

Moderating effect of resilience in the relationship between compassion fatigue and mental well-being among frontline health workers exposed to COVID-19 Patients

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Most studies on the impact of COVID-19 have centred on patients and the general population with less attention to the frontline health workers who are more vulnerable to diverse effects of the pandemic. This paper examined the moderating effect of resilience in the association between compassion fatigue and mental well-being of frontline health workers that are involved in the mental well-being of COVID-19 patients. A total of 112 (mean age = 39.58; SD = 9.68; Female = 62.5%) frontline health workers completed an online survey of compassion fatigue, resilience and mental well-being measures in a snowballing manner. Correlation analysis revealed that compassion fatigue negatively associated with mental well-being. Mediation analysis with hierarchical multiple regression showed a decremental effect of the interaction term on the relationship between compassion fatigue and mental well-being of frontline health workers at isolation centres ($\Delta R^2 = 0.040$). Frontline health workers reported that attending to COVID-19 patients was challenging to them because of the experience of compassion fatigue which affected their mental wellbeing. This was dependent on their low level of resilience. Therefore, it was concluded that when resilience was low, compassion fatigue had decreased effect on the mental wellbeing of frontline health workers attending to COVID-19 patients. It is suggested that policy framework for alleviating compassion fatigue in frontline health workers be developed and executed.

Keywords: Compassion fatigue, COVID-19, frontline health workers, mental well-being, resilience.

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Introduction

The emergence of coronaviruses (COVID-19) that were categorised as a pandemic by the World Health Organization (WHO, 2020) may harm the mental well-being of frontlines health workers. Westerhof and Keyes (2010) defined mental well-being as optimal psychological functioning and complete satisfaction with life. Past studies have demonstrated that individuals with adequate mental well-being tend to volunteer more for community services, achieve better work outcomes, possess greater coping abilities, have better immune systems, are more cooperative, are more involved in pro-social, and charitable behaviours (Andersson & Glanville, 2016; Heikkinen & Kauppinen, 2011). Similarly, Zhang, et al. (2020), reported that worries about being infected, perceived lack of helpfulness, absence of psychological intervention and robust vagueness relating to COVID-19 control and prevention predicted severe sleeplessness among frontline health workers of COVID-19 in China.

Health care workers during COVID-19 have displayed several mental health challenges. For instance, mental health difficulties such as depressive symptoms, excessive worry, insomnia and distress were found to be common with health

care workers exposed to COVID-19 in China (Lai et al., 2020). Similarly, findings revealed that a significant number of young healthcare providers to COVID-19 patients in Wuhan, China reported that they experience severe mental disturbance as well as poor mental well-being (Kang et al., 2020). In a related manner health care workers treating COVID-19 patients also reported having symptoms of anxiety depression and stress (Khazeaee-Pool et al., 2023) as well as high tendencies for developing psychological distress (Arias-Ulloa et al., 2023).

Jenkins and Warren (2012) described compassion fatigue as most common weariness of individual in the caregiving professions which is characterized by feeling of gloom, sleeplessness, and cryptic physical and emotional exhaustion. According to American Psychiatric Association, (APA, 2013) individual experiences compassion fatigue as a result of elongated exposure to traumatised patient with symptoms of depression, excessive apprehension, lack of confidence, decreased mental functioning and diminished sense of purpose or enjoyment at workplace. Compassion fatigue in frontline health workers may result from exposure to the pain and suffering of COVID-19 patients in their day-to-day interactions, which can degrade both their expert identities and private

lives (Berzoff & Kita, 2010; Fallek et al., 2019; Melvin, 2015).

Compassion fatigue is an unpredictable experience that may occur at any time while providing care to persons suffering from physical, emotional or mental trauma (Todaro-Franceschi, 2013). Findings revealed that healthcare providers suffer high level of compassion fatigue, especially individuals working at emergency units (Borges et al., 2019) and those involved with psychiatric and terminally ill patients (Hooper et al., 2010). A study revealed that compassion fatigue significantly predicts burnout and secondary traumatic stress in those nurses (Borges et al., 2019). This may in turn have a significantly damaging impact on the well-being in acute medical care nurses (Upton, 2018). Compassion fatigue has also been reported to predict other behavioural outcomes such as turnover intention (Wells-English et al., 2019), well-being (Beaumont et al., 2016), expression of negative emotions particularly among hospice nurses (Barnett et al., 2019). However, Frey et al. (2018) argued that previous palliative care education can significantly lessen the experience of secondary traumatic stress component of compassion fatigue symptoms in nurses delivering palliative care.

Frontline health workers of COVID-19 with adequate resilience may potentially adjust to the psychological challenges experienced when delivering tedious cares for COVID-19 patients. Resilience may also abate COVID-19 related compassion fatigue that may depreciate their mental well-being. It is a positive adaptation and coping strategy to life threatening challenges that can boost the mental well-being of frontlines health workers of COVID-19. The moderating effects of resilience are well documented. For instance, resilience has been found to moderate the link between personality and burnout (Treglown et al., 2016), emotional exhaustion and psychological well-being (Garcia-Izquierdo et al., 2017), stress and quality of life (Li et al., 2019), perceived stress, depression and anxiety (Reh, 2019), compassion fatigue and burnout (Burnett, 2017). Most of the past studies consistently reported moderating effect of resilience and its impact on the enhancement of individual's physical and emotional health outcomes. However, its moderating effect in the behavioural outcomes of frontlines health workers of COVID-19 pandemic is not yet documented. Thus, the present study hypothesized that resilience will have a moderating effect on the relationship between compassion fatigue and mental well-being among frontline health workers of COVID-19 pandemic.

Method

Participants and Procedure

The study is cross-sectional in nature with an online survey that was conducted using Google Forms to generate a survey link. This link was circulated mainly through WhatsApp social media platform of frontline health workers (Medical Doctors, Pharmacists, Nurses, Laboratory related workers, Community Health Workers) at various Isolation Centres across various states in Nigeria in a snowballing manner between April 30 to July 7, 2020. The period of data collection represented the time of community spread of the pandemic in Nigeria, thus the pandemic was on the rise and these frontline health workers had increased number of cases to attend to. A total of 112 (Female = 63.4%; mean age = 39.68 years) responses generated through the online survey were analysed for the study. Participants were required to indicate their consent before proceeding to

respond to the items on the online survey. Distribution of participants is presented on Table 1.

Instruments

Mental well-being: participants' mental well-being was assessed through the short Warwick-Edinburg Mental Well-Being Scale (SWEMWBS) developed by Tennant, et al., (2009) which is rated on a 5-point Likert-type scale ranging from 1 = none of the time, and 5 = all of the time and can be scored by summing responses to each item. Sample items include: "I've been feeling optimistic about the future", "I've been able to make up my own mind about things" The SWEMWBS established adequate alpha coefficient = 0.89 (Vainganka et al., 2017). In this study, the Cronbach alpha coefficient of 0.80 was reported.

Compassion Fatigue: This was assessed using the brief version of the Compassion Fatigue Scale (CFS-13 by Adams, Boscarino and Figley, (2006). The CFS 13-items are divided into two subscales: Secondary Trauma (ST) which consists of 5-items and Job Burnout (JB) comprised of 8 items. The CFS is a 10-point Likert-type scale ranging from 1 (rarely/never) to 10 (very often). Sample items include: "I have felt a sense of hopelessness associated with working with clients/patients", "I am losing sleep over a client's traumatic experiences" Although the subscales were examined at the correlational analyses, the sum score of the CFS-13 was utilized for the moderation analyses. The CFS-13 demonstrated good alpha coefficients (0.80 to 0.90) of each sub-dimension (Adams et al. 2006). The Cronbach alpha coefficient of 0.90 was established for this study.

Resilience: Participants' resilience was measured with the Brief Resilience Scale (BRS) developed by Smith et al., (2007). The BRS consists of 6-items that assess individual's ability to bounce back or recover from stress. Each item is rated on a 5-point Likert-type scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Sample items of the BRS include: "I tend to bounce back quickly after hard times", "It does not take me long to recover from a stressful event." BRS has good internal consistency with Cronbach's alpha between 0.80 and 0.91 and test-retest reliability was 0.69 and 0.62 (Smith et al., 2007). The Cronbach alpha coefficient of 0.66 was established for this study.

Data analyses

Preliminary analysis of the demographic variables in the study was conducted to describe the respondents (see Table 1). Also, Product Moment Correlation (PPMC) and hierarchical multiple regression statistical tool were used for both correlation and moderation analyses respectively. Specifically, a two-step hierarchical multiple regression procedure was employed. The two predictor variables were standardized. Z-scores were generated for the predictor variable. Thereafter, the Z-scores for these variables were multiplied to generate the interaction term (moderator). In the first step, both variables were entered into the model. The moderator variable was introduced in the second step to conduct the moderation analysis.

Results

A total of 112 (71 females and 41 males) participated in the study. Data were first screened for normality via skewness and kurtosis and a substantially skewed distribution was established. Specifically, a Skewness of 1.31, 0.01 and 3.11 were found for compassion fatigue, resilience and mental well-being respectively. A Kurtosis of 1.81 was established for compassion fatigue, 1.30 for resilience and 1.80 for mental well-being.

Table 1: Summary of descriptive analysis of Socio-demographic characteristics of respondents (N = 122)

	Groups	Frequencies	Percentages %	Mean (SD)
Age				39.58 (9.683)
Sex	Female	71	63.4	
	Male	41	36.6	
Profession	Medical Doctor	18	16.1	
	Nurse	81	72.3	
	Comm. Health Worker	5	4.5	
	Pharmacists	5	4.5	
	Laboratory Related Workers	3	2.7	
Marital Status	Married	26	23.2	
	Single	79	70.5	
	Divorced	2	1.8	
	Separated	2	1.8	
	Widowed	3	2.7	
Religion	Islam	77	68.8	
	Christianity	34	30.4	
	Others	1	0.9	

Distribution of respondents by profession revealed that majority (81;72.3%) were nurses, followed by medical doctors (18; 16.1%). Community health workers and pharmacists were 5(4.5%) each, while the remaining 2.7% of the respondents were laboratory related workers. Most of the respondents (79; 70.5%) were single, 26(23.2%) were married, 1.8% were separated while 3(2.7%) of the respondents were widowed. Distribution by religion showed that majority practice Islamic religion 77(68.8%) while 34(30.4%) indicated that they were Christian, while the remaining 1(0.9%) indicated other religion (see Table 1). The age of the 112 respondents ranged from 22 to 60 years, mean = 39.58, and SD = 9.68.

Table 2: Correlations of the study variables

	M	SD	1	2	3	4	5
1.Job burnout	26.80	13.35	-				
2.Secondary trauma	20.24	10.92	.88**	-			
3.Resilience	18.00	3.08	.056	.116	-		
4.Compassion Fatigue	47.04	22.96	.956**	.934**	.088	-	
5.Mental well-being	27.11	4.31	-.325*	-.194*	.061	-.28**	-

Notes. *p < .05. **p < .01.

Results, as presented in Table 2, revealed a significantly negative relationship between compassion fatigue and mental well-being ($r = -0.28, p < 0.05$). The results showed no significant relationship between resilience and mental well-being ($r = 0.06, p > 0.05$), and also showed no significant relationship between resilience and compassion fatigue among COVID-19 frontline health workers ($r = 0.09, p > 0.05$). The subscales of compassion fatigue revealed that job burnout ($r = -0.33, p < 0.05$) and secondary trauma ($r = -0.19, p < 0.01$) had negative association with mental well-being of frontline health workers.

We conducted hierarchical multiple regression to test the effect of compassion fatigue and mental wellbeing of frontline health workers exposed to COVID-19 pandemic. Both compassion fatigue and resilience were entered into the first model. Results on Table 3 revealed that compassion fatigue predicted mental well-being of frontline health workers ($\beta = -0.29$) but resilience did not ($\beta = 0.09$). The first model potentially explained for 8.7% ($\Delta R^2 = 0.087$) of the variance in mental well-being. In order to cater for potentially high multicollinearity with interaction term, the

predictor variables were standardized to permit the creation of a moderator which is the interaction term between compassion fatigue and resilience.

Table 3: Summary of hierarchical regression analysis for variables frontline health workers' mental well-being (N = 112)

	Model 1			Model 2		
	B	SE B	β	B	SE B	β
Compassion Fatigue	-1.25	0.39	0.29*	-1.08	0.39	-0.25*
Resilience	0.37	0.39	0.09	-.15	0.40	0.03
Comp Fatigue x Resilience				.86	0.38	0.21*
R^2		.087			.127*	
ΔR^2		.087			.040*	
F for change in R^2		5.17			5.00	

Note: Compassion fatigue and resilience were centered at their means. *p < .05. **p < .01.

In the second model, the interaction term (moderator) was entered into the regression model with the expectation to have an incremental effect that would exceed what was reported in model 1. However, the hierarchical multiple regression results slightly but significantly supported the recorded effect [$\beta = -0.25, p > 0.05, \Delta R^2 = 0.040$]. The reduction in F-change value from $\Delta F = 5.17$ to $\Delta F = 5.00$ at the introduction of the interaction term, showed no improvement in the model. Furthermore, the interaction plot presented in Figure 1 showed that as compassion fatigue and resilience increase, mental well-being decreased. Low level of resilience improved the mental well-being of frontline health workers that were exposed to COVID-19 patients.

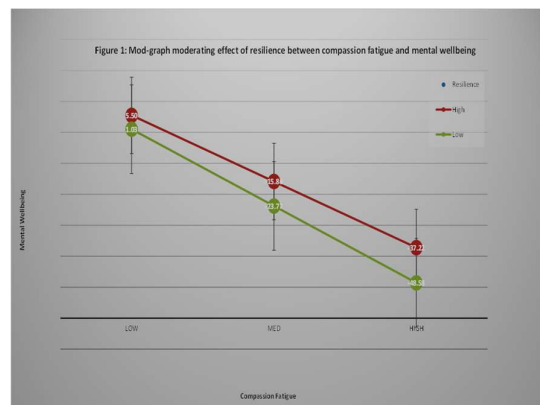


Figure 1 Mediating moderated graph

Discussion

The aim of the study was to investigate the relationship between compassion fatigue and mental well-being as well as ascertaining the moderating effect of resilience in the relationship between compassion fatigue and mental well-being of frontline health workers involved in the treatment of COVID-19 patients in Nigeria.

Our findings revealed a negative association between compassion fatigue and mental well-being of frontline health workers. This is not strange because health workers at emergency units have been previously reported to experience higher level of compassion fatigue (Borges, et al., 2019; Wells-English, et al., 2019) which may indirectly impact their mental well-being (Upton, 2018). Exposure to COVID-19 patients at Isolation centers may increase the experience of compassion fatigue. This is an unpredictable occurrence in a bid to provide care for individuals suffering from physical or mental trauma (Todaro-Franceschi, 2013) such as COVID-19. Given that there is no known cure for the pandemic, the threat of death that confronts the patients may potentially increase health workers' compassion fatigue experience and consequently their optimal psychological functioning and satisfaction with life (Westerhof, 2010). Compassion fatigue impacts negatively on the mental well-being of frontline health workers because of their daily exposure to patients who have been separated from their network of supports, possibly surviving through the aid of ventilators and with uncertain date of discharge.

Contrary to expectation, we found that resilience did not independently predict frontline health workers' mental well-being. Furthermore, the interaction effect was significant but had a decremental effect on the model. We plotted ModGraph to explore the pattern of decremental effects of the interaction term. Contrary to expectation, the less resilience in the face of COVID-19, the better the mental well-being of frontline health workers. Resilience has been reported to be a psychological resource that can help to adapt well in the face of adversity trauma and workplace stress (APA, 2013, Garcia-Izquierdo, et al., 2017; Reh, 2019). Our findings revealed that the interaction of both compassion fatigue and resilience produce better mental well-being at the lowest level. Resilience, as a personal resource, was not found to be a sufficient moderator between compassion fatigue and mental well-being. In other words, it decreased the capacity of frontline health workers to sustain their mental well-being in face of unpredictably experience that may occur at any time while providing care to persons suffering from physical, emotional or mental trauma (Todaro-Franceschi, 2013).

Previous studies have revealed that provision of previous palliative care education can reduce the experiences of compassion fatigue (Frey, et al., 2018). Thus, government may need to consider palliative care education to cushion the negative effects of compassion fatigue on the mental well-being of frontline health workers. This will enable them enjoy more social support, practice mindfulness (such as prayer, meditation) and collaborations in other to boost their level of resilience. In furtherance to this is the need for training in psychological principles that may enhance resilience. Frontline health workers also need some form of encouragement to accept the change that the pandemic has brought upon the world and thus be optimistic that patients' health will not diminish beyond remedy. It is believed that when their levels of resilience have moderately increased, it will cushion the impact of compassion fatigue

on their mental well-being and consequently improved optimal functioning.

The study has few limitations. The online nature of the study made it difficult to ascertain the response rate since we may not be able to know the number of people who got the link but did not respond. Also, the fact that data were collected cross-sectionally may pose a challenge to the findings from the study. Future study may consider the link between compassion fatigue and other behavioural outcomes among each of the cohorts in the list of frontline health workers as listed in the present study.

In conclusion, compassion fatigue was found to negatively relate the mental health of frontline health workers involved in the treatment of COVID-19 patients. A decrease in the level of resilience was also reported to moderate this relationship. Frontline health workers would need more social support, positive work climate and palliative education to enhance their capacity to cope with the negative effects of compassion fatigue occasioned by their exposures to patients battling with COVID-19 pandemic.

Conflict of interests

There are no conflicts of interests between the authors.

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