Impact of Fear of COVID-19, Burnout, and Social Support on Turnover Intention in Laboratory Professionals

Ubaid Ullah[1], Muhammad Ahmad[2], Asma Gul[1], Sultan Haider[1], Hamza Arif[1], Qaisar Shah[1], Wali ur Rehman[1], Lalina Maroof[1], Raisa Bano[3], Mohammad Haroon Khan[1]

Correspondence
Mohammad Haroon Khan
mhkhan@cusit.edu.pk

Affiliations
1   City University of Science and Information Technology, Peshawar, Pakistan
2   Liaquat University of Medical and Health Sciences, Jamshoro, Pakistan
3   Women University Swabi, Peshawar, Khyber Pakhtunkhwa, Pakistan

ABSTRACT

Background: The COVID-19 pandemic significantly impacted healthcare workers, including laboratory professionals, leading to increased psychological stress, burnout, and turnover intention. This study explores the impact of fear of COVID-19 on turnover intention, with burnout as a mediator and social support as a moderator.

Objective: To assess the effect of fear of COVID-19 on turnover intention in laboratory professionals, with burnout as a mediator and social support as a moderator.

Methods: A cross-sectional study was conducted from October 2021 to June 2022, using a convenience sample of 300 laboratory professionals in Khyber Pakhtunkhwa, Pakistan. Data were collected via an online questionnaire and analyzed using SPSS 25. Simple linear regression was used to evaluate associations, and mediation and moderation analyses were performed using PROCESS macro.

Results: Fear of COVID-19 was significantly associated with turnover intention (β = 0.411, $p < 0.001$), with burnout partially mediating this relationship (β = 0.177, p = 0.003). Social support did not significantly moderate the relationship (p = 0.88).

Conclusion: Fear of COVID-19 increases turnover intention in laboratory professionals, with burnout as a partial mediator. Targeted interventions to reduce fear and burnout are necessary to retain healthcare professionals during crises.

INTRODUCTION

The COVID-19 pandemic, a global health crisis, has significantly affected various aspects of life, including public health, emotional well-being, and the global economy (1). Healthcare workers, particularly laboratory professionals, have faced unique challenges due to their direct involvement in the diagnosis and management of COVID-19 cases. These professionals have been exposed to a high risk of infection, inadequate protective equipment, and the constant threat of spreading the virus to their families. Such conditions have led to increased psychological stress, anxiety, depression, burnout, and fear among healthcare workers, including laboratory professionals, who have experienced heightened levels of frustration, fear, and exhaustion (2). Fear, as defined by psychological models, is an adaptive emotional response triggered by perceived threats, which can motivate individuals to adopt safety behaviors; in the context of the COVID-19 pandemic, fear became a pervasive and unavoidable emotional response worldwide (3). This fear has been shown to influence healthcare professionals, leading to increased levels of burnout and affecting their intention to remain in their jobs, particularly in environments with inadequate support or protective measures (4).

The COVID-19 pandemic has also slowed progress toward achieving several Sustainable Development Goals (SDGs) set forth by the United Nations, including those related to poverty, hunger, health, education, and gender equality (5). The impact on healthcare workers has been particularly significant, as studies have demonstrated a correlation between the fear of COVID-19 and increased turnover intention, meaning that many healthcare workers considered leaving their jobs due to heightened stress and the fear of infection (6). Previous research has identified a direct link between fear of COVID-19 and burnout, with fear serving as a contributing factor to emotional exhaustion and reduced job performance among healthcare professionals (7). Additionally, burnout, characterized by emotional exhaustion, depersonalization, and reduced personal accomplishment, has been found to exacerbate turnover intentions, as healthcare workers facing long hours, insufficient resources, and the constant fear of infection experience increased psychological distress and are more likely to consider leaving their jobs (8).

Social support has been identified as a potential moderating factor in mitigating the adverse effects of stress, burnout, and turnover intention in healthcare settings. Support from colleagues, supervisors, and family members has been shown to reduce psychological distress and improve mental health outcomes, particularly in high-stress environments like healthcare (9). Studies have demonstrated that social

support can buffer the effects of work-related stress and anxiety, reducing the likelihood of burnout and its associated negative outcomes, such as turnover intention (10). However, the extent to which social support moderates the relationship between fear of COVID-19 and turnover intention among laboratory professionals remains uncertain. While some studies suggest that social support can reduce turnover intention, others have found that its moderating effects are limited, particularly in situations of extreme stress, such as during the COVID-19 pandemic (11). This study aims to explore the impact of fear of COVID-19 on turnover intention among laboratory professionals in Khyber Pakhtunkhwa, Pakistan, while examining the mediating role of burnout and the moderating influence of social support. Understanding these relationships is crucial for developing strategies to support healthcare workers, reduce turnover rates, and create a more sustainable and resilient healthcare workforce, particularly in the face of future public health crises. The findings of this study will contribute to the ongoing discourse on healthcare workforce management during pandemics, offering insights into the psychological challenges faced by laboratory professionals and the potential interventions that can mitigate these effects (12).

MATERIAL AND METHODS

The study was designed as a cross-sectional analysis conducted between October 2021 and June 2022 in diagnostic laboratories located in Khyber Pakhtunkhwa (KPK), Pakistan. The target population comprised laboratory professionals from various cadres working during the peak phases of the COVID-19 pandemic. Only those professionals actively involved in laboratory duties during the peak period of COVID-19 were included in the study. Laboratory professionals who began working after mid-2021, when the peak phases of the pandemic had subsided, were excluded. A total of 300 participants were selected using convenience sampling. The study participants were drawn from both public and private sector laboratories in the districts of Peshawar, Lower Dir, Bajaur, Khyber, and Swat. Data collection was conducted through an online structured questionnaire comprising 30 items, divided into two sections: the first section captured socio-demographic data, while the second section was designed to evaluate the study variables, including fear of COVID-19, burnout, turnover intention, and social support. Each item in the questionnaire was rated using a five-point Likert scale, with response options ranging from "strongly disagree" to "strongly agree."

The scale used to assess fear of COVID-19 was adapted from the Fear of COVID-19 Scale developed by Ahorsu et al. (2020), comprising ten items (14). Turnover intention was measured using a three-item scale from the work of Skelton, Nattress, and Dwyer (2019) (15). Burnout was assessed using a seven-item scale adapted from the Maslach Burnout Inventory developed by Maslach et al. (1996) (16). Social support was measured using the ten-item Multidimensional Scale of Perceived Social Support, as formulated by Zimet et al. (1998) (17). All instruments used in the study were validated in prior research and demonstrated good internal consistency.

The study adhered to ethical guidelines in line with the Declaration of Helsinki, ensuring voluntary participation, confidentiality, and informed consent from all participants. Approval for the research was obtained from the Ethics and Review Committee of the City University of Science and Information Technology, Peshawar, Pakistan.

Data were analyzed using IBM SPSS Statistics, Version 25. Descriptive statistics were generated to summarize the socio-demographic characteristics of the participants, including their age, gender, marital status, work experience, and professional qualifications. Mean scores and standard deviations were calculated for each study variable. Frequency distributions were examined to identify any missing or outlying data, and appropriate measures were taken to address any discrepancies, such as list-wise deletion of incomplete cases. One-way ANOVA was applied to control for variance in fear of COVID-19, burnout, turnover intention, and social support based on the demographic characteristics of the study participants.

To assess the association between fear of COVID-19 and turnover intention, simple linear regression analysis was conducted, with burnout being evaluated as a mediating variable and social support as a moderating variable. Mediation and moderation analyses were performed using the PROCESS macro for SPSS, with burnout acting as the mediator between fear of COVID-19 and turnover intention, and social support as the moderator. The overall significance of the models was tested at a 95% confidence interval, and p-values of less than 0.05 were considered statistically significant. Additionally, the Johnson-Neyman technique was applied to identify the specific ranges of social support within which the moderation effect was significant. All results, including odds ratios (OR) and confidence intervals (CI), were reported accordingly.

The study employed rigorous statistical methods to ensure the reliability of the findings. Cronbach's alpha was used to assess the internal consistency of the scales, with values exceeding 0.80 for all variables, indicating good to excellent reliability (18). This ensured the robustness of the data collection instruments and the validity of the results.

RESULTS

The demographic profile of the participants revealed that the majority of laboratory professionals (76%) fell within the 16-25 age group. Male participants dominated the sample, representing 87.3% of the population, and 72.7% of the participants were single. In terms of professional experience, 80.7% had 0–5 years of total work experience, and most held either a diploma in pathology (100 out of 300) or a bachelor's degree (86.2%). The most common designations among the respondents were lab technicians and lab technologists, with 102 participants in each category. These socio-demographic characteristics are illustrated in Figures 2 and 3.

The reliability analysis showed that all study scales demonstrated high internal consistency, with Cronbach's alpha values exceeding 0.80 for each variable. Specifically,

the Fear of COVID-19 scale had an alpha value of 0.914, the Turnover Intention scale had a value of 0.816, the Burnout scale had a value of 0.903, and the Social Support scale had a value of 0.947, indicating good to excellent reliability across all instruments (Table 1).

Table 1: Reliability Analysis of Study Scales

Variable	Number of Items	Cronbach's Alpha
Fear of COVID-19	10	0.914
Turnover Intention	3	0.816
Burnout	7	0.903
Social Support	10	0.947

Association of Fear of COVID-19 with Turnover Intention and Burnout. The results of the simple linear regression analysis showed a statistically significant positive association between fear of COVID-19 and turnover intention among laboratory professionals. Fear of COVID-19 accounted for more than 15% of the variability in turnover intention, with a beta coefficient (β) of 0.411 ($p < 0.001$). This suggests that an increase in fear of COVID-19 significantly increased the turnover intention of laboratory professionals (Table 2)

Table 2: Simple Linear Regression for the Impact of Fear of COVID-19 on Turnover Intention

Variable	β	Std. Error	t	p-value	95% CI Lower	95% CI Upper
Constant	1.518	0.182	8.323	<0.001	1.159	1.877
Fear of COVID-19	0.411	0.057	7.261	<0.001	0.300	0.522

R Square = 0.150, F = 52.719, $p < 0.001$.

A mediation analysis was conducted to evaluate the mediating role of burnout in the relationship between fear of COVID-19 and turnover intention. The overall model was statistically significant ($R^2 = 0.308$, $p < 0.001$), indicating that burnout partially mediated this relationship. The total effect of fear of COVID-19 on turnover intention was 0.411 ($p < 0.001$), while the indirect effect through burnout was 0.234 ($p < 0.001$). Even when burnout was accounted for, the direct effect of fear of COVID-19 on turnover intention remained significant but reduced ($\beta = 0.177$, $p = 0.003$), suggesting partial mediation (Table 3).

Table 3: Mediation Analysis of Burnout Between Fear of COVID-19 and Turnover Intention

Effect	β	Std. Error	t	p-value	95% CI Lower	95% CI Upper
Total	0.411	0.057	7.261	<0.001	0.299	0.522
Indirect	0.234	-	-	<0.001	0.164	0.318
Direct	0.177	0.059	3.025	0.003	0.062	0.292

R Square = 0.308, F = 65.944, $p < 0.001$.

The moderation analysis revealed that social support did not significantly moderate the relationship between fear of COVID-19 and turnover intention in laboratory professionals ($p = 0.88$). Additionally, the interaction term was also not statistically significant ($p = 0.14$), as shown in Table 4. However, the Johnson-Neyman test indicated that social support moderated the relationship between fear of COVID-19 and turnover intention within a specific interval range of [-14.64, 5.27]. The observed range of social support values was [1.00, 5.00], suggesting that moderation occurs only under certain conditions (Figure 5).

Table 4: Moderation Effect of Social Support on Fear of COVID-19 and Turnover Intention

Model	Coefficient	SE	t	p-value	LLCI	ULCI
Constant	2.80	0.05	52.87	<0.001	2.69	2.90
Fear of COVID-19	0.39	0.06	6.58	<0.001	0.27	0.50
Social Support	-0.01	0.05	-0.15	0.88	-0.12	0.10
Interaction	-0.07	0.05	-1.49	0.14	-0.17	0.02

This comprehensive analysis highlights the significant relationships among fear of COVID-19, burnout, turnover intention, and the moderating role of social support in laboratory professionals.

While burnout partially mediates the relationship between fear of COVID-19 and turnover intention, the moderating role of social support was only significant within a specific range of values. This figure depicts the hypothesized relationships between fear of COVID-19, burnout, social support, and turnover intention. Fear of COVID-19 is proposed to influence turnover intention directly and through burnout as a mediator, while social support is suggested as a potential moderator.

This figure (2) stands for the socio-demographic distribution of the participants. It says that (a) Age distribution: Most participants were aged 18–25 years (76%). (b) Gender distribution:
Males made up 87.3% of the sample, with 12.7% females. (c) Marital status: 72.7% of participants were single, while 27.3% were married.
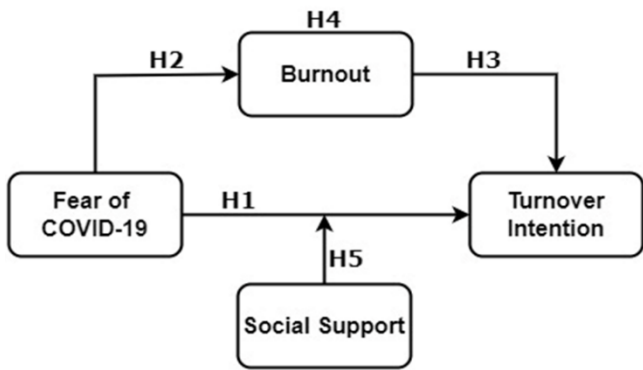
Figure 1 Conceptual Model of the Study

Figure 2 Socio-Demographic Characteristics of Study Participants

(d) Experience: 80.7% had 0–5 years of experience, with smaller proportions having 6–10 years (16%) and 11–20 years (3.3%).
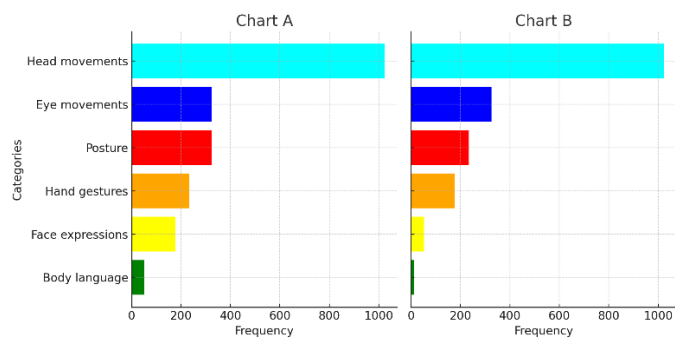
Figure 3 Designations and Educational Qualifications of Study Participants

(a) Designations: Most participants were lab technicians and lab technologists (102 each). (b) Qualifications: The most common qualifications were a diploma in pathology (100) and a bachelor's degree (86). This figure shows the regression coefficients for the mediation model, where fear of COVID-19 impacts turnover intention both directly and through burnout. The total effect is 0.411 (p < 0.001), while the indirect effect through burnout is 0.234 (p < 0.001), indicating partial mediation. This figure presents the Johnson-Neyman plot, illustrating the moderating effect of

social support on the relationship between fear of COVID-19 and turnover intention.

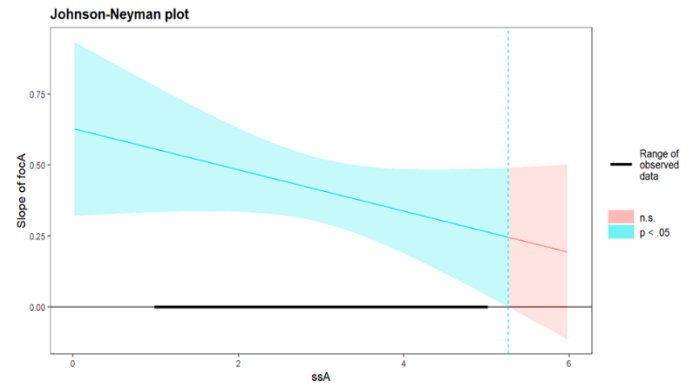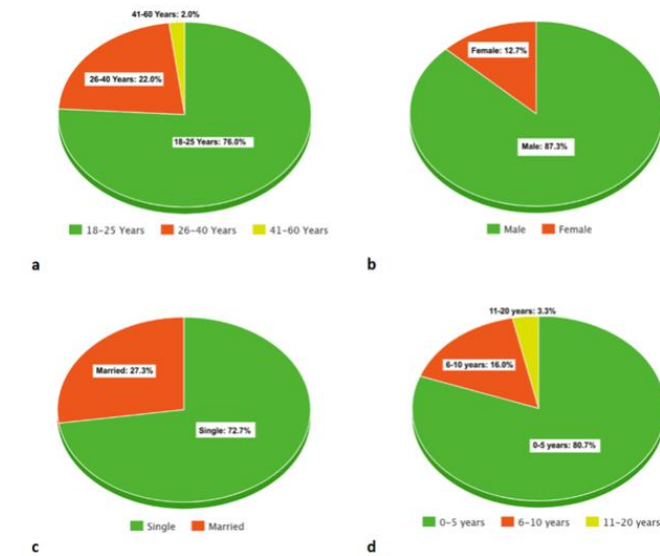**Figure 4 Regression Coefficients for Mediation Analysis**

Figure 5 Johnson-Neyman Plot for Moderation Analysis

The moderation effect is significant within a specific range of social support values (p < 0.05).

DISCUSSION

This study examined the impact of fear of COVID-19 on turnover intention among laboratory professionals in Khyber Pakhtunkhwa, Pakistan, with burnout as a mediator and social support as a potential moderator. The findings revealed a significant and positive association between fear of COVID-19 and turnover intention, consistent with previous studies that have demonstrated the psychological impact of the pandemic on healthcare workers (19). Fear of contracting the virus, coupled with the pressures of working in a high-risk environment, has driven many healthcare workers to consider leaving their jobs, a trend observed globally during the pandemic (20). The significant role of burnout as a partial mediator in this relationship further supports the notion that emotional exhaustion and work-related stress during the pandemic heightened turnover intention. This aligns with earlier research indicating that burnout exacerbates the negative effects of job stress, reducing job satisfaction and increasing turnover rates among healthcare professionals (21, 22).

One of the key strengths of this study is its focus on laboratory professionals, a group often overlooked in discussions about the mental health of healthcare workers during the pandemic.

While many studies have concentrated on frontline workers like doctors and nurses, laboratory professionals faced their own unique set of challenges, such as inadequate personal protective equipment (PPE) and exposure to infectious materials. This study contributes to the limited body of

research on the psychological toll experienced by laboratory staff, highlighting the critical need for targeted mental health interventions within this professional group. Additionally, the use of validated scales for fear of COVID-19, turnover intention, burnout, and social support ensured the reliability of the findings.

Despite these strengths, the study has several limitations. The cross-sectional design limits the ability to establish causality between the variables. Future studies should consider longitudinal designs to explore how fear of COVID-19 and burnout evolve over time and their long-term effects on turnover intention. Moreover, the reliance on self-reported data may have introduced bias, as participants may have underreported or overreported their levels of fear, burnout, or social support. Another limitation is the use of convenience sampling, which may limit the generalizability of the results to all laboratory professionals across different regions of Pakistan. Future research could benefit from a more diverse and randomized sample to enhance external validity.

Interestingly, while burnout partially mediated the relationship between fear of COVID-19 and turnover intention, the moderation analysis revealed that social support did not significantly buffer this relationship in the overall model. This finding contradicts previous research, which has consistently shown that social support, particularly from supervisors and peers, plays a protective role in reducing the negative impacts of job stress and burnout (25, 26). However, the Johnson-Neyman test indicated that social support moderates the relationship between fear of COVID-19 and turnover intention within a specific range of social support values. This suggests that the buffering effect of social support may only be effective under certain conditions or for specific individuals, which could be explored further in future studies. The non-significant overall moderation effect may also reflect the heightened and pervasive levels of stress experienced during the pandemic, which may have overwhelmed the protective benefits of social support in certain cases.

In light of these findings, several recommendations can be made to reduce turnover intention and improve the well-being of laboratory professionals during future public health crises. Interventions aimed at reducing fear and stress, such as providing adequate PPE and implementing mental health support programs, are critical. Organizational support should also focus on alleviating burnout by addressing workload issues and offering flexible work arrangements when possible. Additionally, while social support did not emerge as a strong moderator in this study, creating a supportive work environment where colleagues and supervisors actively engage in offering emotional and professional support remains important. Encouraging peer networks and fostering a culture of mutual assistance could potentially mitigate some of the psychological burdens experienced by healthcare professionals during pandemics or similar emergencies.

Overall, this study underscores the urgent need for healthcare organizations to prioritize the mental health and well-being of laboratory professionals, recognizing the unique challenges they face in their roles. By addressing the factors that contribute to fear, burnout, and turnover intention, organizations can create a more resilient healthcare workforce better equipped to handle future crises.

CONCLUSION

The findings of this study demonstrate that fear of COVID-19 significantly influences turnover intention among laboratory professionals, with burnout acting as a partial mediator, while the moderating role of social support was limited. These results emphasize the critical need for targeted interventions to address fear and burnout in healthcare professionals to retain skilled workers and sustain effective healthcare delivery during pandemics. Human healthcare implications highlight the necessity for healthcare organizations to invest in mental health support, adequate protective measures, and fostering supportive work environments to safeguard the well-being and retention of healthcare staff in future public health emergencies.

REFERENCES

1. Pak A, Adegboye OA, Adekunle AI, Rahman KM, McBryde ES, Eisen DP. Economic Consequences Of The COVID-19 Outbreak: The Need For Epidemic Preparedness. Front Public Health. 2020;8:546036.
2. Sarker R, Roknuzzaman A, Hossain MJ, Bhuiyan MA, Islam MR. The WHO Declares COVID-19 Is No Longer A Public Health Emergency Of International Concern: Benefits, Challenges, And Necessary Precautions To Come Back To Normal Life. Int J Surg. 2023;109(9):2851-2.
3. Cai W, Lian B, Song X, Hou T, Deng G, Li H. A Cross-Sectional Study On Mental Health Among Health Care Workers During The Outbreak Of Corona Virus Disease 2019. Asian J Psychiatr. 2020;51:102111.
4. Obuobisa-Darko T, Sokro E. Psychological Impact Of COVID-19 Pandemic And Turnover Intention: The Moderating Effect Of Employee Work Engagement. Soc Sci Humanit Open. 2023;8(1):100596.
5. Troisi A, Nanni RC, Riconi A, Carola V, Di Cave D. Fear Of COVID-19 Among Healthcare Workers: The Role Of Neuroticism And Fearful Attachment. J Clin Med. 2021;10(19):4358.
6. Shehada AK, Albelbeisi AH, Albelbeisi A, El Bilbeisi AH, El Afifi A. The Fear Of COVID-19 Outbreak Among Health Care Professionals In Gaza Strip, Palestine. SAGE Open Med. 2021;9:20503121211022987.
7. Zheng R, Zhou Y, Fu Y, Xiang Q, Cheng F, Chen H, et al. Prevalence And Associated Factors Of Depression And Anxiety Among Nurses During The Outbreak Of COVID-19 In China: A Cross-Sectional Study. Int J Nurs Stud. 2021;114:103809.
8. Ornell F, Schuch JB, Sordi AO, Kessler FHP. "Pandemic Fear" And COVID-19: Mental Health Burden And Strategies. Braz J Psychiatry. 2020;42(3):232-5.
9. Rasul G, Nepal AK, Hussain A, Maharjan A, Joshi S, Lama A, et al. Socio-Economic Implications Of COVID-

19 Pandemic In South Asia: Emerging Risks And Growing Challenges. Front Sociol. 2021;6.

10. Pradhan P, Subedi DR, Khatiwada D, Joshi KK, Kafle S, Chhetri RP, et al. The COVID-19 Pandemic Not Only Poses Challenges, But Also Opens Opportunities For Sustainable Transformation. Earth's Future. 2021;9(7).

11. Abd-Ellatif EE, Anwar MM, AUifri AA, El Dalatony MM. Fear Of COVID-19 And Its Impact On Job Satisfaction And Turnover Intention Among Egyptian Physicians. Saf Health Work. 2021;12(4):490-5.

12. Yurova YV, Fazio J, Gong B, Sims R. The Impact Of Organizational And Supervisor Support On Turnover Intentions In Hospital Employees. Hosp Top. 2017;95(2):39-50.

13. Meral E, Yildiz B, Karabay ME. How Burnout Affects Turnover Intention? The Conditional Effects Of Subjective Vitality And Supervisor Support. Int J Org Lead. 2018;7(1):47-57.

14. Ahorsu DK, Lin CY, Imani V, Saffari M, Griffiths MD, Pakpour AH. The Fear Of COVID-19 Scale: Development And Initial Validation. Int J Ment Health Addict. 2022;20(3):1537-45.

15. Skelton AR, Nattress D, Dwyer RJ. Predicting Manufacturing Employee Turnover Intentions. J Econ Fin Adm Sci. 2019;24(47):52-67.

16. Maslach C, Jackson SE, Leiter MP. Maslach Burnout Inventory Manual. 3rd ed. Sunnyvale, CA: CPP, Inc; 1996.

17. Zimet GD, Dahlem NW, Zimet SG, Farley GK. The Multidimensional Scale Of Perceived Social Support. J Pers Assess. 1988;52(1):30-41.

18. Taber KS. The Use Of Cronbach's Alpha When Developing And Reporting Research Instruments In Science Education. Res Sci Educ. 2018;48:1273-96.

19. Barnett ML, Grabowski DC. Nursing Homes Are Ground Zero For COVID-19 Pandemic. JAMA Health Forum. 2020;1(3).

20. Mo Y, Deng L, Zhang L, Lang Q, Liao C, Wang N, et al. Work Stress Among Chinese Nurses To Support Wuhan In Fighting Against COVID-19 Epidemic. J Nurs Manag. 2020;28(5):1002-9.

21. Safdar CA, Qayyum R. Moral Injury, Emotional Labor And Burnout: An Unbearable Burden For Health Professionals. Pak J Med Sci. 2021;37(5):1256-62.

22. Smallwood J. Why The Global Availability Of Mind Wandering Necessitates Resource Competition. J Psychol. 2010;34(2):119-24.

23. Montero-Marín J, García-Campayo J. A Newer And Broader Definition Of Burnout: Validation Of The "Burnout Clinical Subtype Questionnaire (BCSQ-36)". BMC Public Health. 2010;10(1):1-9.

24. Yáñez JA, Jahanshahi AA, Alvarez-Risco A, Li J, Zhang SX. Anxiety, Distress, And Turnover Intention Of Healthcare Workers In Peru By Their Distance To The Epicenter During The COVID-19 Crisis. Am J Trop Med Hyg. 2020;103(4):1614-20.

25. Cohen S, Wills TA. Stress, Social Support, And The Buffering Hypothesis. Psychol Bull. 1985;98(2):310-57.

26. Kornblith AB, Herndon JE, Zuckerman E, Viscoli CM, Horwitz RI, Cooper MR, et al. Social Support As A Buffer To The Psychological Impact Of Stressful Life Events In Women With Breast Cancer. Cancer. 2001;91(2):443-54.

27. Lau Y, Wong DFK, Wang Y, Kwong DHK, Wang Y. The Roles Of Social Support In Helping Chinese Women With Antenatal Depressive And Anxiety Symptoms Cope With Perceived Stress. Arch Psychiatr Nurs. 2014;28(5):305-13.

28. Lin HS, Probst JC, Hsu YC. Depression Among Female Psychiatric Nurses In Southern Taiwan: Main And Moderating Effects Of Job Stress, Coping Behaviour And Social Support. J Clin Nurs. 2010;19(15-16):2342-54.

29. Maheri A, Sadeghi R, Shojaeizadeh D, Tol A, Yaseri M, Rohban A. Depression, Anxiety, And Perceived Social Support Among Adults With Beta-Thalassemia Major: Cross-Sectional Study. Korean J Fam Med. 2018;39(2):101-7.

30. Zhang H, Ye Z, Tang L, Zou P, Du C, Shao J, et al. Anxiety Symptoms And Burnout Among Chinese Medical Staff Of Intensive Care Unit: The Moderating Effect Of Social Support. BMC Psychiatry. 2020;20(1):197.

31. Huang HY, Wu KS, Wang ML, Tang PS. Moderating The Effect Of Supervisor Support On Work-To-Family Conflict And Burnout Relationship. Ethno Med. 2015;9(2):263-78.

32. Gattino S, De Piccoli N, Grosso M, Miozzo S, Tanturri G, Rollero C. Awareness Of Gender Medicine Among Family Doctors: A Field Investigation. J Prev Interv Community. 2020;48(2):147-60.