored from 1 to 5 points ranging from 1 = no to 5 = very severe), and the total score ranges from 17 to 85. The higher the score, the more likely PTSD is to occur; a total score of ≥38 indicates significant PTSD symptoms and a diagnosis of PTSD. The Cronbach $\alpha$ for the scale in this study was 0.957.

Turnover Intention Scale

The Turnover Intention Scale (TIS) was developed by Michael and Spector (13) in 1982 and was subsequently translated and revised by Li and Li (14), with a Cronbach’s alpha of 0.773 and content validity of 0.677. The TIS main content scale contains three dimensions and six items: the possibility of quitting the current job, finding another job, and getting a different job. Items 1 and 6 constitute the intention to leave, indicating the possibility of quitting the current job; items 2 and 3 constitute the intention to leave I, indicating the motivation to find another job; and items 4 and 5 constitute the intention to leave II, indicating the possibility of obtaining a different job. A 4-point Likert scale is used, with each entry scored on a reverse scale of 1 to 4 points (4 = often to 1 = never), with a total score of 6 to 24 points; the higher the score, the stronger the turnover intention. The Cronbach $\alpha$ for the scale in this study was 0.848.

The Chinese version of the Connor-Davidson Resilience Scale

The Chinese version of the CD-RISC, which was developed by Connor-Davidson et al. (15) and contains 25 items in 5 dimensions, was used. The Chinese version was translated and revised in 2007 by Yu et al. (16); this version also has 25 items, but the original 5 dimensions are modified into 3 dimensions, namely, optimism (4 items), self-improvement (8 items), and resilience (13 items). A 5-point Likert scale is used, with each entry scored from 0 to 4 points (0 = never to 4 = always), and a total score of 0 to 100 points, with higher scores indicating a better level of psychological resilience. The Cronbach $\alpha$ for the scale in this study was 0.964.

Statistical methods

Statistical analyses were conducted using SPSS 25.0 software. Count data are reported as rates (%), and measurement data met the normality test and are presented as M ± SD. Two independent sample t-tests and 2 tests were used for comparisons between two groups, and factors with $P < 0.05$ were entered into binary logistic regression model for the multifactor analysis.

Results

Demographic information

The demographic information of all subjects is shown in Table 1. A total of 443 front-line medical staff participated in this study, and 64 (14.4%) had PTSD.

Single-factor analysis of post-traumatic stress disorder

Table 2 shows that the total turnover intention score was 15.69 ± 3.84 for the PTSD group and 13.99 ± 4.00 for the non-PTSD group, and the total psychological resilience score was
TABLE 2  Correlation analysis of psychological resilience scores with insomnia severity and general information (M ± SD, n = 443).

| Projects                      | PTSD              | c2/t value | P-value |
|-------------------------------|-------------------|------------|---------|
| Turnover intention (M ± SD)   | Yes, n = 64 (%)   | 15.69 ± 3.84 | 13.99 ± 4.00 | 5.015 | <0.001 |
| Mental toughness (M ± SD)     | No, n = 379 (%)   | 79.33 ± 14.07 | 88.49 ± 18.75 | -3.732 | <0.001 |
| Gender                        | Male              | 5 (8.1)    | 57 (91.9)    | 2.376 | 0.123  |
|                               | Female            | 59 (15.5)  | 322 (84.5)   |       |        |
| Age (years)                   | ≤35               | 43 (12.8)  | 292 (87.2)   | 2.886 | 0.089  |
|                               | >35               | 21 (19.4)  | 87 (80.6)    |       |        |
| Marital status                | Unmarried         | 10 (8.1)   | 113 (91.9)   | 5.497 | 0.019  |
|                               | Married           | 54 (16.9)  | 266 (83.1)   |       |        |
| Fertility status              | No children       | 14 (8.5)   | 154 (91.5)   | 7.938 | 0.005  |
|                               | Children          | 50 (18.0)  | 228 (82.0)   |       |        |
| Education level               | Specialized       | 8 (5.9)    | 127 (94.1)   | 11.407| 0.001  |
|                               | Bachelor’s degree and above | 56 (18.2) | 252 (81.8) |       |        |
| Title                         | Junior            | 36 (12.7)  | 248 (87.3)   | 2.008 | 0.157  |
|                               | Senior Intermediate | 28 (17.6) | 131 (82.4)  |       |        |
| Nature of work                | Employed by the hospital | 24 (17.4) | 114 (82.6) | 1.406 | 0.236  |
|                               | Employed by an agency | 40 (13.1) | 265 (86.9) |       |        |
| Any experience of COVID-19 treatment or care | Yes | 23 (14.6) | 135 (85.4) | 0.002 | 0.961 |
|                               | No                | 41 (14.4)  | 244 (85.6)   |       |        |
| Fear of being infected        | Yes               | 47 (18.6)  | 206 (81.4)   | 8.141 | 0.004  |
|                               | No                | 17 (8.9)   | 173 (91.1)   |       |        |

79.33 ± 14.07 for the PTSD group and 88.49 ± 18.75 in the non-PTSD group among the 443 medical staff. Compared to the non-PTSD group, the PTSD group had a higher turnover intention and lower psychological resilience (both \( P < 0.05 \)). In addition, the PTSD prevalence was higher among female, married, and childbearing medical staff, and the PTSD prevalence was also higher among medical staff who were highly educated and worried about being infected (all \( P < 0.05 \)).

TABLE 3  Table of independent variable assignments.

| Variable | Variable name            | Assignment                          |
|----------|--------------------------|-------------------------------------|
| Y        | Presence of PTSD         | No = 0; Yes = 1                      |
| X1       | Marital status           | Unmarried = 0; Married = 1           |
| X2       | Fertility status         | No children = 0; Children = 1       |
| X3       | Education level          | Specialized = 0; Bachelor and above = 1 |
| X4       | Fear of being infected   | No = 0; Yes = 1                      |

Multifactor analysis of post-traumatic stress disorder

Using the PTSD status as the dependent variable and a significant factor in the univariate analysis as the independent variable, a binary logistic regression analysis was conducted, and the dichotomous variables were assigned the values shown in Table 3: PTSD status: no = 0, yes = 1; marital status:
the presence of children in the family during COVID-19 was higher among medical personnel with children. Numerous studies have reported increased mental health risks associated with the presence of children in the family during COVID-19 (34–36), and concerns about children's health potentially contribute to higher rates of PTSD among medical staff in families with children because children have relatively less immunity than adults.

A higher education level and fear of infection were risk factors for PTSD in health workers (P < 0.05) Giorgi et al. (37) reported that PTSD was more likely to affect health workers during COVID-19, especially frontline workers with higher educational backgrounds. This result may be due to the increased speed of transmission and infectiousness of the virus in the face of ongoing mutations of the new coronavirus and the
fact that more educated health workers are more likely to have access to information about COVID-19 and to feel more afraid of the virus. Fear of disease is a risk factor for psychological stress during a pandemic (38), consistent with the findings of the present study. In contrast, less educated individuals may not be aware of the potential hazards of a pandemic and therefore may exhibit a lower PTSD incidence (39).

In addition, the PTSD group had a higher total score for turnover intention and a lower total score for psychological resilience than the non-PTSD group. The differences between COVID-19 illness and turnover intention and psychological resilience were significant (both \( P < 0.05 \)). In this case, turnover intention was a risk factor, while psychological resilience was a protective factor. Previous studies of the SARS outbreak have shown that health care workers often experienced isolation after being involved in treating infected patients, and studies of Chinese hospital staff reported higher levels of stress among isolated health care workers who expressed reluctance to work or considered quitting (7). Since the outbreak, different occupations have been hit differently, with health care workers facing a greater occupational risk than others, increasing their likelihood of infection. In the COVID-19 context, we used the O*Net (40) definition of occupational risk that is divided into two components: (i) the level of physical contact with other individuals and (ii) the frequency of exposure to possible diseases or infections. Several researchers have found that healthcare workers are among those at the highest risk of infection (41, 42). In addition to extrinsic environmental factors, researchers have found that individual factors such as workability and perceived threat to work potentially influence employees’ decisions to continue working (43, 44). The results of a Korean study showed that in a pandemic context, where viruses are constantly mutating, healthcare workers still face uncertainty in terms of competence and risk, as well as threats to their safety, generating burnout and a lower willingness to retain their jobs (41). In addition, the study showed that a decrease in career retention intentions implies a shrinking healthcare workforce, which would be a major obstacle to overcoming COVID-19.

The findings of the present study on psychological resilience as a protective factor for PTSD are consistent with the findings reported by Liu et al. (45) for Chinese medical personnel during COVID-19. Resilient individuals tend to be optimistic and adaptive, with high resilience positively correlated with well-being and negatively correlated with perceived stress (46); resilient individuals are able to maintain perspective and daily functioning in the face of problems, representing the strength to overcome obstacles with competence and hope (47). Some studies have shown that resilience predicts secondary traumatic stress in medical personnel and that psychological resilience is protective against traumatic stress (48), while psychological resilience also mediated the relationship between COVID-19 stress experiences and acute stress disorder in a study of 7,800 university students (49). Furthermore, studies on psychological resilience have reported a protective effect on turnover intentions, with psychological resilience reducing burnout and turnover rates (50). We should identify risk and protective factors that are important to reduce the occurrence of PTSD. A review of guidelines and recommendations issued during the COVID-19 pandemic by Halms et al. (51) also showed that structural social support and improvements in the work environment were important for health workers in the fight against the epidemic. We therefore also recommend that the mental health of medical staff be carefully monitored and that health care organizations provide support to medical staff with sufficient flexibility to prevent health care system breakdown in response to a pandemic.

However, several limitations of this study must be acknowledged. First, we used a snowball sampling method to recruit medical staff online, which may have resulted in a sampling bias, as some older medical staff do not use social networks; this limitation was evident in our sample, as a larger proportion of participants were under 35 years of age. This recruitment method also have resulted in a skewed gender demographic distribution, with a larger proportion of women in the current sample and little data available from men, which also limits the generalizability of the findings. Second, as this study recruited subjects working in only one public hospital, some bias in the proportion of medical staff with or without experience in COVID-19 treatment or care was also present, and the findings should be validated in future studies in multiple centers. Furthermore, the cross-sectional design of the current survey did not allow for a causal relationship to be established, and the short duration of the survey did not allow for the effective validation of whether a dynamic change in PTSD prevalence occurs with the development of COVID-19.

Conclusion

In summary, this study revealed a high prevalence of PTSD among health care workers during COVID-19. Emphasis on the screening and treatment of PTSD is important for maintaining the physical and mental health of healthcare workers during the epidemic and to reduce staff turnover. The findings also revealed that being married with children and a fear of being infected were associated with a higher prevalence of PTSD among healthcare workers and that the PTSD group had a higher level of education and turnover intention in the workforce and lower psychological resilience than the non-PTSD group. Associated risk factors included a high turnover intention in the profession and fear of infection. In addition, tolerance of psychological resilience and a high level of literacy were protective factors for PTSD. Focusing on gender differences, culture and other aspects of the lives of staff enable a better understanding and perception of their psychological experiences (52). Hospital
administrators should actively improve the psychological resilience of volunteers, cultivate optimism and resilience, and use psychological resilience as a positive psychological resource to play an active role in reducing the incidence of PTSD and turnover intention among front-line medical staff, which is important for responding to and providing relief during major disasters. In addition, government disaster preparedness plans should include provisions and interventions to address mental health issues among medical staff.

Data availability statement

The original contributions presented in this study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by the Medical Ethics Committee, and Second People’s Hospital of Gansu Province. The patients/participants provided their written informed consent to participate in this study.

Author contributions

CJ and ZF-H: conceptualization, methodology, investigation, data collection, statistical analysis, manuscript preparation, writing – review and editing, supervision, and revision. WY-Y: conceptualization, methodology, investigation, data collection, and manuscript preparation. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

1. Pitman RK. Post-traumatic stress disorder, hormones, and memory. Biol Psychiatry. (1989) 26:221–3. doi: 10.1016/0006-3223(89)90033-4
2. Herrlinga RJ. Trauma, PTSD, and the developing brain. Curr Psychiatry Rep. (2017) 19:69. doi: 10.1007/s11920-017-0825-3
3. Walters EM, Jenkins MM, Nappi CM, Clark J, Lies J, Norman SB, et al. The impact of prolonged exposure on sleep and enhancing treatment outcomes with evidence-based sleep interventions: a pilot study. Psychol Trauma. (2020) 12:175–85. doi: 10.1037/tral0000478
4. Xu Z, Zhang D, Xu D, Li X, Xie YJ, Sun W, et al. Loneliness, depression, anxiety, and post-traumatic stress disorder among Chinese adults during COVID-19: a cross-sectional online survey. PLoS One. (2021) 16:e0259012. doi: 10.1371/journal.pone.0259012
5. Maunder R, Hunter J, Vincent L, Bennett J, Peladeau N, Leszcz M, et al. The immediate psychological and occupational impact of the 2003 SARS outbreak in a teaching hospital. Cmaj. (2003) 168:1245–51.
6. Rouhbakhsh A, Badrfram R, Nejatsafa AA, Soori M, Sharaif SE, Etesam F, et al. Health care professionals’ perception of stress during COVID-19 pandemic in Iran: a qualitative study. Front Psychiatry. (2021) 12:804637. doi: 10.3389/fpsych.2021.804637
7. Bai Y, Lin CC, Lin CY, Chen JY, Chue CM, Chou P. Survey of stress reactions among health care workers involved with the SARS outbreak. Psychiatr Serv. (2004) 55:1055–7. doi: 10.1176/appi.ps.55.9.1055
8. Kansan S, Ali PSS, Sheera A. Omicron (B.1.1.529) – variant of concern – molecular profile and epidemiology: a mini review. Eur Rev Med Pharmacol Sci. (2021) 25:8019–22. doi: 10.26355/eurrev_202112_27653
9. Singhal T. The emergence of omicron: challenging times are here again! Indian J Pediatr. (2022) 89:490–6. doi: 10.1007/s12098-022-04077-4
10. Al-Mansour K. Stress and turnover intention among healthcare workers in Saudi Arabia during the time of COVID-19: can social support play a role? PLoS One. (2021) 16:e0258101. doi: 10.1371/journal.pone.0258101
11. Babic R, Babic M, Rastovic P, Curlin M, Simic J, Mandic K, et al. Resilience in health and illness. Psychiatr Danub. (2020) 32:226–32.
12. Mahaffey BL, Mackin DM, Rosen J, Schwartz RM, Taoe L, Gonzalez A. The disaster worker resiliency training program: a randomized clinical trial. Int Arch Occup Environ Health. (2021) 94:9–21. doi: 10.1007/s00420-020-01552-3
13. Michaels CE, Spector PE. Causes of employee turnover: a test of the mobility, griffith, hand, and meglino model. J Appl Psychol. (1982) 67:53–9. doi: 10.1037/0021-9010.67.1.53
COVID-19 among people from the banking sector in Bangladesh: a cross-sectional study. Int J Ment Health Addict. (2022) 20:1485–99. doi: 10.1111/1476-020-00456-0

Banna MHA, Sayeed A, Kundu S, Christopher E, Hasan MT, Begum MR, et al. The impact of the COVID-19 pandemic on the mental health of the adult population in Bangladesh: a nationwide cross-sectional study. Int J Environ Res Public Health. (2022) 23:850–61. doi: 10.3390/ijerph23080850

Sayeed A, Kundu S, Banna MHA, Hasan MT, Begum MR, Khan MS. Mental health outcomes during the COVID-19 and perceptions towards the pandemic: findings from a cross-sectional study among Bangladeshi students. Child Youth Serv Rev. (2022) 119:105658. doi: 10.1016/j.childyouth.2022.105658

Hajebi A, Abbasisnejad M, Zafar M, Hajebi A, Taramian F. Mental health, burnout, and job stressors among healthcare workers during the COVID-19 pandemic in Iran: a cross-sectional survey. Front Psychiatry. (2022) 13:891430. doi: 10.3389/fpsyt.2022.891430

Jones E, Vermaas RH, McCartney H, Beech C, Palmer I, Hyams K, et al. Flashbacks and post-traumatic stress disorder: the genesis of a 20th-century pathology. Br J Psychiatry. (2009) 82:219–32. doi: 10.1348/147608308X380769

Saxena SK, Kumar S, Ansari S, Paweska JT, Maurya VK, Tripathi AK, et al. Characterization of the novel SARS-CoV-2 Omicron (B.1.1.529) variant of concern and its global perspective. J Med Virol. (2022) 94:1738–44. doi: 10.1002/jmv.27524

The Supreme People’s Procuratorate of the People’s Republic of China. Accuracy Gap & Criminal Charges Related to the “Epidemic”. (2020). Available online at: https://www.spp.gov.cn/spp/zdgz/202003/t20200305_455943.shtml (accessed August 1, 2022)

Galli F, Pozzi G, Ruggiero F, Manfeci F, Cavicchioli M, Barberi S, et al. A systematic review and provisional metanalysis on psychopathologic burden on health care workers of coronavirus outbreaks. Front Psychiatry. (2020) 11:568664. doi: 10.3389/fspyt.2020.568664

Foster L, Arseni MC, Duncan LE. Chromosomes to social contexts: sex and gender differences in PTSD. Curr Psychiatry Rep. (2018) 20:114. doi: 10.1007/s11920-018-0983-0

Farhood L, Fares S, Hamady C. PTSD and gender: could gender differences in war trauma types, symptom clusters and risk factors predict gender differences in PTSD prevalence? Arch Womens Ment Health. (2018) 21:725–33. doi: 10.1007/s10238-016-0849-7

Ravi M, Stevens JS, Michopoulos V. Neuroendocrine pathways underlying risk for insomnia in women. Front Neuroendocrinol. (2019) 55:100790. doi: 10.1016/j.yfrne.2019.100790

National Health Commission of the People’s Republic of China. China Health Statistics Yearbook. Beijing: China Union Medical University Press (2021).

National Health Commission of the People’s Republic of China. Text Transcript of the Press Conference on April 7, 2020. 2020. Available online at: http://www.nhc.gov.cn/xcs/s3574/202004/35b23a66a5cd4ee2a643c2719811081e.shtml (accessed August 1, 2022)

Hosen I, Al-Mamun F, Mamun MA. Prevalence and risk factors of the PTSD and gender differences in PTSD. Front Psychiatry. (2020) 11:568664. doi: 10.3389/fspyt.2020.568664

Kimerling R, Allen MC, Duncan LE. Chromosomes to social contexts: sex and gender differences in PTSD. Curr Psychiatry Rep. (2018) 20:114. doi: 10.1007/s11920-018-0983-0

Hosen I, Al-Mamun F, Mamun MA. Prevalence and risk factors of the PTSD and gender differences in PTSD. Front Psychiatry. (2020) 11:568664. doi: 10.3389/fspyt.2020.568664

Kershaw MA, Johnson S, Forget C, Shuster D, Atkinson B, Blandford R, et al. Enhancing physical activity and psychological well-being in college students during COVID-19 through weactive and wemindful interventions. PLoS One. (2020) 15:e0237766. doi: 10.1371/journal.pone.0237766

Kalmia M, Vrachnitis C, Vrachnitis C, Vrachnitis C, Vrachnitis C. Secondary traumatic stress and vicarious posttraumatic growth in healthcare workers during the first COVID-19 lockdown in Greece: the role of resilience and coping strategies. Psychiatr. (2021) 32:19–25. doi: 10.22365/jpsy.2021.001

Liu D, Liu S, Zhu L, Li D, Huang D, Deng H, et al. Prevalence and related factors of insomnia among Chinese medical staff in the middle and late stage of COVID-19. Front Psychiatry. (2021) 12:766127. doi: 10.3390/fpsyt.2021.12.766127

Kerry CA, Johnson RE, Soo R, Jenkins SM, Soo A. Is higher resilience predictive of lower stress and better mental health among corporate executives? PLoS One. (2019) 14:e0218092. doi: 10.1371/journal.pone.0218092

Friedman KM, Kemmers MW, Murray A, Cahuaus A, Ottensooer H, Sanowski J, et al. Enhancing physical activity and psychological well-being in college students during COVID-19 through reactive and wemindful interventions. Int J Environ Res Public Health. (2022) 19:4144. doi: 10.3390/ijerph19074144

Kalaitzaki A, Rovithis M. Secondary traumatic stress and vicarious posttraumatic growth in healthcare workers during the first COVID-19 lockdown in Greece: the role of resilience and coping strategies. Psychiatr. (2021) 32:19–25. doi: 10.22365/jpsy.2021.001

Ye Z, Yang X, Zeng C, Wang Y, Shen Z, Li X, et al. Resilience, social support, and coping as mediators between COVID-19-related stressful experiences and acute stress disorder among college students in China. Appl Psychol Health Well-Being. (2022) 14:10274. doi: 10.1111/apwh.12211

Brenner MJ, Hickson GB, Boothman RC, Rushton CH, Bradford CR. Honesty and transparency, indispensable to the clinical mission—part III: how leaders can prevent burnout, foster wellness and recovery, and instill resilience. Otolaryngol Clin N Am. (2022) 55:83–103. doi: 10.1016/j.otc.2021.08.004

Halms T, Strasser M, Kunz M, Hasan A. How to reduce mental health burden in health care workers during COVID-19: a scoping review of guideline recommendations. Front Psychiatry. (2021) 12:770193. doi: 10.3389/fpsyt.2021.770193

Nohesara S, Saeidi M, Mosavari H, Ghalichi L, Ateboueyeh MR. Grief and bereavement: can it be overcome? Otolaryngol Clin N Am. (2022) 55:83–103. doi: 10.1016/j.otc.2021.08.004

Nohesara S, Saeidi M, Mosavari H, Ghalichi L, Ateboueyeh MR. Grief and bereavement: can it be overcome? Otolaryngol Clin N Am. (2022) 55:83–103. doi: 10.1016/j.otc.2021.08.004

Nohesara S, Saeidi M, Mosavari H, Ghalichi L, Ateboueyeh MR. Grief and bereavement: can it be overcome? Otolaryngol Clin N Am. (2022) 55:83–103. doi: 10.1016/j.otc.2021.08.004