

Mediating Role of COVID-19 Burnout in the Relationship Between Coronavirus Stress and well-being of Healthcare Professionals

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ABSTRACT

Evidence has consistently shown that healthcare professionals were highly stressed during the recent pandemic. Stressors influence well-being, but little is known about the underlying mechanism involved. This study aimed to explore whether coronavirus stress led to *COVID-19 burnout*, thereby reducing the well-being of healthcare professionals during the pandemic. A cross-sectional study of 388 healthcare professionals was conducted using self-administered questionnaires on coronavirus stress, *COVID-19 burnout*, and well-being. The structural equation modeling (SEM) was performed to determine the mediating effect of *COVID-19 burnout* in the relationship between coronavirus stress, and well-being. 48.96% of participants reported high coronavirus stress. *COVID-19 burnout* was found to mediate the relationship. This necessitates reducing stress (risk to own health) and managing symptoms of burnout resulting from it. The findings have implications for healthcare service providers and mental health service professionals.

Keywords: Well-being, coronavirus stress, *COVID-19 burnout*, healthcare professionals.

Introduction

More than three years after the beginning of the COVID-19 pandemic, the well-being of healthcare professionals remains a priority for researchers (Calkins et al., 2023; Gribben et al., 2023; Isbell et al., 2023). Well-being has been identified as a precursor to positive outcomes such as better quality of care (Tawfik et al., 2019), patient satisfaction (Welle et al., 2020), and promotion of psychological strengths (Kubzansky et al., 2018).

Healthcare is considered to be one of the most stressful professions (Birhanu et al., 2018). During a pandemic, healthcare professionals are vulnerable to stressful situations. Recent research shows the harmful effects of working

during a pandemic on healthcare professionals (e.g., Chua et al., 2004). Health professionals face high levels of stress due to fear of disease and risk of infection from exposure to the coronavirus (Memon et al. 2022; Prasad et al., 2021). Due to moral obligation, healthcare professionals remain dutiful and take care of patients even at high risk (Maraqqa et al., 2020). During the pandemic, medical professionals were overwhelmed with work and continuously cared for patients infected with COVID-19. This compounded their concerns and required them to deal with the overburden and excessive load. This, in turn, has led to adverse effects such as poorer mental health and low level of well-being of healthcare professionals (Ceri & Cicek, 2021). The prevalence of burnout among healthcare workers during the COVID-19 pandemic is also reported (Jalili et al., 2021; Memon et al. 2022; Nishimura et al., 2021). Therefore, the well-being of healthcare providers is a concern that needs to be managed (Mathur et al., 2020; Kumar & Nayar, 2020).

Extant research has reported an increase in coronavirus stress that has contributed to *COVID-19 burnout* (Matsuo et al., 2021; Yldrm et al. 2021) and reduced well-being (Arsalan & Allen, 2022; Ceri & Cicek., 2021). Prolonged and excessive coronavirus stress could deplete personal resources and lead to *COVID-19 burnout* with subsequent impairment of well-being. There is ample evidence linking these factors, but the mechanism by which they may impact well-being remains unclear. Therefore, it is important to identify the underlying mechanisms and mitigate the factors affecting the well-being of healthcare workers. Additionally, identifying the mediating role of *COVID-19 burnout* between these factors will provide insight into the negative loop that adversely affects well-being. For this purpose, this study aimed to explore the mediating role of *COVID-19 burnout* in the relationship between coronavirus stress and well-being among healthcare professionals. The hypotheses are as follows:

H1: Coronavirus stress has a positive relationship with *COVID-19 burnout*.

H2: *COVID-19 burnout* has a negative relationship with well-being.

H3: Coronavirus stress has a negative relationship with well-being.

H4: Coronavirus stress has a negative indirect effect on well-being through *COVID-19 burnout*.

Figure 1 shows the conceptual model of the study.

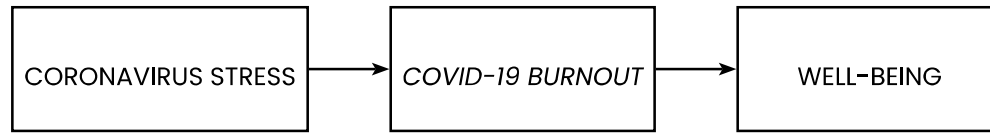


Figure 1. Conceptual Model

Methods

Participants

From 8 May 2021 to 7 June 2021, a cross-sectional study was conducted. Data was collected through online survey sent via social media sites. Survey comprised demographic profile and a battery of questionnaires. In all, 388 healthcare professionals working during the second wave of COVID-19 in India responded to the survey link. All participants gave informed consent for voluntary participation. Participants were informed about the purpose of the study, their rights, maintenance of anonymity, confidentiality, and no potential threat of participation. All procedures performed were in accordance with 1964 Helsinki declarations and its later amendments for studies involving human participants. Age range of the participants was 23 to 60 years (Mean=33.19). Of the total sample, 170 (43.8%) were female and 218 (56.2%) were male; 255 (65.7%) worked in government sector, 133 (34.3%) were in private sector. As per the profession there were 229 (59%) Doctors, 17 (4.4%) Lab Technicians, 69 (17.8%) Nurses, and 73 (18.8%) Pharmacists.

Measures

Coronavirus Stress Measure (CSM, Arslan et al., 2020). It includes five items on a five-point Likert scale (0=never to 4= often) was used. A sample item is "In the last month due to coronavirus, how often have you felt that you were unable to control the important things in your life?" Higher score indicates higher coronavirus stress. The Cronbach's α coefficient of the scale is 0.838.

COVID-19 Burnout. It was measured with the 10 item *COVID-19 Burnout Scale* (COVID-19-BS) by Yıldırım and Solmaz (2020). The items are rated on a five-point Likert scale (Never=1 to Always=5). The sample item for the scale is "When you think about COVID-19 overall, how often do you feel hopeless?" Higher score

indicates greater *COVID-19 burnout* levels. In this study, the scale has good reliability, with Cronbach's α coefficient of .893.

Well-being. To measure Well-being, PERMA Profiler (Butler & Kern, 2016) was used. It comprises five factors namely, positive emotion, engagement, relationships, meaning, and accomplishment and eight are filler items. The sample item is "At work, how often do you feel sad?" Items are on an 11-point scale ranging from 0= not at all, to 10= completely. Scores are calculated as the average of the items comprising each factor. We also calculated an average well-being score for each participant. Among Butler and Kern's (2016) validation sample, the PERMA-Profiler demonstrated good convergent and divergent validity, and good reliability with a Cronbach's alpha of 0.950 and for the current study it was 0.922.

Socio-demographic information. It included gender, age, marital status, years of service, employment, and profession.

Data analysis

Preliminary Analysis and Descriptive Statistics

The preliminary data analysis, Pearson product-moment correlation, calculation of descriptive statistics was done using IBM SPSS version 26. The mean, standard deviation, and intercorrelations for the study variables are presented in Table 1. As shown in Table 1, the means of the observed variables ranged from 11.38 to 22.77, and standard deviations ranged from 4.50 to 6.85. Both univariate and multivariate normality test were used to check normality.

Additional analyses indicated that coronavirus stress had positive and significant correlations with *COVID-19 burnout* and negative and significant correlations well-being. Further, *COVID-19 burnout* had a significant and negative correlation with well-being (Table 1). Frequencies and percentages showed that 48.96% participants had high level of coronavirus stress.

Table 1 Descriptive statistics and intercorrelation for study variables

Variables	M	SD	Skew-ness	Kurto-sis	A	1.	2.	3.	4.	5.	6.	7.
1. CS	11.384	4.501	-.455	.262	.838	-						
1. CB	21.183	6.850	-.050	-.531	.893	.448**						
1. P	21.378	5.905	-.571	-.347	.695	.037	-.256**	-				
1. E	20.451	5.517	-.511	.017	.489	.139**	-.084	.583**	-			
1. R	21.899	5.796	-.622	-.050	.772	.016	-.266**	.692**	.598**	-		
1. M	22.770	5.988	-.836	.054	.825	.030	-.271**	.730**	.633**	.702**	-	
1. A	21.273	6.208	-.596	-.274	.782	.043	-.257**	.751**	.639**	.700**	.750**	-

Results

Structural Equation Modeling (SEM) analysis was conducted using SmartPLS-4. The measurement model was tested for reliability and validity. Next, structural modeling was done to test the proposed hypotheses.

Results of measurement model

The final measurement model comprised 28 items after deletion of one item from the construct meaningfulness and engagement each (Table 2). Further, the Table 2 shows the AVE ≥ 0.5 , CR values > 0.70 (Hair et al., 2010) established convergent validity. The HTMT ratio < 0.85 (Henseler et al., 2015) established discriminant validity (Table 3).

Table 2 Measurement model

Lower Order Constructs						
Construct	Item	Loading	Alpha	Rho_A	CR	AVE
Coronavirus Stress	CS1	0.775	0.838	0.842	0.885	0.606
	CS2	0.768				
	CS3	0.798				
	CS4	0.764				
	CS5	0.786				
COVID-19 Burnout	CB1	0.626	0.893	0.91	0.912	0.511
	CB2	0.71				
	CB3	0.749				
	CB4	0.735				
	CB5	0.802				

	CB6	0.816				
	CB7	0.726				
	CB8	0.733				
	CB9	0.643				
	CB10	0.572				
Positive Emotions	P1	0.849	0.707	0.732	0.871	0.771
	P2	0.907				
	P3	Deleted				
Engagement	E1	0.85	0.708	0.732	0.871	0.772
	E2	0.907				
	E3	Deleted				
Relationships	RE1	0.794	0.773	0.785	0.868	0.687
	RE2	0.824				
	RE3	0.868				
Meaningfulness	M1	0.887	0.825	0.827	0.895	0.741
	M2	0.859				
	M3	0.836				
Accomplishment	A1	0.837	0.783	0.784	0.873	0.697
	A2	0.856				
	A3	0.812				
Higher Order Construct						
Well-being	P	0.847	0.923	0.926	0.942	0.765
	E	0.891				
	R	0.879				
	M	0.856				
	A	0.9				

Table 3 Discriminant Validity (HTMT)

	COVID-19 Burnout	Coronavirus Stress	Well-being
COVID-19 Burnout			
Coronavirus Stress	0.533		
Well-being	0.322	0.121	

Results of structural model

The mediating effect of COVID-19 burnout on the relationship between coronavirus stress and well-being among healthcare workers was examined. The R^2 , Q^2 , and significance of paths were assessed. The value for R^2 above 0.1 is considered good

(Ozili, 2023). The R^2 values 0.218 and 0.122 for COVID-19 burnout and well-being respectively are higher than 0.1. Therefore, it establishes the predictive ability. Next, $Q^2_{\text{COVID-19 Burnout}}=0.207$ and $Q^2_{\text{Well-being}}=-0.007$ for the endogenous constructs are above 0 which shows that the model has predictive relevance.

Next, hypothesis testing was done. Bias-corrected bootstrapping with 10000 resamples was done. A confidence interval different from zero further confirms significant relationship. Table 4 shows results of hypotheses testing.

Table 4 Path coefficients

	Path coefficient	Sample mean (M)	Standard deviation (STDEV)	t value	P values	BI	BI
COVID-19 Burnout -> Well-being	-0.395	-0.402	0.052	7.594	0	-0.471	-0.298
Coronavirus Stress -> COVID-19 Burnout	0.466	0.47	0.048	9.777	0	0.377	0.536
Coronavirus Stress -> Well-being	0.202	0.206	0.065	3.1	0.001	0.088	0.301
Total Indirect Effects							
Coronavirus Stress -> Well-being	-0.184	-0.189	0.033	5.614	0	0.033	5.614
Specific Indirect Effects							
Coronavirus Stress -> COVID-19 Burnout -> Well-being	-0.184	-0.189	0.033	5.614	0	-0.237	-0.132

Furthermore, the results revealed that coronavirus stress has a significant impact on *COVID-19 burnout* ($\beta = .466$, $t = 9.777$, $p < .001$), *COVID-19 burnout* has a significant impact on well-being ($\beta = -.395$, $t = 7.594$, $p < .001$) supporting H1 and H2. Results showed that coronavirus stress has a significant but positive impact on well-being ($\beta = .202$, $t = 3.100$, $p = .001$). Hence H3 is rejected (Figure 2).

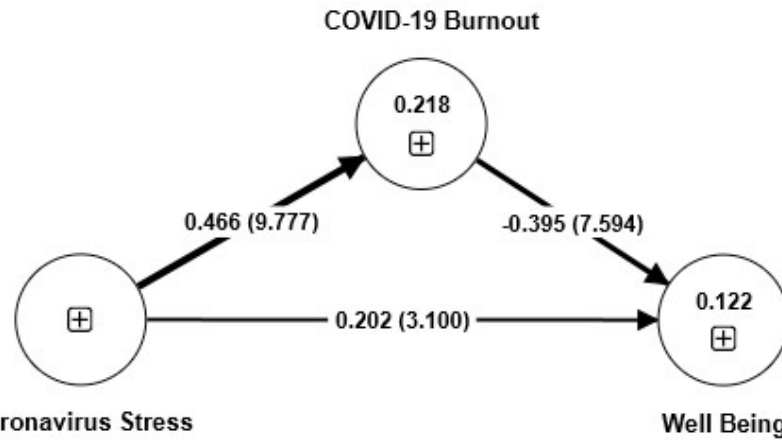


Figure 2 Structural model

Subsequently, mediation analysis was done to assess the mediating role of *COVID-19 burnout* in the relationship between coronavirus stress and well-being. The findings from the analyses indicated that coronavirus stress did significantly and negatively predict well-being through COVID-19 burnout. (H4: $\beta = -.184$, $t = 5.614$, $p = .000$).

Discussion

In the present study, we sought to uncover the mediating role of *COVID-19 burnout* in the relationship between coronavirus stress and the well-being of healthcare workers in India. The results of the study supported the hypothesis H1, H2, and H4. It noted the presence of direct and indirect effects in hypothetical relationships. It was unusual to find that coronavirus stress is positively related to the well-being of healthcare professionals. So, H3 was rejected. However, it has been confirmed that coronavirus stress is linked to COVID-19 burnout, which has an additional negative impact on the well-being of healthcare professionals.

When treating patients, medical professionals are automatically exposed to deadly microorganisms such as the coronavirus, with immediate consequences such as reduced well-being. Therefore, it is necessary to understand the underlying mechanisms so that the well-being needs of healthcare professionals can be met with from time to time.

It was surprising to find positive impact of coronavirus stress on well-being of healthcare professionals. The results of the present study are contrary to the findings of previous research reporting the linkage between stress and well-

being. This brings to light the possibility of identifying factors that could reverse the effect of such a negative precursor for boosting well-being. Previous research reported negative and significant impact of stress on well-being (Arslan & Allen, 2022; Ceri & Cicek, 2021; Sood & Sharma, 2020). It is possible that healthcare professionals did not show deterioration in well-being even when they experienced high level of stress due to the presence of moderators. Our findings corroborate with previous research for relationship between stress and burnout (Matsuo et al., 2021; Yıldırım et al. 2021), burnout and well-being (George et al., 2017; Qu & Wang, 2015). These results suggest that burnout is a mechanism underlying the compromised state of well-being in stressful situations. Efforts need to be made to minimize burnout as far as possible since it indicates a deterioration in the well-being of the healthcare professionals. y to confirm its effect in promotion of well-being.

In conclusion, these results add to the burgeoning literature suggesting that burnout is cardinal in determining well-being of healthcare workers. Well-being of healthcare professionals arises from the sustained efforts to control stressors and minimize burnout symptoms. It is possible to recover from stress induced symptoms of negative mental health and burnout. Therefore, the healthcare sector must prioritize the well-being of healthcare professionals so that they could provide optimum services to the patients. Thus, these results suggest the importance of redefining the services of the healthcare workers. The mental health service providers could work on designing interventions to handle burnout in healthcare professionals.

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