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Stress and Burnout among Medical Workers in Indonesia: A Study during COVID-19 Pandemic

[1]Urfa Khairatun Hisan*, [2,3]Muhammad Miftahul Amri
Corresponding Author: *urfa.hisan@med.uad.ac.id
[1] Faculty of Medicine, Universitas Ahmad Dahlan, Yogyakarta, Indonesia
[2] Master of Management (HR) Postgraduate Program, Universitas Terbuka, Jakarta, Indonesia
[2] Faculty of Industrial Technology, Universitas Ahmad Dahlan, Yogyakarta, Indonesia

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ABSTRACT

The COVID-19 pandemic has infected at least half a billion people around the world. As frontline workers, medical professionals inevitably experienced significant workloads and pressure. Adding to the common causal of COVID-19 mental issues such as economic, fears, and anxiety, these factors make medical workers more vulnerable to stress and burnout. This manuscript aims to investigate stress and burnout levels among medical workers during the COVID-19 pandemic. In this study, we include medical workers in Indonesia (n=161). We used the coronavirus stress measure (CSM) and COVID-19 burnout scale (COVID-19-BS) to measure the variables of interest. The data is collected through an anonymous online survey from November 2021 to January 2022. The result shows that the majority of the participants experienced a high intensity of stress and mild burnout during the third wave of COVID-19 infection in Indonesia (June 2021-August 2021). In addition, the regression test shows that there is a significant relationship between stress and burnout caused by COVID-19. When the stress intensity increases, it is likely that the burnout risk also increases. Considering that medical workers play important roles in mitigating diseases such as the COVID-19 pandemic, the medical workers and healthcare stakeholders must pay attention to these factors in order to maintain the medical worker's mental health and healthcare service quality.

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Introduction

When this manuscript was written, the COVID-19 pandemic has had lasted for at least 29 months [1]. This COVID-19 pandemic has infected more than 500 million people and caused more than 6 million deaths worldwide. In Indonesia, the first infection was found in March 2020. Since then, Indonesia has experienced at least four waves of COVID-19. In terms of the number of infections, Indonesia's infection rate peaked in February 2022, with new cases reaching more than 64,000 cases per day. In terms of the fatality rate, COVID-19 peaked in Indonesia between June 2021 to August 2021, with the highest fatality rate reaching more than 2,000 deaths per day [2].

Obviously, the medical worker becomes one of the main factors in resolving this pandemic. However, the COVID-19 pandemic has harmed the mental health of healthcare workers. In carrying out their duties to stop the spread of COVID-19, workers are at a higher risk of being exposed to the virus. In addition, high workload demands, irregular or prolonged working hours, and increased psychological stress such as depression, fear, anxiety, stress, and burnout contribute to their mental issue. For example, a survey study by Liu et al. showed that health workers caring for COVID-19 patients experienced concerns about COVID-19 exposure to themself and their family members. These concerns increased their anxiety. Moreover, a systematic review by Jiménez-Giménez et al. showed that during the COVID-19 pandemic, medical workers in Spain experienced mental health issues, including anxiety (45%), depression (38%), acute stress (31%), and burnout (29%).

Work stress is a feeling of pressure experienced by employees in dealing with work. This work stress can be seen in unstable emotions, feeling uneasy, being alone, having trouble sleeping, being unable to relax, being tense, nervous, increasing blood pressure, and experiencing digestive disorders. At a severe level, work stress might risk employee health [3, 4].

Many studies reveal the association between work stress and burnout [5-7]. Tziner et al. in [7] discussed the connection between work stress, burnout, satisfaction, and turnover intentions among hospital physicians. In addition, a study by Weigl, Schneider, Hoffmann, & Angerer [8] shows a significant relationship between work stress and pediatricians' burnout.

Burnout is a state of prolonged emotional, physical, and mental exhaustion that appears as a response to a stressor, especially from work. Several studies have shown that burnout caused by the COVID-19 pandemic is positively related to symptoms of emotional distress such as depression, anxiety, and stress [9-11]. Apart from emotional exhaustion, burnout also consists of depersonalization and decreased personal achievement. On a severe

level, burnout degrades work motivations and self-efficacy [12], reducing work productivity, and increasing human error [13, 14]. In terms of healthcare service, low work productivity and human error are two critical issues which might lead to patient death. Therefore, it is crucial to create awareness about the psychological stress health workers face amid the COVID-19 pandemic.

Further, a meta-analysis study [15] related to psychological distress experienced by health workers in Asia showed that nurses ranked first (80.2%) in terms of experiencing burnout, followed by doctors (74.9%). Increased work pressure and stress at work during the pandemic exacerbate burnout experienced by healthcare workers. During the pandemic, the mental health issues of healthcare workers are inadequately addressed. Ironically, health workers are one of the main pillars in handling the COVID-19 pandemic.

The study of the association between the COVID-19 pandemic and medical worker stress and burnout has recently gained interest from researchers worldwide [10, 11, 16]. A study by Yıldırım, Çiçek, & Şanlı [17] investigates the mediating role of optimism and social connectedness in COVID-19 stress and burnout among healthcare staff in Turkey. In addition, Munn et al. [18] conducted empirical research on the qualitative exploration of wellbeing and resilience among healthcare workers during COVID-19 in the United States of America. However, studies on the pandemic's impact on stress and burnout experienced by health workers in Indonesia are relatively limited. Hence, in this paper, we elaborately investigate the COVID-19 stress and burnout among medical workers in Indonesia.

Material And Methods

A. Participants

Participants ($n = 161$) were medical workers who worked at different hospitals in Indonesia. The participants' age ranged between 18 and 45 ($M = 27.9$) (See. Table 1). The majority of the participants were female ($n = 130$, 80.8%) and working as general practitioners ($n = 104$, 64.6%). Of the participants, 61.5% ($n = 99$) were single. In addition, most participants hold a bachelor's degree ($n = 144$, 89.4%). A detailed description of the participants' demography is presented in Table 2.

This study takes place in Indonesia. We have adapted the coronavirus stress measure (CSM) questionnaire [19-21] and COVID-19 Burnout Scale (COVID-19-BS) [19, 21] questionnaire to measure stress and burnout, respectively. The survey was conducted between November 2021 to January 2022. Furthermore, we have specifically asked the respondents to fill out the questionnaire according to their conditions between June 2021 to

August 2021. In this time window, the COVID-19 fatality rate in Indonesia has reached its peak [2], which most likely burdens the medical worker.

Table 1. Age distribution of respondents

Age	*n*	Percentage (%)
18-25	33	20.5
26-35	125	77.6
36-45	3	1.9
Total	161	100

Table 2. Summary of sample characteristics

Group	Level	*n*	Percentage (%)
Gender	Male	31	19.2
	Female	130	80.8
Occupation	Specialist Doctor/Resident	10	6.2
	General Practitioner	104	64.6
	Dentist	8	5
	Nurse	25	15.5
	Allied health workers	14	8.7
Relationship Status	Married	99	61.5
	Single	62	38.5
Level of Education	Diploma	13	8.1
	Bachelor/Professional	144	89.4
	Master/Doctorate	4	2.5

B. Measures

We used CSM to measure the mental stress induced by the coronavirus. Arslan et al. created the Coronavirus Stress Measure (CSM), which consists of five items. Each item is graded on a 5-point Likert scale ranging from 0=strongly disagree (SD), 1=disagree (D), 2=neutral (N), and 4=agree (A), to 5=strongly agree (SA). A sample item is "I am worried that my family or I could potentially be infected with COVID". Higher scores on the scale indicate a higher level of coronavirus-related stress.

The COVID-19 burnout scale is used to measure the COVID-19 burnout experienced by the participants. Yıldırım & Solmaz created the COVID-19 Burnout Scale (COVID-19-BS), consisting of ten items. Each item is graded on a 5-point Likert-type scale ranging from 1=never (N), 2=rarely (R), 3=sometimes (S), 4=often (O), to 5=very often (VO). A sample item is "during the pandemic, how often do you feel tired?". COVID-19 burnout is associated with higher scores in this research.

The questionnaires are first tested for validity and reliability. These tests intend to measure the level of feasibility of the questionnaire as a data collection tool. The instrument's validity is calculated by correlating each item score with the total score using Pearson Correlation analysis. For example, suppose the correlation coefficient value of one indicator is

greater than r_table. In that case, we consider the indicator valid for measuring the construct in question and as a data collection tool. Based on the instrument's validity testing results, it was found that all indicators in the questionnaires produced a correlation coefficient value greater than $r_table = 0.1547$. Thus, we can conclude that all indicators are valid, as shown in Table 3.

Table 3. Instrument validity test result

Variable	Items	Correlation Coefficient	Remarks
CSM	1	0.620	Valid
	2	0.482	Valid
	3	0.501	Valid
	4	0.664	Valid
	5	0.652	Valid
	6	0.676	Valid
	7	0.637	Valid
	8	0.623	Valid
	9	0.610	Valid
	10	0.583	Valid
	11	0.530	Valid
Burnout	1	0.564	Valid
	2	0.618	Valid
	3	0.618	Valid
	4	0.839	Valid
	5	0.839	Valid
	6	0.876	Valid
	7	0.876	Valid
	8	0.853	Valid
	9	0.853	Valid
	10	0.728	Valid

The instrument reliability test investigates the instrument's consistency as a measuring tool. We used the Cronbach Alpha coefficient as the metric. The Cronbach Alpha coefficients for CSM and burnout questionnaires were 0.817 and 0.925, respectively.

C. Procedure

The data for this study was obtained between November 2021 to January 2022 using an online survey (Microsoft Forms). The participants were provided with all of the information they needed concerning the study's goal. Prior to participating in this study, all individuals signed a written informed consent form. Participants in the study were invited to fill out an anonymous online survey that included survey questions and demographic data. The participants were not provided with any incentives. Participants were clearly informed of the study's goal, their rights during and after participation, and the confidentiality of their replies. All of the tests were performed in the same sequence by the participants. The study and data collection were conducted in accordance with the university policy.

In this study, descriptive analysis and linear regression are employed to analyze the participant's data. First, descriptive analysis is used to determine the mental health condition of respondents at the peak of the covid pandemic fatality in Indonesia, especially in terms of coronavirus stress and burnout. Then, a regression analysis was used to investigate the relationship between stress due to coronavirus and burnout. Our research framework is presented in Figure 1.



Fig. 1. Research framework.

Results

A. Descriptive Analysis

In this work, we conduct descriptive analysis by looking at the average value and the frequency distribution of the research variables.

1. CSM Variable

   Based on the data presented in Table 4, the average CSM variable value for 161 respondents is 3.47. This value shows that during the peak period of the COVID-19 fatality in Indonesia, most respondents experienced high-intensity stress caused by the pandemic. The highest indicator perceived by the respondents is the statement, "I am worried that my family or I could potentially be infected with COVID-19", with an average score of 4.17. Then, the lowest perceived indicator is the statement, "I have difficulty concentrating because I am always anxious about COVID-19", with an average of 2.27.

2. Burnout Variable

   Table 5 presents the data of the participant's responses to the burnout questionnaire. As depicted in Table 5, it is observed that from 161 respondents, the average value of the answers for the Burnout variable is 3.10. This value indicates that during the peak period of the pandemic fatality in Indonesia, most respondents experienced mild burnout. The indicator that resulted in the highest score was the statement "During a pandemic, how often did you feel disappointed and angry with the community?" and "How often did you feel hopeless because of this pandemic situation?" with an average of 3.65. Furthermore, the indicator that resulted in the lowest score was the statement "During a pandemic, how often do you feel trapped in

your own environment?" and "During a pandemic, how often have you felt helpless?" with an average of 2.83.

Table 4. Descriptive analysis result of CSM variables.

Item	SD		D		N		A		SA		Mean
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	
I am worried that my family or I could potentially be infected with COVID.	1	0.6	4	2.5	17	10.6	8.3	51.6	56	34.8	4.17
I am worried that the health facilities around my place are not adequate for all COVID patients.	1	0.6	17	10.6	42	26.1	80	49.7	21	13.0	3.64
I am worried about the scarcity of basic needs (panic buying).	14	8.7	20	12.4	85	52.8	33	20.5	9	5.6	3.02
I am worried about the scarcity and high cost of medical equipment & medicines.	4	2.5	11	6.8	50	31.1	77	47.8	19	11.8	3.60
I am worried that the arrival of overseas visitors could increase the transmission of the COVID virus in Indonesia.	4	2.5	7	4.3	40	24.8	79	49.1	31	19.3	3.78
During this pandemic, when I meet strangers, I feel afraid of being infected by the COVID virus.	6	3.7	9	5.6	48	29.8	78	48.4	20	12.4	3.60
I am worried that my family or I could potentially be infected with COVID.	10	6.2	19	11.8	55	34.2	66	41.0	11	6.8	3.30
I am afraid to touch money or public facilities (doorknobs, public transportation, etc.).	3	1.9	2	1.2	25	15.5	97	60.2	34	21.1	3.98
I am afraid that the people around me can transmit the virus because they don't obey the procedures.	2	1.2	5	3.1	33	20.5	85	52.8	36	22.4	3.92
If someone coughs or sneezes next to me, I'm afraid of being infected with COVID.	39	24.2	51	31.7	61	37.9	9	5.6	1	0.6	2.27
I have trouble concentrating because I always think about COVID.	13	8.1	44	27.3	61	37.9	38	23.6	5	3.1	2.86
I check myself periodically because afraid of being infected with COVID.	1	0.6	17	10.6	42	26.1	80	49.7	21	13.0	3.64
Average											**3.47**

Table 5. Descriptive analysis result of burnout variables.

Item	N		R		S		O		VO		Mean
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	
During the pandemic, how often do you feel tired?	1	0.6	13	8.1	44	27.3	73	45.3	30	18.6	3.73
During the pandemic, how often do you feel disappointed and angry with society?	3	1.9	14	8.7	40	24.8	83	51.6	21	13.0	3.65
During the pandemic, how often do you feel hopeless?	3	1.9	14	8.7	40	24.8	83	51.6	21	13.0	3.65

During the pandemic, how often do you feel trapped in your own environment?	20	12.4	35	21.7	65	40.4	35	21.7	6	3.7	2.83
During the pandemic, how often do you feel helpless?	20	12.4	35	21.7	65	40.4	35	21.7	6	3.7	2.83
During the pandemic, how often do you feel depressed?	20	12.4	37	23.0	59	36.6	38	23.6	7	4.3	2.84
During the pandemic, how often do you feel physically ill/weak?	20	12.4	37	23.0	59	36.6	38	23.6	7	4.3	2.84
During the pandemic, how often do you feel like a failure/worthless?	35	21.7	46	28.6	54	33.5	19	11.8	7	4.3	2.48
During the pandemic, how often do you find it difficult to sleep?	35	21.7	46	28.6	54	33.5	19	11.8	7	4.3	2.48
During the pandemic, how often do you feel you are infected with COVID?	1	0.6	17	10.6	42	26.1	80	49.7	21	13.0	3.64
Average											**3.47**

B. Asumption Test

In order to perform regression analysis, several assumptions must be met, including the assumptions of data normality and heteroscedasticity. In this section, we present the result of the assumption tests.

1. Data Normality Test

   The data normality test aims to validate whether the residual variables in the regression model are normally distributed or not. In linear regression analysis, the residuals are expected to be normally distributed. In this study, the Kolmogorov-Smirnov Test and the Normal Probability Plot (P-P Plot) are used to test the data normality.

   We set the test criteria as follows. If the Kolmogorov Smirnov probability value is equal to or greater than the significant alpha (α) value of 5% or 0.05, and the data points are spread along the diagonal line of the Normal Probability Plot (P-P Plot), then the residual is declared normally distributed.

   As we can see in Normal Probability Plot P-P Plot in Figure 2, the data plots follow the diagonal reference line. Hence, the residuals are declared to be normally distributed. Moreover, the Kolmogorov-Smirnov statistical probability is 0.054 ($p = 0.200$). This value test is greater than the significant alpha (α) value of 5% or 0.05. Thus, we conclude that the normality test criteria are met.

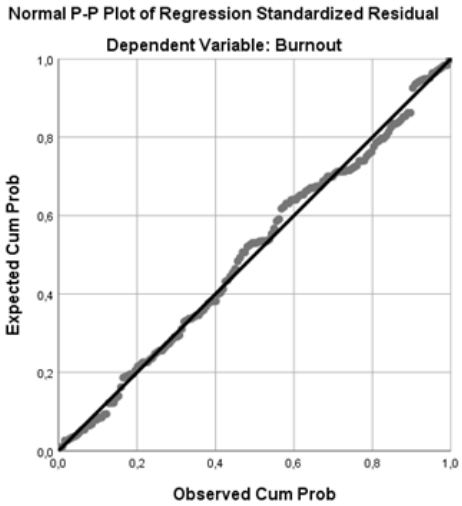


Fig. 2. Normal probability plot.

As we can see in Normal Probability Plot P-P Plot in Figure 2, the data plots follow the diagonal reference line. Hence, the residuals are declared to be normally distributed. Moreover, the Kolmogorov-Smirnov statistical probability is 0.054 ($p = 0.200$). This value test is greater than the significant alpha (α) value of 5% or 0.05. Thus, we conclude that the normality test criteria are met.

2. Heteroscedasticity Test

The heteroscedasticity test is used to determine whether the residuals have a homogeneous variance. The residuals are expected to have a homogeneous variance in the regression analysis. The heteroscedasticity assumption result can be seen through the Breusch Pagan Test and the scatterplot graph.

We set the test criteria as follows. If all the significance values of the independent variables in the Breusch Pagan Test are equal to or greater than the significant alpha (α) value of 5% or 0.05, then the residuals are declared to have a homogeneous variance. Then if the data distribution in the scatterplot graph does not form a certain pattern or appears to be random, the residual is declared to have a homogeneous variance.

As shown in Figure 3, the data distribution is below or around the number 0. In addition, the data distribution is also relatively scattered and does not form a pattern. Therefore, we can assume that the residual has a homogeneous variance. Furthermore, the heteroscedasticity test shows that the model produces a chi-square value of 3.193 ($df = 1$) with a significance value of 0.074. This value is greater than the significant alpha (α) value of 5% or 0.05. This result means the residual is considered to have a homogeneous variance. Thus, the assumption of heteroscedasticity is met.

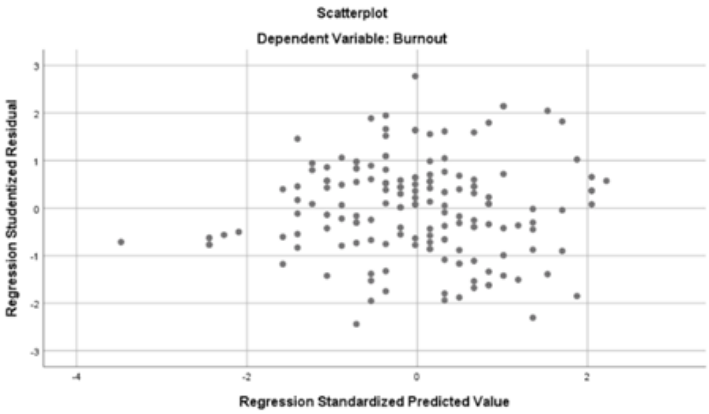


Fig. 3. Heteroscedasticity plot.

C. Linear Regression Test

1. Significance Test

The significance test is used to validate the influence of the independent variable on the dependent variable. In this manuscript, the test criteria are formulated as follows: If the probability value is less than the significant alpha (α) value of 5% or 0.05, the independent variable is considered to influence the dependent variable.

Table 6 indicates that the t-statistic (t_stat) value of the influence of CSM on Burnout is 6.041 with a significance value of 0.000. The significance value is smaller than the significant alpha (α) value of 5% or 0.05. This means that there is a significant effect of CSM on Burnout. The resulting coefficient is 0.640 (positive), which means that CSM is proportional to burnout. In other words, when a person experiences an increase in stress, the risk of burnout also increases.

Table 6. Significance test result

Independent Variable	Coeff.	t_stat	Sig.
(Constant)	0.734	1.975	0.050
CSM	0.640	6.041	0.000

Structural Model:

$$Burnout = 0.734 + 0.640\ CSM$$

2. Determinant Coefficient

The determinant coefficient determines how much the independent variables explain the dependent variable. In other words, the determinant coefficient shows the contribution magnitude of the independent variable to the dependent variable. In regression analysis, R^2 typically denotes the coefficient of determination.

Table 7. Determinant coefficient result

Model	R	R^2	Adjusted R2
1	0.42	0.187	0.182

3. According to the result in Table 7, the R^2 value in the model is 0.187 or 18.7%. This indicates that the stress variable (CSM) can explain the burnout variable by 18.7%. In other words, the contribution of the stress variable (CSM) to burnout is 18.7%, while the remaining 81.3% is the contribution of other variables that are not discussed in this study.

Discussion

A. Findings and Implications

Coronavirus stress is associated with mental health and wellbeing issues, including burnout [22]. Our present study investigated the stress and burnout of medical workers in Indonesia and how stress can affect burnout caused by COVID-19. There is still limited study examining the COVID-19 stress and burnout of medical workers in Indonesia. Moreover, the intervention efforts to mitigate coronavirus stress are considered inadequate. Considering those two factors, our study reveals an insight into the medical workers' stress and burnout issues caused by the coronavirus.

This study revealed that medical workers were not immune to stress and burnout caused by COVID-19. During the peak of COVID-19 fatality, the participants reported intense stress levels and mild exhaustion. This finding is in accordance with a previous study in China [23] that revealed that anxiety has an association with COVID-19 healthcare workers.

In this study, female medical workers had greater issues as a result of the COVID-19 pandemic, such as increased stress and burnout. This result is in line with the study conducted in Turkey [22]. Furthermore, it is shown that married medical workers are at a lower risk of stress and burnout. This result is similar to the findings in studies by Bakker & Demerouti in 2007 [24] and Shacham et al., in 2020 [25]. In addition, the study by Sun et al., in 2019 [26] revealed that family support lowers the burnout risk of medical workers.

B. Factors to Minimize Pandemic Stress and Burnout among Medical Workers

Former studies indicate that stress and burnout are related to each other. Subsequently, this subsection elaborately discussed factors that may help minimize stress and burnout, especially among medical workers. Several studies [27-29] show that social support helps to minimize work stress and burnout. In the study by Nie et al. [30], the authors investigate the relationship between social support and burnout with hospital nurses as the object of the study. The result shows that more than 60% of the participants suffered burnout. Further, the burnout dimensions are negatively associated with social support. The study concluded that

social support significantly influences burnout in hospital nurses. In the context of burnout during the COVID-19 pandemic, studies [31-34] reveal that lack of decent psychological support at work was one of the highest factors in developing healthcare workers' burnout.

In addition, training [35, 36] and working environment [37-39] are important to reduce workers' stress and burnout. It is suggested that the stakeholders tailor COVID-19 training programs to improve the medical workers' skills, knowledge, and capability to cope with heavy workloads and stressors while providing decent healthcare services for patients. As for the working environment, COVID-19 has shifted the working paradigms. Not only the workload stress, but the healthcare workers are also at a high risk of COVID-19 infection. Finally, assuring the safety of the working environment helps relieve one of the stressors experienced by medical workers.

C. Study Limitations

The participants' data are collected from an anonymous online survey that entirely relies on the respondents' honest answers. Therefore, we were not able to validate the findings with the participants through background checking or other means. Moreover, this study was conducted during the pandemic and only targeted medical workers in Indonesia. In addition, the number of participants is only 161, which is barely enough to generalize the results. Therefore, our findings only provide insight into the stress and burnout in Indonesia and might not represent the situation beyond the pandemic or the characteristics of other countries and cultures. Therefore, it is necessary to conduct a large-scale, in-depth study involving more participants with more variables associated with burnout.

Conclusion

As frontline workers, medical employees are at high risk of stress and pressure during the COVID-19 outbreak. Workload and pressure, in addition to the typical COVID-19 mental issue factors such as economics, worries, and anxiety, make healthcare workers more sensitive to stress and burnout. From 161 participants, the findings reveal that during the peak period of the COVID-19 fatality rate in Indonesia (June 2021-August 2021), the majority of participants experienced an intense level of stress and moderate burnout (June 2021-August 2021). Furthermore, the regression test reveals a significant link between stress and burnout caused by COVID-19. When the intensity of stress rises, the danger of burnout rises as well. Given the importance of medical workers in outbreak mitigation, such as the COVID-19 pandemic, medical workers and healthcare stakeholders must pay attention to these issues in order to maintain medical workers' mental health and healthcare service quality. Sufficient

social support, adequate training, and a decent working environment are factors that help to minimize stress and burnout risk.

Conflict of Interest

The authors declare that there is no conflict of interest.

References

[1] World Health Organization. (2020). Listings of WHO's response to COVID-19. Retrieved from https://www.who.int/news/item/29-06-2020-covidtimeline/

[2] Worldometer. (2022). COVID-19 Coronavirus Pandemic. Retrieved from https://www.worldometers.info/coronavirus/

[3] Ganster, D. C., & Rosen, C. C. (2013). Work stress and employee health: A multidisciplinary review. *Journal of Management*, *39*(5), 1085–1122.

[4] Kivimäki, M., & Kawachi, I. (2015). Work stress as a risk factor for cardiovascular disease. *Current Cardiology Reports*, *17*(9), 1–9.

[5] Cox, T., Kuk, G., & Leiter, M. P. (2017). Burnout, health, work stress, and organizational healthiness. In *Professional burnout* (pp. 177–193). Routledge.

[6] Gluschkoff, K., Elovainio, M., Kinnunen, U., Mullola, S., Hintsanen, M., Keltikangas-Järvinen, L., & Hintsa, T. (2016). Work stress, poor recovery and burnout in teachers. *Occupational Medicine*, *66*(7), 564–570.

[7] Tziner, A., Rabenu, E., Radomski, R., & Belkin, A. (2015). Work stress and turnover intentions among hospital physicians: The mediating role of burnout and work satisfaction. *Revista de Psicología Del Trabajo y de Las Organizaciones*, *31*(3), 207–213.

[8] Weigl, M., Schneider, A., Hoffmann, F., & Angerer, P. (2015). Work stress, burnout, and perceived quality of care: a cross-sectional study among hospital pediatricians. *European Journal of Pediatrics*, *174*(9), 1237–1246.

[9] Jiménez-Giménez, M., Sánchez-Escribano, A., Figuero-Oltra, M. M., Bonilla-Rodríguez, J., García-Sánchez, B., Rojo-Tejero, N., … Muñoz-Lorenzo, L. (2021). Taking care of those who care: attending psychological needs of health workers in a hospital in Madrid (Spain) during the COVID-19 pandemic. *Current Psychiatry Reports*, *23*(7), 1–8.

[10] Nguyen, L. H., Drew, D. A., Joshi, A. D., Guo, C.-G., Ma, W., Mehta, R. S., … Song, M. (2020). Risk of COVID-19 among frontline healthcare workers and the general community: a prospective cohort study. *MedRxiv: The Preprint Server for Health Sciences*.

[11] Pan, R., Zhang, L., & Pan, J. (2020). The anxiety status of Chinese medical workers during the epidemic of COVID-19: a meta-analysis. *Psychiatry Investigation*, *17*(5), 475.

[12] Shoji, K., Cieslak, R., Smoktunowicz, E., Rogala, A., Benight, C. C., & Luszczynska, A. (2016). Associations between job burnout and self-efficacy: A meta-analysis. *Anxiety, Stress, & Coping*, *29*(4), 367–386.

[13] Del-Aguila-Arcentales, S., & Alvarez-Risco, A. (2013). Human error or burnout as explanation for mistakes in pharmaceutical laboratories. *Accreditation and Quality Assurance*, *18*(5), 447–448.

[14] Reader, T. W., Cuthbertson, B. H., & Decruyenaere, J. (2008). Burnout in the ICU: potential consequences for staff and patient well-being. *Intensive Care Medicine*, Vol. 34, pp. 4–6. Springer.

[15] Ching, S. M., Ng, K. Y., Lee, K. W., Yee, A., Lim, P. Y., Ranita, H., … Cheong, A. T. (2021). Psychological distress among healthcare providers during COVID-19 in Asia: Systematic review and meta-analysis. *PloS One*, *16*(10), e0257983.

[16] Conversano, C., Marchi, L., & Miniati, M. (2020). Psychological distress among healthcare professionals involved in the COVID-19 emergency: Vulnerability and resilience factors. *Clinical Neuropsychiatry*, *17*(2), 94.

[17] Yıldırım, M., Çiçek, İ., & Şanlı, M. E. (2021). Coronavirus stress and COVID-19 burnout among healthcare staffs: The mediating role of optimism and social connectedness. *Current Psychology*, *40*(11), 5763–5771.

[18] Munn, L. T., Huffman, C. S., Connor, C. D., Swick, M., Danhauer, S. C., & Gibbs, M. A. (2022). A qualitative exploration of the National Academy of medicine model of well-being and resilience among healthcare workers during COVID-19. *Journal of Advanced Nursing*.

[19] Arslan, G., Yıldırım, M., Tanhan, A., Buluş, M., & Allen, K.-A. (2021). Coronavirus stress, optimism-

pessimism, psychological inflexibility, and psychological health: Psychometric properties of the Coronavirus Stress Measure. *International Journal of Mental Health and Addiction*, *19*(6), 2423–2439.
[20] Ye, B., Chen, X., Zhang, Y., & Yang, Q. (2022). Psychological flexibility and COVID-19 burnout in Chinese college students: A moderated mediation model. *Journal of Contextual Behavioral Science*, *24*, 126–133.
[21] Wang, R., Ye, B., Wang, P., Tang, C., & Yang, Q. (2022). Coronavirus stress and overeating: the role of anxiety and COVID-19 burnout. *Journal of Eating Disorders*, *10*(1), 1–8.
[22] Yıldırım, M., & Solmaz, F. (2022). COVID-19 burnout, COVID-19 stress and resilience: Initial psychometric properties of COVID-19 Burnout Scale. *Death Studies*, *46*(3), 524–532.
[23] Liu, C.-Y., Yang, Y., Zhang, X.-M., Xu, X., Dou, Q.-L., Zhang, W.-W., & Cheng, A. S. K. (2020). The prevalence and influencing factors in anxiety in medical workers fighting COVID-19 in China: a cross-sectional survey. *Epidemiology & Infection*, *148*.
[24] Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of Managerial Psychology*.
[25] Shacham, M., Hamama-Raz, Y., Kolerman, R., Mijiritsky, O., Ben-Ezra, M., & Mijiritsky, E. (2020). COVID-19 factors and psychological factors associated with elevated psychological distress among dentists and dental hygienists in Israel. *International Journal of Environmental Research and Public Health*, *17*(8), 2900.
[26] Sun, H., Warner, D. O., Macario, A., Zhou, Y., Culley, D. J., & Keegan, M. T. (2019). Repeated cross-sectional surveys of burnout, distress, and depression among anesthesiology residents and first-year graduates. *Anesthesiology*, *131*(3), 668–677.
[27] Winnubst, J. (2017). Organizational structure, social support, and burnout. In *Professional burnout* (pp. 151–162). Routledge.
[28] Velando-Soriano, A., Ortega-Campos, E., Gómez-Urquiza, J. L., Ramírez-Baena, L., De La Fuente, E. I., & Cañadas-De La Fuente, G. A. (2020). Impact of social support in preventing burnout syndrome in nurses: A systematic review. *Japan Journal of Nursing Science*, *17*(1), e12269.
[29] Greenglass, E. R., Fiksenbaum, L., & Burke, R. J. (2020). The relationship between social support and burnout over time in teachers. In *Occupational Stress* (pp. 239–248). CRC Press.
[30] Nie, Z., Jin, Y., He, L., Chen, Y., Ren, X., Yu, J., & Yao, Y. (2015). Correlation of burnout with social support in hospital nurses. *International Journal of Clinical and Experimental Medicine*, *8*(10), 19144.
[31] Dimitriu, M. C. T., Pantea-Stoian, A., Smaranda, A. C., Nica, A. A., Carap, A. C., Constantin, V. D., … Bratu, O. G. (2020). Burnout syndrome in Romanian medical residents in time of the COVID-19 pandemic. *Medical Hypotheses*, *144*, 109972.
[32] Elbay, R. Y., Kurtulmuş, A., Arpacıoğlu, S., & Karadere, E. (2020). Depression, anxiety, stress levels of physicians and associated factors in Covid-19 pandemics. *Psychiatry Research*, *290*, 113130.
[33] Mo, Y., Deng, L., Zhang, L., Lang, Q., Liao, C., Wang, N., … Huang, H. (2020). Work stress among Chinese nurses to support Wuhan in fighting against COVID-19 epidemic. *Journal of Nursing Management*, *28*(5), 1002–1009.
[34] Roslan, N. S., Yusoff, M. S. B., Asrenee, A. R., & Morgan, K. (2021). Burnout prevalence and its associated factors among Malaysian healthcare workers during COVID-19 pandemic: an embedded mixed-method study. *Healthcare*, *9*(1), 90. MDPI.
[35] Aronsson, G., Theorell, T., Grape, T., Hammarström, A., Hogstedt, C., Marteinsdottir, I., … Hall, C. (2017). A systematic review including meta-analysis of work environment and burnout symptoms. *BMC Public Health*, *17*(1), 1–13.
[36] Nogueira, L. de S., Sousa, R. M. C. de, Guedes, E. de S., Santos, M. A. dos, Turrini, R. N. T., & Cruz, D. de A. L. M. da. (2018). Burnout and nursing work environment in public health institutions. *Revista Brasileira de Enfermagem*, *71*, 336–342.
[37] Moody, K., Kramer, D., Santizo, R. O., Magro, L., Wyshogrod, D., Ambrosio, J., … Stein, J. (2013). Helping the helpers: mindfulness training for burnout in pediatric oncology—a pilot program. *Journal of Pediatric Oncology Nursing*, *30*(5), 275–284.
[38] Suleiman-Martos, N., Gomez-Urquiza, J. L., Aguayo-Estremera, R., Cañadas-De La Fuente, G. A., De La Fuente-Solana, E. I., & Albendín-García, L. (2020). The effect of mindfulness training on burnout syndrome in nursing: a systematic review and meta-analysis. *Journal of Advanced Nursing*, *76*(5), 1124–1140.
[39] Hayes, B., Douglas, C., & Bonner, A. (2015). Work environment, job satisfaction, stress and burnout among haemodialysis nurses. *Journal of Nursing Management*, *23*(5), 588–598.

Authors



Urfa Khairatun Hisan is a lecturer at the Faculty of Medicine, Universitas Ahmad Dahlan, Yogyakarta, Indonesia, and a graduate student of the Department of Bioethics, Universitas Gadjah Mada, Indonesia. She received her B.Med. and M.D. degrees from the Faculty of Medicine, Universitas Gadjah Mada, Indonesia, in 2017 and 2019, respectively. Her research interests include public health and bioethics in medicine. She can be contacted at email: urfa.hisan@med.uad.ac.id.



Muhammad Miftahul Amri received his B.S. degree from the Department of Computer Science and Electronics, Universitas Gadjah Mada Indonesia in 2018, and the M.S. degree from the Department of Electrical and Computer Engineering, Sungkyunkwan University South Korea in 2021, where he is currently pursuing the Ph.D. degree. In 2022, he received the M.M. degree and professional engineer title, respectively, from Universitas Terbuka and Universitas Muhammadiyah Yogyakarta Indonesia. In 2021, he joined the faculty at Universitas Ahmad Dahlan, Indonesia, where he is currently a lecturer in the Department of Electrical Engineering. His research interests include wireless communications and reconfigurable intelligent surfaces. He can be contacted through: muhammad.amri@te.uad.ac.id.