Research Paper:
The Mediating Role of Meaning in Life in the Relationship Between Psychological Resilience and Post-traumatic Stress Symptoms in Healthcare Workers During COVID-19 Pandemic

Salman Zarei[1]

1. Department of Psychology, Faculty of Literature and Humanities, University of Loreslan, Khorramabad, Iran.

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Citation Zarei S. The Mediating Role of Meaning in Life in the Relationship Between Psychological Resilience and Post-traumatic Stress Symptoms in Healthcare Workers During COVID-19 Pandemic. Journal of Research & Health. 2022; 12(1):17-24. http://dx.doi.org/10.32598/JRH.12.1.1224.4

http://dx.doi.org/10.32598/JRH.12.1.1224.4

Article info:
Received: 09 Sep 2021
Accepted: 03 Nov 2021
Publish: 01 Feb 2022

Keywords:
Meaning, Resilience, Stress, Trauma

ABSTRACT

Background: The current outbreak of the COVID-19 has distorted the physical, mental, and psychological conditions of healthcare workers. There is a paucity of research exploring the relationship between psychological resilience and post-traumatic stress symptoms and no existing literature examining the mediating role of meaning in life in the relationship between these two constructs. The objective of this study was to examine if meaning in life mediates the relationship between psychological resilience and post-traumatic stress symptoms.

Methods: The research design was descriptive-correlational. A total of 337 healthcare workers during the COVID-19 pandemic in public hospitals in Tehran, Iran were selected using the convenience sampling method. The self-administered questionnaire included demographic information, the Connor-Davidson Resilience Scale (CD-RISC), the Meaning in Life Questionnaire (MLQ), and the Impact of Event Scale-Revised (IES-R). Structural Equation Model (SEM) was employed to test whether the proposed relationships between variables involved existed.

Results: The results showed that psychological resilience (β=-0.09, P<0.05) and meaning in life (β=-0.41, P<0.01) exert a significant and negative direct effect on post-traumatic stress symptoms. The SEM analysis confirmed that the mediating role of meaning in life in the relationship between psychological resilience and post-traumatic stress symptoms was significant (β=-0.15, P<0.01).

Conclusion: Psychological resilience and meaning in life of healthcare workers affected their psychological conditions. Efforts to reduce post-traumatic stress symptoms among healthcare workers may benefit from practices for promoting psychological resilience and meaning in life.

*** Corresponding Author:**
Salman Zarei, PhD.
Address: *Department of Psychology, Faculty of Literature and Humanities, University of Loreslan, Khorramabad, Iran.*
Phone: *+98 (912) 8364266*
E-mail: *salman_zarei@yahoo.com*

1. Introduction

The COVID-19 pandemic is classifiable as a traumatic event of an exceptional magnitude that transcends the range of normal human experience with exposure to the risk of death [1]. Healthcare workers represent the first-line fighters treating patients with COVID-19, and every day, they face a high risk of being infected and, consequently, of spreading the virus to other people [2]. They are obliged to make difficult ethical decisions and function professionally under conditions of fear for themselves and their loved ones [3]. Healthcare workers are thus facing critical situations that increase their risk of suffering from the psychological impact of dealing with several unfavorable conditions, with consequences that might extend from psychological distress to mental health symptoms [4].

As reported in earlier pandemics, including SARS and MERS, working directly with infected patients has been associated with high levels of post-traumatic stress symptoms and worry among healthcare workers [5, 6]. In particular, research by Tan et al. [7] revealed that post-traumatic stress symptoms among healthcare workers facing the COVID-19 pandemic are higher compared to the general population. Similarly, meta-analytic findings have indicated a prevalence of 32.2% posttraumatic stress symptoms among healthcare workers during the COVID-19 pandemic [8]. Therefore, consistent with Dutheil et al. [9], the ongoing pandemic of COVID-19 is highly likely to also promote post-traumatic stress symptoms in healthcare workers.

Post-traumatic stress symptoms are defined as a wide range of stress response symptoms that occur three months up to several years after the traumatic event [10]. Post-traumatic stress symptoms in healthcare workers can negatively affect the quality of life, and cognitive, social, work-related, and physical functioning [11, 12]. However, traumatic experiences do not necessarily lead to the development of psychopathological symptoms. A growing number of studies have suggested that a considerable proportion of healthcare workers show no pathology, despite suffering severe adversity that would be expected to produce serious sequela [13, 14]. Thus, there are protective factors that keep healthcare workers from developing post-traumatic stress symptoms during experiencing traumatic events.

Regarding the critical factors that distinguish people who develop posttraumatic stress symptoms from those who do not, psychological resilience takes the front [15]. Resilience is often defined as the process wherein an individual maintains a relatively stable, healthy level of psychological and physical functioning when confronted with traumatic events [16]. Resilient people are assertive, have good social skills, and have better self-control over their emotions. Less resilient people cannot cope with traumatic situations and develop depression, anxiety, and posttraumatic stress symptoms [17]. A rich body of studies has verified that resilience might help to improve one's well-being and promote recovery from stressful situations [18, 19]. For example, a study on 318 healthcare workers dealing with patients with COVID-19 showed that resilience can be served as a protective factor against posttraumatic stress symptoms [20]. Accordingly, Coco et al. [21] found that psychological resilience can alleviate posttraumatic stress symptoms among a sample of healthcare workers during the COVID-19 pandemic. Furthermore, resilient healthcare workers often have some personality characteristics that moderate the deleterious effects of stress on health outcomes [22, 23].

However, little is still known about the mechanisms underlying the relationship between psychological resilience and posttraumatic stress symptoms. Some pieces of research and theories suggest that the key mechanisms mediating between resilience and the various stresses of traumatic events should be sought in a positive interpretation of the meaning in a life-threatening event, whereas some studies have focused primarily on meaning [24]. The meaning-making theory states that successful meaning-making regarding a traumatic event aids in preserving the meaning in life and overcoming psychological difficulties [25]. People with meaning in life are more hopeful and optimistic than people who see little meaning in their lives [26]. They also show higher degrees of self-compassion, self-efficacy, and resilience [27]. A large number of studies on the importance of meaning in life in the course of responding to traumatic experiences have demonstrated a close association between the meaning in life and a mechanism, by which psychological difficulties are overcome [28, 29]. For example, Schnell and Krampe [30] found that meaning in life is served as a buffer between COVID-19 stress and post-traumatic stress symptoms among healthcare workers. Similarly, Aiena et al. [31] found that meaning in life mediated the relationship between resilience, stressors, and distress in times of crisis.

According to the literature, healthcare workers suffering from post-traumatic stress not only are prone to physical, social, and cognitive malfunctioning but also are more likely to leave their jobs [12]. It is well proved that stress following traumatic experiences is associ-

ated with lower levels of psychological well-being and quality of life in healthcare workers [11]. Apart from its negative impacts on health and wellbeing, post-traumatic stress is associated with increased medical errors and decreased quality of services. Hence, identifying factors that protect healthcare workers against traumatic events, like the COVID-19 pandemic is of high value.

Taken together, increasing evidence has indicated the prevalence rates and predictors of posttraumatic stress symptoms in workers dealing with COVID-19, with most of the above studies stemming from Europe and China. However, in Iran, scarce data on correlates and predictors for post-traumatic stress symptoms in this population of interest are available. Drawing on previous studies and in light of the above concerns, we hypothesized that psychological resilience acts as a resource that preserves the meaning in life among healthcare workers and fosters the meaning-making process, and, finally, will predict post-traumatic stress symptoms significantly. Therefore, in the present study, we aimed to investigate the relationship between psychological resilience and post-traumatic stress symptoms and to examine the mediating role of meaning in life among health workers dealing with the COVID-19 pandemic.

2. Methods

A cross-sectional online study was conducted from 11th April to 27th May 2021 among healthcare workers who were actively working during the COVID-19 pandemic in Tehran. There is no consensus on the sample size for structural equation modeling. However, many researchers recommend 200 participants as the minimum sample size [32]. Therefore, a total of 350 healthcare workers were selected by convenience sampling strategy and 337 (96.28%) of them completed all the questionnaires. The questionnaires were designed online using Porsline software. Then, with the cooperation of the heads of different channels of healthcare workers in WhatsApp and Telegram social networks, the link of the questionnaires was provided to the healthcare workers. All subjects provided informed consent electronically before registration. Only subjects who agreed to participate voluntarily were included in this study, and subjects could quit the process at any time. The following instruments were used to collect the data:

Connor-Davidson Resilience Scale (CD-RISC): The CD- RISC contains 25 items, which are rated on a five-point Likert scale ranging from 0 (not true at all) to 4 (true nearly all the time). Possible scores thus range from 0 to 100, with higher scores corresponding to higher levels of resilience. The CD- RISC included five factors: 1) High competence, 2) Handling negative emotions, 3) Positive attitude to change, 4) Perceived control, and 5) Spiritual influences [33]. The CD-RISC has been validated in a variety of countries and cultures. Several studies have found that exploratory factor analysis supports the 5-factor structure of CD-RISC [34]. Gras et al. [35] reported that the scale had good reliability properties (Cronbach's alpha=0.89; test-retest reliability=0.87). In the present study, the CD-RISC demonstrated good internal consistency with Cronbach's alpha coefficient of 0.91.

Meaning in Life Questionnaire (MLQ): The MLQ consists of 10 items within two subscales, including the presence of meaning and the search for meaning subscales. The respondents rate their degree of agreement with the items on a 7-point scale, ranging from 1 (absolutely untrue) to 7 (absolutely true). The overall score of the questionnaire (rangeed 10-70), wherein higher scores indicate greater levels of meaning in life [36]. The MLQ has good reliability, test-retest stability, stable factor structure, and convergence among informants [37]. In support of construct validity, scores on the MLQ have been found to be positively associated with other measures of meaning [38]. In a study by Seol et al. [28], Cronbach's alpha was 0.89 indicating good scale score reliability. In the present study, the MLQ showed good internal consistency with Cronbach's alpha coefficient of 0.84.

Impact of Event Scale-Revised (IES-R): The IES-R consists of 22 items within three clusters of symptoms: hyperarousal, avoidance, and intrusion. Each item is rated on a 5-point Likert scale ranging from 0 (not at all) to 4 (extremely). The overall score of the questionnaire ranges from 0 to 88 and the higher total score is indicative of the higher level of the impact perceived by the person [39]. Previous research has demonstrated that the IES-R possesses sound psychometric properties [22]. In a study by Tiemensma et al. [40], Cronbach's alpha was 0.83 indicating good scale score reliability. In the present study, the IES-R demonstrated good internal consistency with Cronbach's alpha coefficient of 0.81.

Descriptive statistics were used for socio-demographic variables, including gender, age group, marital status, and education. The normal distribution of numerical data and the correlation between numerical variables were tested using the Kolmogorov–Smirnov and Pearson correlation tests, respectively. Structural Equation Model (SEM) was carried out to examine the mediating role of meaning in life. Data analyses were conducted via SPSS software, v. 23 and AMOS v. 21.

Table 1. Demographic characteristics of the participants (N=337)

Variables	Characteristics	No.(%)
Gender	Male	82(24.3)
	Female	255(75.7)
Age group (y)	25-35	49(14.5)
	36-45	201(59.7)
	46-55	87(25.8)
Marital status	Married	242(71.8)
	Single	72(21.4)
	Not stated	23(6.8)
Education level	B. A	214(63.5)
	M. A	87(25.8)
	Ph. D	36(10.7)
Professional statues	Nurse	197(58.5)
	Doctor	21(6.2)
	Support staff	119(35.3)

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3. Results

The demographic information of participants is presented in Table 1. The Mean±SD age was 38.61±8.09 years, 75.7% of participants were female, 24.3% were male, 71.8% were married, 21.4% were single, 6.2% were doctors, 58.5% were nurses, and 35.3% were support staff.

Descriptive statistics, such as Mean±SD and test for normal distribution of data are presented in Table 2. The results of the Kolmogorov-Smirnov test showed that the distributions of study variables were normal (P>0.05).

The results in Table 3 showed that all relationships were significantly positive at P<0.01. Therefore, based on the significant relationship between the variables, the necessary condition for investigating the mediating role of meaning in life in the relationship between psychological resilience and post-traumatic stress symptoms was fulfilled.

Prior to conducting SEM, it was ensured that its basic assumptions, such as adequacy of the sample size, data distribution normality, and multi-collinearity, were established. The research model of the relationship between psychological resilience and post-traumatic stress

Table 2. Descriptive statistics and test for normal distribution of study variables

Variables	Mean±SD		Skewness	Kurtosis	K-S test	
					Z	Sig
Psychological Resilience	61.07	9.35	0.84	0.93	0.73	0.066
Meaning in Life	34.81	6.09	0.67	0.72	0.089	0.054
Post-Traumatic Stress Symptoms	33.57	4.63	0.77	-0.49	0.081	0.058

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Table 3. Correlation between study variables and collinearity statistics

Variables	Pearson Correlation Coefficient			Collinearity Statistics	
	(1)	(2)	(3)	Tolerance	VIF
(1) Psychological Resilience	1			0.83	5.33
(2) Meaning in Life	0.51**	1		0.59	4.27
(3) Post-Traumatic Stress Symptoms	-0.26**	-0.59**	1	-	-

** P<0.01.

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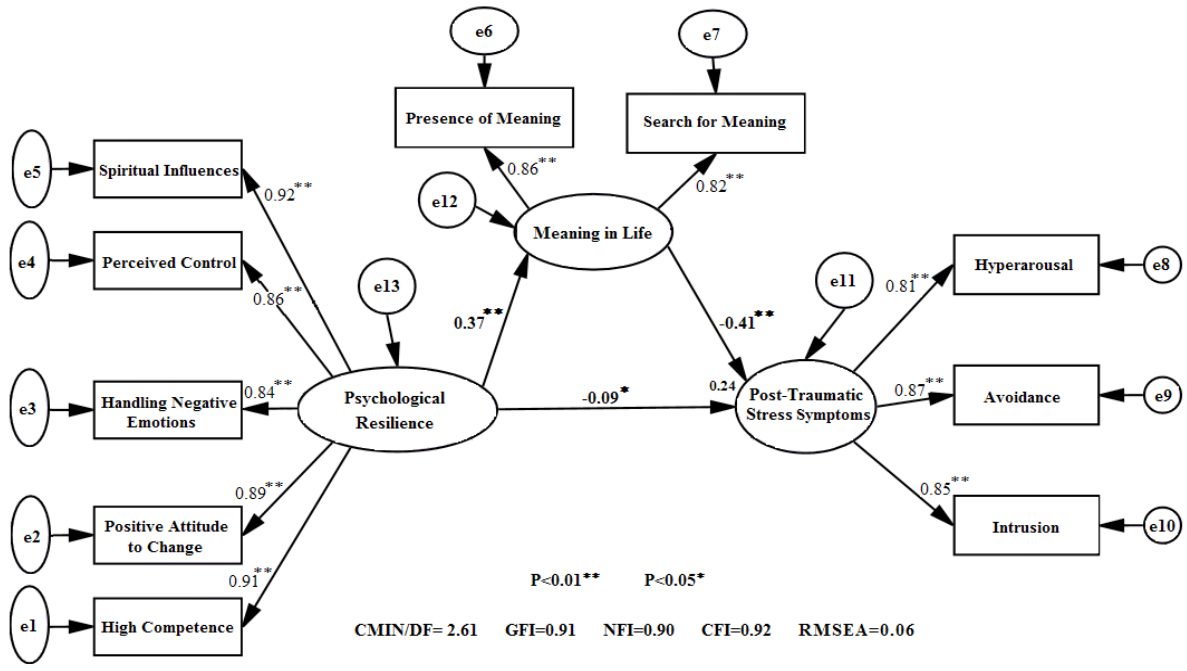

Figure 1. Model of the mediating role of sleep disturbance

symptoms mediated via meaning in life is shown in Figure 1 based on standardized coefficients (β).

As shown in Figure 1, the proposed model had a good fit based on fitness indices. The most commonly used fitness index in the model analysis is Chi-square/degree of freedom (CMIN/DF), which with a value lesser than 3 in the current research model shows a good fit. The goodness of fit index (GFI), the normalized fit index (NFI), and the comparative fit index (CFI) with values higher than 0.90 indicate an acceptable fit to the current data. Also, the root mean square error of approximation (RMSEA) with a value between 0.05 and 0.10 shows an acceptable fit of the model.

The parameters of the direct and indirect relationship measurement in the research model are presented in Table 4. As shown, the direct effect of psychological resilience on meaning in life (β=0.37, critical ration=6.15, P<0.01), and the direct effect of meaning in life on post-traumatic stress symptoms (β=-0.42, critical ratio=7.63, P<0.01), were significant. Moreover, the direct effect of psychological resilience on post-traumatic stress symptoms (β=0.09, critical ration=2.07, P<0.005) was significant. Finally, the result of the bootstrap method for investigating indirect pathway in Table 4 shows that the upper (-0.13) and lower (-0.06) limits of the indirect relationship of psychological resilience and post-traumatic stress symptoms via meaning in life did not include zero, which indicates a significant indirect pathway (β=-0.15, P<0.01).

4. Discussion

The COVID-19 pandemic, which has deeply affected the world, has caused the death of thousands of people, and with the onset of the pandemic, healthcare workers have had to work at a very busy pace. In the current study, the mediating role of meaning in life in the relationship between psychological resilience and post-traumatic stress symptoms was investigated. The results

Table 4. Summary of the direct, indirect, and total path coefficients

Variables	Paths	Direct Effect	Indirect Effect	Total Effect	Explained Variance
On Meaning in Life From	Psychological Resilience	0.37**	-	0.37**	-
On Post-Traumatic Stress Symptoms From	Psychological Resilience	-0.09*	-0.15**	-0.24**	0.24
	Meaning in Life	-0.41**	-	-0.41**	

P<0.01; ** P<0.05

showed that psychological resilience and post-traumatic had a significant negative effect on post-traumatic stress symptoms in healthcare workers indicating that individuals with high resilience had fewer post-traumatic stress symptoms even if they experienced traumatic events, which is consistent with the results of previous research [19, 23]. Accordingly, Coco et al. [20] and Bogaerts et al. [21] reported that problematic smartphone use is an important protective factor for post-traumatic stress symptoms among healthcare workers working during the COVID-19 pandemic.

Our findings are also in line with those of Arabaci et al. [18] who showed that resilience might help to improve one's well-being and promote recovery from stressful situations. Resilience is an active and dynamic process, through which a person adaptively overcomes a stressful or difficult situation or recovers swiftly from a period of the traumatic event [16]. In line with this, an explorative prospective study reported that resilience is an active reaction to an adverse situation that enables individuals to adapt to the circumstances they encounter [22]. Another possible explanation is that resilient people have positive features, like assertiveness, good social skills, and high self-control that are positively linked to enhanced mental health; subsequently, they can cope with traumatic situations and decrease the damaging effects of post-traumatic stress symptoms [17].

The findings showed that psychological resilience through meaning in life had a significant effect on post-traumatic stress symptoms. This finding is in line with the results of previous studies reporting meaning in life as a mediator [30, 31]. These results support the meaning-making model [25] suggesting that after a traumatic experience, which is an extremely severe stressor, post-traumatic psychological outcomes can be improved as a consequence of a successful meaning restructuring. Furthermore, these are consistent with previous findings that successful meaning-making can reduce post-traumatic stress symptoms in healthcare workers exposed to pandemics [26]. To explain the results, one hypothesis is that meaning in life can be considered as psychological flexibility and a core factor of resilient adjustment for individuals with traumatic events; some researchers discuss meaning in life as one of the factors consisting of resilience [28].

Another plausible explanation for the mediating role of meaning in life is that under the generic cognitive model, stressful events are appraised with regard to a person's goals, identity, and understanding of their lives. If a stressor conflicts with or disrupts one of these central aspects, it may be particularly destabilizing or distressing, disorientation that often causes trauma. Cognitive processing of trauma makes the trauma consistent with established meaning in life and cognitive schemas. If a person can cope with stress through meaning-making, framing it in a way that integrates into his understanding of himself and the world, the stressor may be less risky [27]. Thus, meaning in life seems an especially useful tool for those who experience stressors that they have limited direct control over, similar to healthcare workers. Orienting to stressors adaptively may be important in resisting traumatic events, particularly for those vulnerable or with low direct control over their circumstances [24].

Several limitations should be noted when interpreting this study's findings. The first limitation was its cross-sectional design: the pandemic has not yet finished and its influence on mental health cannot be reflected in this research; thus, it would also be advisable to carry out a longitudinal study that evaluates the evolution over time of the symptoms assessed in this work. Second, all measures were self-report, which might have influenced the validity of the results. Future studies could employ multiple methods (e.g., standardized interview and observation) to collect data, thereby providing more detailed information and reducing potential common method bias. Third, all healthcare workers participating in this study were recruited from public hospitals in Tehran, Iran. The generalizability of the study results to a broader healthcare workers population requires confirmation by further research.

5. Conclusion

This study represents the first attempt to explore meaning in life as a mediator in the relationship between psychological resilience and post-traumatic stress symptoms among Iranian healthcare workers. Limitations aside, the present study provided some theoretical and practical implications. Our finding reveals that both psychological resilience and meaning in life exhibited negative associations with post-traumatic stress symptoms among Iranian healthcare workers and psychological resilience exerts effects on post-traumatic stress symptoms indirectly through the mediating role of meaning in life. It could therefore be implied that to reduce the mental damage of COVID-19 among healthcare workers, mental health intervention teams can be organized, brochures can be prepared, and some mental services, including counseling and psychotherapy can be provided to healthcare workers and their families. Also, it is advisable that stress management programs and group programs aiming at communicating, talking, sharing experiences, and expressing fears and hopes at the end of a working day

can be created in order to provide individual mental support for healthcare workers in the COVID-19 units.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Ethics Committee of Islamic Azad University, Tehran Medical Branch (Code: IR.IAU.TMU.REC.1400.305). All ethical principles were considered in this article. The participants were informed about the purpose of the research and its implementation stages. They were also assured about the confidentiality of their information and were free to leave the study whenever they wished and if desired, the research results would be available to them.

Funding

This research did not receive any grant from funding agencies in the public, commercial, or non-profit sectors.

Authors' contributions

All authors equally contributed to preparing this article.

Conflict of interest

The author declared no conflicts of interests.

References

[1] Xiao X, Zhu X, Fu S, Hu Y, Li X, Xiao J. Psychological impact of healthcare workers in China during COVID-19 pneumonia epidemic: A multi-center cross-sectional survey investigation. Journal of Affective Disorders. 2020; 274:405-10. [DOI:10.1016/j.jad.2020.05.081] [PMID] [PMCID]

[2] Zhang W, Wang K, Yin L, Zhao W, Xue Q, Peng M, et al. Mental health and psychosocial problems of medical health workers during the COVID-19 epidemic in China. Psychotherapy and Psychosomatics. 2020; 89(4):242-50. [DOI:10.1159/000507639] [PMID] [PMCID]

[3] Wong AH, Pacella-LaBarbara ML, Ray JM, Ranney ML, Chang BP. Healing the healer: Protecting emergency health care workers' mental health during COVID-19. Annals of Emergency Medicine. 2020; 76(4):379-84. [DOI:10.1016/j.annemergmed.2020.04.041] [PMID] [PMCID]

[4] Carmassi C, Cerveri G, Bui E, Gesi C, Dell'Osso L. Defining effective strategies to prevent post-traumatic stress in healthcare emergency workers facing the COVID-19 pandemic in Italy. CNS Spectrums. 2021; 26(6):553-4. [DOI:10.1017/S1092852920001637] [PMID] [PMCID]

[5] Lee SM, Kang WS, Cho AR, Kim T, Park JK. Psychological impact of the 2015 MERS outbreak on hospital workers and quarantined hemodialysis patients. Comprehensive Psychiatry. 2018; 87:123-7. [DOI:10.1016/j.comppsych.2018.10.003] [PMID] [PMCID]

[6] Jung H, Jung SY, Lee MH, Kim MS. Assessing the presence of post-traumatic stress and turnover intention among nurses post-middle east respiratory syndrome outbreak: The importance of supervisor support. Workplace Health & Safety. 2020; 68(7):337-45. [DOI:10.1177/2165079919897693] [PMID] [PMCID]

[7] Tan BYQ, Chew NWS, Lee GKH, Jing M, Goh Y, Yeo LLL, et al. Psychological impact of the COVID-19 pandemic on health care workers in Singapore. Annals of Internal Medicine. 2020; 173:317-20. [DOI:10.7326/M20-1083] [PMID] [PMCID]

[8] Rogers JP, Chesney E, Oliver D, Pollak TA, McGuire Ph, Fusar-Poli P, et al. Psychiatric and neuropsychiatric presentations associated with severe coronavirus infections: A systematic review and meta-analysis with comparison to the COVID-19 pandemic. The Lancet Psychiatry. 2020; 7(7):611-27. [DOI:10.1016/S2215-0366(20)30203-0]

[9] Dutheil F, Mondillon L, Navel V. PTSD as the second tsunami of the SARS-Cov-2 pandemic. Psychological Medicine. 2021; 51(10):1773-4. [DOI:10.1017/S0033291720001336] [PMID] [PMCID]

[10] American Psychiatric Association. Diagnostic and Statistical Manual of mental disorders (DSM-5). Washington, DC: American Psychiatric Association Publishing; 2013. [DOI:10.1176/appi.books.9780890425596]

[11] Sekowski M, Gambin M, Hansen K, Holas P, Hyniewska S, Wyszomirska J, et al. Risk of developing post-traumatic stress disorder in severe COVID-19 survivors, their families and frontline healthcare workers: What should mental health specialists prepare for? Frontiers in Psychiatry. 2021; 12:562899. [DOI:10.3389/fpsyt.2021.562899] [PMID] [PMCID]

[12] Greenberg N, Docherty M, Gnanapragasam S, Wessely S. Managing mental health challenges faced by healthcare workers during COVID-19 pandemic. BMJ. 2020; 368:m1211. [DOI:10.1136/bmj.m1211] [PMID]

[13] Yuan K, Gong YM, Liu L, Sun YK, Tian SS, Wang YJ, et al. Prevalence of posttraumatic stress disorder after infectious disease pandemics in the twenty-first century, including COVID-19: A meta-analysis and systematic review. Molecular Psychiatry. 2021; 26(9):4982-98. [DOI:10.1038/s41380-021-01036-x] [PMID] [PMCID]

[14] Li X, Li Sh, Xiang M, Fang Y, Qian K, Xu J, et al. The prevalence and risk factors of PTSD symptoms among medical assistance workers during the COVID-19 pandemic. Journal of Psychosomatic Research. 2020; 139:110270. [DOI:10.1016/j.jpsychores.2020.110270] [PMID] [PMCID]

[15] Xi Y, Yu H, Yao Y, Peng K, Wang Y, Chen R. Post-traumatic stress disorder and the role of resilience, social support, anxiety and depression after the Jiuzhaigou earthquake: A structural equation model. Asian Journal of Psychiatry. 2020; 49:101958. [DOI:10.1016/j.ajp.2020.101958] [PMID]

[16] Bonanno GA, Westphal M, Mancini AD. Resilience to loss and potential trauma. Annual Review of Clinical Psychology. 2011; 7:511-35. [DOI:10.1146/annurev-clinpsy-032210-104526] [PMID]

[17] Zang Y, Gallagher T, McLean CP, Tannahill HS, Yarvis JS, Foa EB, et al. The impact of social support, unit cohesion, and trait resilience on PTSD in treatment-seeking military personnel with PTSD: The role of posttraumatic cognitions. Journal of Psychiatric Research. 2017; 86:18-25. [DOI:10.1016/j.jpsychires.2016.11.005] [PMID]

[18] Arabaci LB, Dikec G, Buyukbayram A, Uzunoglu G, Ozan E. Traumatic growth and psychological resilience status of female victims of violence inpatients in a district psychiatric hospital. Archives of Psychiatric Nursing. 2018; 32(4):568-73. [DOI:10.1016/j.apnu.2018.03.017] [PMID]

[19] Polusny MA, Erbes CR, Kramer MD, Thuras P, DeGarmo D, Koffel E, et al. Resilience and posttraumatic stress disorder symptoms in national guard soldiers deployed to Iraq: A prospective study of latent class trajectories and their predictors. Journal of Traumatic Stress. 2017; 30(4):351-61. [DOI:10.1002/jts.22199] [PMID]

[20] Bogaerts S, van Woerkom M, Erbaş Y, De Caluwé E, Garofalo C, Frowijn I, et al. Associations between resilience, psychological well-being, work-related stress and COVID-19 fear in forensic healthcare workers using a network analysis. Frontiers in Psychiatry. 2021; 12:678895. [DOI:10.3389/fpsyt.2021.678895] [PMID] [PMCID]

[21] Coco M, Guerrera CS, Santisi G, Riggio F, Grasso R, Di Corrado D, et al. psychosocial impact and role of resilience on healthcare workers during COVID-19 pandemic. Sustainability. 2021; 13(13):7096. [DOI:10.3390/su13137096]

[22] Kahve AC, Aydemir MC, Yuksel RN, Kaya H, Bicakci EU, Goka E. Evaluating the relationship between post traumatic stress disorder symptoms and psychological resilience in a sample of Turkoman refugees in Turkey. Journal of Immigrant and Minority Health. 2021; 23(3):434-43. [DOI:10.1007/s10903-020-01122-2] [PMID]

[23] Baskin RG, Bartlett R. Healthcare worker resilience during the COVID-19 pandemic: An integrative review. Journal of Nursing Management. 2021; 29(8):2329-42. [DOI:10.1111/jonm.13395] [PMID] [PMCID]

[24] Boullion GQ, Pavlacic JM, Schulenberg SE, Buchanan EM, Steger MF. Meaning, social support, and resilience as predictors of posttraumatic growth: A study of the Louisiana flooding of August 2016. American Journal of Orthopsychiatry. 2020; 90(5):578-85. [DOI:10.1037/ort0000464] [PMID]

[25] Park CL, Chmielewski J, Blank TO. Post-traumatic growth: Finding positive meaning in cancer survivorship moderates the impact of intrusive thoughts on adjustment in younger adults. Psycho-Oncology. 2010; 19(11):1139-47. [DOI:10.1002/pon.1680] [PMID]

[26] Martela F, Steger MF. The three meanings of meaning in life: Distinguishing coherence, purpose, and significance. The Journal of Positive Psychology. 2016; 11(5):531-45. [DOI:10.1080/17439760.2015.1137623]

[27] Vötter B, Schnell T. Cross-lagged analyses between life meaning, self-compassion, and subjective well-being among gifted adults. Mindfulness. 2019; 10(7):1294-303. [DOI:10.1007/s12671-018-1078-x]

[28] Seol JH, Park Y, Choi J, Sohn YW. The mediating role of meaning in life in the effects of calling on posttraumatic stress symptoms and growth: A longitudinal study of navy soldiers deployed to the Gulf of Aden. Frontiers in Psychology. 2021; 11:599109. [DOI:10.3389/fpsyg.2020.599109] [PMID] [PMCID]

[29] Dursun P, Steger MF, Bentele Ch, Schulenberg SE. Meaning and posttraumatic growth among survivors of the September 2013 Colorado floods. Journal of Clinical Psychology. 2016; 72(12):1247-63. [DOI:10.1002/jclp.22344] [PMID]

[30] Schnell T, Krampe H. Meaning in life and self-control buffer stress in times of COVID-19: Moderating and mediating effects with regard to mental distress. Frontiers in Psychiatry. 2020; 11:582352. [DOI:10.3389/fpsyt.2020.582352] [PMID] [PMCID]

[31] Aiena BJ, Buchanan EM, Smith CV, Schulenberg SE. Meaning, resilience, and traumatic stress after the Deepwater Horizon oil spill: A study of Mississippi coastal residents seeking mental health services. Journal of Clinical Psychology. 2016; 72(12):1264-78. [DOI:10.1002/jclp.22232] [PMID]

[32] Klein RB. Principles and practices of structural equation modeling. (3rd ed). New York: Guilford Press; 2011. https://www.google.com/books/edition/Principles_and_?hl=en

[33] Connor KM, Davidson JRT. Development of a new resilience scale: The Connor-Davidson Resilience Scale (CD-RISC). Depression and Anxiety. 2003; 18(2):76-82. [DOI:10.1002/da.10113] [PMID]

[34] Manzano-García G, Ayala Calvo JC. Psychometric properties of Connor-Davidson Resilience Scale in a Spanish sample of entrepreneurs. Psicothema. 2013; 25(2):245-51. [DOI:10.7334/psicothema2012.183] [PMID]

[35] Gras ME, Font-Mayolas S, Baltasar A, Patiño J, Sullman MJM, Planes M. The Connor-Davidson Resilience Scale (CD-RISC) amongst young Spanish adults. Clínica y Salud. 2019; 30(2):73-9. [DOI:10.5093/clysa2019a11]

[36] Brandstatter M, Baumann U, Borasio GD, Fegg MJ. Systematic review of meaning in life assessment instruments. Psycho-Oncology. 2012; 21(10):1034-52. [DOI:10.1002/pon.2113] [PMID]

[37] Steger MF, Frazier P, Oishi S, Kaler M. The meaning in life questionnaire: Assessing the presence of and search for meaning in life. Journal of Counseling Psychology. 2006; 53(1):80-93. [DOI:10.1037/0022-0167.53.1.80]

[38] Rose LM, Zask A, Burton LJ. Psychometric properties of the Meaning in Life Questionnaire (MLQ) in a sample of Australian adolescents. International Journal of Adolescence and Youth. 2017; 22(1):68-77. [DOI:10.1080/02673843.2015.1124791]

[39] Weiss DS, Marmar CR. The Impact of Event Scale-Revised. (IES-R, IES) [Database record]. APA PsycTests; 1997. [DOI:10.1037/t12199-000]

[40] Tiemensma J, Depaoli S, Winter SD, Felt JM, Rus HM, Arroyo AC. The performance of the IES-R for Latinos and non-Latinos: Assessing measurement invariance. PLoS One. 2018; 13(4):e0195229. [DOI:10.1371/journal.pone.0195229] [PMID] [PMCID]