

Research Paper

Coping Strategies and Mental Health Symptoms in Emergency Nurses During the COVID-19 Pandemic



Ziba Bakhtiari¹ , Farhad Ramezani-Badr^{1*} , Kourosh Amini²

1. Department of Critical Care and Emergency Nursing, School of Nursing and Midwifery, Zanjan University of Medical Sciences, Zanjan, Iran.

2. Department of Psychiatric Nursing, School of Nursing and Midwifery, Zanjan University of Medical Sciences, Zanjan, Iran.



Citation Bakhtiari Z, Ramezani-Badr F, Amini K. Coping Strategies and Mental Health Symptoms in Emergency Nurses During the COVID-19 Pandemic. *Health in Emergencies and Disasters Quarterly*. 2026; 11(4):351-362. <http://dx.doi.org/10.32598/hdq.2026.678.1>

doi <http://dx.doi.org/10.32598/hdq.2026.678.1>

Article info:

Received: 27 Feb 2025

Revised: 27 Sep 2025

Accepted: 15 Oct 2025

Keywords:

Mental health, Coping strategies, Emergency nursing, Emergency services, Pandemics, COVID-19

ABSTRACT

Background: Appropriate coping strategies employed by emergency nurses during a pandemic can help reduce their psychiatric issues and positively impact the quality of patient care. This study aimed to determine the relationship between different coping strategies of emergency nurses and their mental health symptoms during the COVID-19 pandemic.

Materials and Methods: This descriptive-correlational study included 125 emergency nurses in three teaching hospitals in Iran. Participants were selected using stratified random sampling. Data collection tools included a questionnaire on nurses' demographic and occupational characteristics, the perceived stress scale, the Hamilton anxiety rating scale, the Hamilton depression rating scale, and the ways of coping questionnaire. Statistical significance was set at $P < 0.05$.

Results: In this study, 97.5%, 66.4%, and 60.8% of the nurses experienced mild-to-severe stress, anxiety, and depression, respectively. Nurses primarily used emotion-oriented strategies to manage their mental health symptoms. A statistically significant relationship existed between mental health symptoms and certain coping strategies ($P < 0.05$). Increased stress, anxiety, and depression led nurses to adopt certain negative coping strategies, especially escape-avoidance, in addition to adopting positive coping strategies.

Conclusion: Preventive interventions are crucial for emergency nurses, particularly during natural disasters, to reduce stress, anxiety, and depression by promoting effective coping strategies and mitigating negative ones, given the prevalence of mental health symptoms.

* Corresponding Author:

Farhad Ramezani-Badr, Associate Professor.

Address: Department of Critical Care and Emergency Nursing, School of Nursing and Midwifery, Zanjan University of Medical Sciences, Zanjan, Iran.

E-mail: Ramezanibadr@gmail.com



Copyright © 2026 The Author(s);
This is an open access article distributed under the terms of the Creative Commons Attribution License (CC-BY-NC 4.0: <https://creativecommons.org/licenses/by-nc/4.0/legalcode.en>), which permits use, distribution, and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.

Introduction

Patients typically first visit the emergency department (ED) upon entering the hospital, where nurses, as the largest professional group, play a crucial role. Their presence is essential for daily practices in this department, including triage, patient assessment, and care, especially following a disastrous pandemic [1-5].

Nursing is a stressful profession that often involves significant physical and mental strain, a situation exacerbated during disasters, such as the COVID-19 pandemic, when work pressures intensify [6, 7]. High stress, anxiety, depression, job burnout, and post-traumatic stress disorder (PTSD) were among the symptoms of nurses' mental health during the pandemic [8-12]. Studies indicated that emergency nurses in Iran experienced a high prevalence of stress, anxiety, depression, and burnout during the COVID-19 pandemic [13-16].

Mental health encompasses emotional, psychological, and social well-being, influencing thoughts, feelings, and performance. It aids in stress management, communication, and healthy decision-making [17]. Consequently, the high prevalence of psychiatric issues and ongoing job burnout among nurses can result in poor job performance, organizational inefficiency, high turnover rates, decreased job satisfaction, and increased workplace errors [14, 18, 19]. Therefore, effective methods to prevent psychiatric problems and improve the mental health of nurses should be prioritized [20]. A recent systematic review identified common risk factors for psychiatric issues among healthcare workers during disasters, including poor communication, inadequate social support, ineffective coping strategies, and insufficient training [21].

Emergency nurses in disaster situations should be able to use effective coping methods to maintain their mental health consciously. Coping strategies, which are cognitive and behavioral efforts, help alleviate the stress of challenging situations. According to Lazarus and Folkman's transactional theory of stress and coping, there are two primary strategies: Problem-oriented and emotion-oriented. Problem-oriented coping strategies, such as planful problem-solving and confrontive coping, involve directly addressing the stressor to change or remove it. In contrast, emotion-oriented coping strategies, such as positive reappraisal, distancing, escape-avoidance, and self-control, focus on managing the emotional impacts of the stressful event. The primary function of emotion-oriented coping strategies is the emotional regulation and management of the stressful factor to maintain the

individual's emotional balance. It is worth noting that the social support-seeking coping strategy is a subscale of both [22, 23].

Studies indicate that during the COVID-19 pandemic, nurses employed a range of coping strategies—both problem- and emotion-oriented—to enhance their mental health, with mixed outcomes. These strategies included planful problem-solving, positive reappraisal, seeking social support, accepting responsibility, family support, positive thinking, maintaining a positive self-attitude, religious coping, adequate rest and nutrition, limiting media exposure, sharing pandemic information, practicing distancing, altruism, commitment to social and professional responsibilities, adhering to protective measures, all aimed at reducing stress and anxiety [19, 24-26].

While numerous studies in various contexts have explored the mental health and coping strategies of emergency nurses, few have specifically investigated the interplay between stress, anxiety, and depression as the main components of mental health and different coping strategies. Understanding the mental health status and coping strategies of emergency nurses in disaster situations and different contexts is crucial for supporting their well-being. Identifying the factors related to mental health and exploring the links between symptoms, such as stress, anxiety, and depression, and various coping strategies will offer valuable insights for health sector decision-makers. This knowledge can inform strategies to prevent mental health issues among nurses, enabling them to respond more effectively to future disasters [11, 12].

Previous studies have shown varying results regarding the relationship between nurses' mental health and their coping strategies during the COVID-19 pandemic. While increased psychological issues—such as emotional stress, PTSD, anxiety, depression, and fatigue—often lead nurses to adopt more negative coping strategies, such as avoidance, some research has suggested that these negative styles, such as suppressing unpleasant feelings and thoughts, can also effectively reduce psychological distress [27-29].

Understanding the primary coping strategies used by emergency nurses during COVID-19, given the prevalence of mental health issues in this population and the scarcity of data on their coping strategies in the context of the ED in Iran, can inform the selection of optimal strategies for future pandemics and disasters. In addition, determining the coping strategies most used by nurses as their mental health status changes can help decision-makers develop more effective interventions to support

nurses during disasters. This study aimed to determine the relationship between the coping strategies of emergency nurses and their mental health symptoms during the COVID-19 pandemic.

Materials and Methods

Research design, participants, and setting

This descriptive-correlational study was conducted among nurses working in the EDs of three teaching hospitals affiliated with [Zanjan University of Medical Sciences \(ZUMS\)](#) in Iran from January 2022 to July 2022. The sample size was calculated to be 125 participants using the formula [30], with $r = 0.25$ [29], $\alpha = 0.05$, and $\beta = 0.1$. Participants were selected using stratified random sampling. The sample size in each hospital was calculated as a proportion of the total number of nurses working in the ED of the teaching hospitals. All teaching hospitals affiliated with [ZUMS](#), excluding the psychiatric hospital, were included in the study. The inclusion criteria comprised nurses with over six months of experience in the EDs and those holding a bachelor's or master's degree in nursing. The exclusion criteria included the existence of known disorders in nurses' mental health, death of nurses' relatives, and exposure to other stressful situations except for COVID-19, six months before data collection, according to nurses' self-conviction.

Questionnaires

The study utilized a questionnaire divided into five sections. The first section collected demographic and occupational information about nurses, including age, gender, work experience, employment status, and experience caring for COVID-19 patients. The second section evaluated perceived stress using the perceived stress scale (PSS-14), the third assessed anxiety using the Hamilton anxiety rating scale (HAM-A), the fourth measured depression using the Hamilton depression rating scale (HAM-D), and the final section examined coping strategies using the ways of coping questionnaire (WCQ).

The PSS-14, a 14-item scale, was used to assess general perceived stress among nurses. Each item was scored on a scale of 0 to 4 with a 5-point Likert scale, including never (0), rarely (1), sometimes (2), fairly often (3), and very often (4). In this questionnaire, questions 4, 5, 6, 7, 9, 10, and 13 were reverse-scored. The total score ranges from 0 to 56. Since the original PSS-14 did not specify a cut-off point [31], we adopted the cut-off points from Şanlıtürk (2021), which indicated mild stress for scores

of 11–26, moderate stress for 27–41, and high stress for 42–56 [32]. In other words, Şanlıtürk (2021) defined stress severity across four levels, from no stress to severe stress, using quartiles as cut-off points. In Cohen's study, Cronbach's α for the 14-item version was reported as 0.86 [31]. This questionnaire has been psychometrically tested in different societies and has good validity and reliability [33].

The HAM-A scale consists of 14 items rated on a 5-point Likert scale to assess both psychic and somatic anxiety. A score of zero indicates no anxiety, one indicates mild anxiety, two indicates moderate anxiety, three indicates severe anxiety, and four indicates very intense anxiety. The total score ranges from 0 to 56. A score of seven or less signifies no to minimal anxiety, 8–14 indicates mild anxiety, 15–23 indicates moderate anxiety, and 24 or more indicates severe anxiety [34, 35].

The 17-item HAM-D uses a three- to five-point scale to assess the severity of each item, with scores ranging from 0-2, 0-3, and 0-4. A score of 0-7 indicates no depression, 8-16 indicates mild depression, 17-23 indicates moderate depression, and a score above 24 indicates severe depression, with a maximum total of 52 points. The questionnaire evaluates various factors, including depressed mood, guilt, suicide, insomnia (early, middle, and late), work and activity, psychomotor slowness, restlessness, psychological and physical anxiety, general physical symptoms, genital symptoms, hypochondriasis, weight loss, and vision issues [36, 37]. Both HAM-A and HAM-D have demonstrated strong reliability and validity across diverse populations [38, 39].

The WCQ consists of eight scales and 50 items out of 66, assessing various behavioral and cognitive coping strategies. The confrontative coping (six items) and planful problem-solving scales (six items) are problem-oriented, while the distancing (six items), self-controlling (seven items), accepting responsibility (four items), escape-avoidance behaviors (eight items), and positive reappraisal (seven items) scales are emotion-oriented. The seeking social support scale (six items) incorporates both orientations. This questionnaire employs a four-point Likert scale with scores of 0 (not used), 1 (used to some extent), 2 (used quite a bit), and 3 (used a great deal). The subscale scores are presented as raw scores, reflecting individuals' use of each coping strategy, and relative scores, which indicate the proportion of each strategy used compared to others, expressed as a percentage or a range from 0 to 100. A higher relative score indicates greater reliance on that coping strategy.

To calculate the relative score of each subscale, the following formula was used: First, each participant's raw score for each subscale was divided by the number of items in that subscale, and the resulting values across all subscales were summed. Finally, the number obtained in each subscale was divided by the sum of the calculated numbers of all subscales and multiplied by 100. This questionnaire lacks a mean total score [23, 40-42]. The original version of the WCQ demonstrated acceptable internal consistency reliability ($\alpha = 0.61-0.79$) [42]. WCQ had good validity and reliability in different studies [43].

The reliability of the PSS-14 and WCQ questionnaires was assessed using Cronbach's α coefficient, given their structure, without a pilot study. Cronbach's α coefficients for the PSS-14 and WCQ questionnaires were 0.76 and 0.92, respectively. In a pilot study, inter-rater reliability for the HAM-A and HAM-D was assessed by two researchers who independently interviewed 10 participants and completed the questionnaires. The Pearson correlation test was then applied to compare the mean scores of the two evaluators, yielding reliability coefficients of 0.8 for HAM-A and 0.85 for HAM-D. Ten participants from this pilot study were excluded from the main study. Two independent translators used the forward-backward method to translate the study's instruments between English and Persian, ensuring compatibility between the questionnaire versions.

Data collection

Nurses who met the inclusion criteria were given the demographic and occupational questionnaires, PSS-14, and WCQ to complete during their shifts. Each nurse took approximately 15-20 minutes to complete the questionnaires. Anxiety and depression were assessed via 20-30 minute interviews using the HAM-A and HAM-D scales in a quiet hospital room. Interviews were conducted by an experienced nurse with a PhD and a master's degree in psychiatric nursing.

Data analysis

Descriptive statistics, such as Mean $\pm$ SD for continuous variables and frequencies and percentages for categorical variables, were used for data analysis. The Kolmogorov-Smirnov test indicated that the main variables followed a normal distribution, which permitted the application of inferential statistics, specifically parametric tests, such as Pearson's correlation coefficient, independent-samples t-test, and one-way analysis of variance (ANOVA). Pearson's correlation coefficient evaluated the relationship between nurses' demographic and occupational

variables and their mean scores on the mental health and coping strategies subscales. An independent-samples t-test and one-way ANOVA compared the mean scores of mental health and coping strategies across qualitative demographic and occupational variables. A significance level of $P < 0.05$ was adopted for all tests. Data were analyzed using the SPSS software, version 24.

Results

In this study, the average age of nurses was 29.98 ± 5.20 years, and their average work experience was 6.26 ± 4.49 years. Most were female (72.8%) and married (59.2%). Most held a bachelor's degree (90.4%) and had temporary employment status (62.4%). Additionally, 76% worked in general emergencies. Notably, 76% had a history of COVID-19 infection, and 91.2% had provided direct care to COVID-19 patients. Furthermore, 56.8% expressed dissatisfaction with their jobs (Table 1).

The findings related to the mental health of nurses depicted that 97.5%, 66.4%, and 60.8% of nurses experienced mild to severe levels of stress, anxiety, and depression, respectively (Table 2).

In our study, the highest mean raw scores for coping strategies used by nurses were for positive reappraisal (11.07 ± 3.32) and self-control (10.32 ± 2.91), which are considered part of emotion-oriented coping strategies. The relative scores for coping strategies showed that nurses used positive reappraisal, seeking social support, planful problem-solving, and self-control more than other strategies, including accepting responsibility, distancing, escape-avoidance, and confrontational coping, respectively (Table 3).

A significant relationship existed between mental health symptoms and certain coping strategies ($P < 0.05$). The results showed a weak positive relationship between stress and coping strategies of confrontational coping, distancing, and accepting responsibility, while a moderate positive relationship was observed between stress and escape-avoidance ($P < 0.05$). Anxiety was also associated with a weak positive correlation with responsibility acceptance and escape-avoidance, and a weak negative correlation with social support seeking ($P < 0.05$). In addition, there was a weak negative relationship between depression and seeking social support, and a weak positive correlation between depression and escape-avoidance ($P < 0.05$).

Table 4 summarizes the relationship between coping strategies and mental health.

Table 1. Sociodemographic and occupational characteristics of nurses (n=125)

Variables		No. (%) / Mean $\pm$ SD
Gender	Female	91(72.8)
	Male	34(27.2)
Marital status	Single	51(40.8)
	Married	74(59.2)
Number of children	Without children	91(72.8)
	A child	22(17.6)
	Two children	12(9.6)
Education level	Bachelors	113(90.4)
	Masters	12(9.6)
Employment status	Permanent employment	78(62.4)
	Temporary employment	47(37.6)
Job Satisfaction	Yes	54(43.2)
	No	71(56.8)
Type of emergency department	General emergency	95(76)
	Respiratory emergency	20(16)
	Pediatric emergency	5(4)
	Gynecological emergency	5(4)
History of being infected with COVID-19	Yes	95(76)
	No	30(24)
History of caring for patients with COVID-19	Yes	114(91.2)
	No	11(8.8)
Age (y)		29.98 $\pm$ 5.2
Nursing work experience (y)		6.26 $\pm$ 4.49

Note: Percentages may not sum up to 100% due to rounding.

Discussion

In our study, more than 60% of emergency nurses had mental health symptoms, including mild to severe stress, anxiety, and depression, during the COVID-19 pandemic. These results indicate the poor mental health status of emergency nurses in our study. Some studies, such as those conducted in China, Ethiopia, and Italy on the mental health of emergency nurses during the COVID-19 pandemic, reported symptom prevalence rates consistent with our findings [8, 44, 45]. Studies in Iran and Turkey

found that the prevalence of stress, anxiety, and depression among frontline nurses was higher than in our study [10, 15, 16, 46]. In contrast, studies in China and Turkey showed lower prevalence rates [11, 12]. However, some systematic reviews and meta-analyses, such as Al Maqbali et al. (2021) and Varghese et al. (2021), have reported a lower prevalence of mental health symptoms in nurses than found in our study [47, 48]. The studies included in these systematic reviews and meta-analyses were primarily conducted in China. The rates of mental health symptoms among nurses varied across studies due

Table 2. Mental health status of nurses, including stress, anxiety and depression (n=125)

Variables		No. (%)	Mean±SD
Stress	No stress (0-10)	3(2.5)	24.78±6.34
	Mild stress (11-26)	65(53.3)	
	Moderate stress (27-41)	53(43.4)	
	Severe stress (42-56)	1(0.8)	
Anxiety	No anxiety/minimal anxiety (≤7)	42(33.6)	13.24±10.5
	Mild anxiety (8–14)	37(29.6)	
	Moderate anxiety (15–23)	23(18.4)	
	Severe anxiety (≥24)	23(18.4)	
Depression	No depression (0-7)	49(39.2)	12.73±9.67
	Mild depression (8-16)	38(30.4)	
	Moderate depression (17-23)	14(11.2)	
	Severe depression (≥24)	24(19.2)	

to sociodemographic, occupational, and organizational factors, as well as the timing of the study during the pandemic [10, 15, 44, 49].

This study found that nurses primarily employed positive coping strategies for their mental health issues, including positive reappraisal, seeking social support, planful problem-solving, and self-control. They tailored their coping methods based on their experiences and reevaluation of stressful situations. To mitigate the emotional impact of stress, nurses employed self-control techniques, such as mentally reviewing their actions before executing them, which served as a positive coping strategy. Conversely, not expressing their feelings represented a negative approach. The nurses employed various problem-oriented coping strategies, such as identifying stressors, formulating comprehensive solutions, consulting with colleagues and psychologists, and finding empathy and solidarity with others. However, it appears that the stress resulting from pandemic conditions is perceived by nurses as largely unchangeable. According to Folkman and Lazarus's theory, when a situation is deemed unchangeable and highly uncontrollable, individuals tend to favor emotion-oriented coping strategies. Conversely, if the situation is viewed as changeable, problem-oriented approaches are preferred [23]. The pandemic's characteristics and the interplay of nurses' coping strategies with contextual and sociocultural vari-

ables [19, 50] indicate that, despite findings from various studies across different countries and pandemic phases showing a greater prevalence of emotion-oriented coping strategies over problem-oriented ones, nurses employed a range of coping behaviors encompassing both types. The findings of Salman et al. (2023), Isa et al. (2019), Habibi et al. (2022), Mahgoub et al. (2021), Htay et al. (2021), and Munawar and Choudhry (2021) on the increased use of emotion-oriented coping strategies—especially through religious adaptation, prayer, experience utilization, seeking social support, and proactive planning to address stressors—are consistent with our study's results [19, 25, 26, 50-52]. Other studies reported different coping behaviors among emergency nurses compared to our findings. These studies identified coping strategies that included seeking support from family, friends, and managers, planning daily activities, fostering open communication within the team for mutual assistance, managing emotions, gathering relevant information, avoiding stressors, limiting social interactions, employing protective measures, practicing mindfulness and moral resilience, engaging in physical activities and leisure pursuits, maintaining a healthy diet, ensuring sufficient rest, practicing social distancing, and expressing emotions [11, 24, 26, 53-57]. A key difference between these studies and ours was that participants in the current study used fewer social distancing methods, such as vacations and leisure activities. Additionally, the lack

Table 3. Mean scores and relative scores on the ways of coping sub-scales (n=125)

The Ways of Coping Sub-scales		Mean±SD	Relative Score (%)
Problem-oriented coping strategies	Planful problem-solving	8.70±2.66	13
	Confrontative coping	7.37±2.93	11
Problem and emotion oriented coping strategies	Seeking social support	9.01±2.99	14
	Distancing	7.78±2.90	12
	Self-controlling	10.32±2.91	13
Emotion-oriented coping strategies	Accepting responsibility	5.22±2.07	12
	Escape-avoidance	9.61±3.78	11
	Positive reappraisal	11.07±3.32	14

Relative score (%): Percentage based on the total possible score for each sub-scale.

Health in
Emergencies and Disasters Quarterly

of emotional expression and prayer among the nurses in our study was significant compared to previous research. However, we found similar results regarding the use of social support, proactive stress management planning, and reduced reliance on negative coping strategies, such as escape-avoidance and unhealthy behaviors, such as substance abuse.

Alongside identifying these strategies during the pandemic, it is crucial to recognize how their usage has shifted regarding their mental health symptoms. Our

study revealed that although nurses employed negative coping strategies less frequently, an increase in mental health symptoms led them to engage in more escape-avoidance and distancing behaviors, such as daydreaming, wishing for chance solutions, hoping for miracles, refusing to think too much about the pandemic, and leaving themselves to fate. Additionally, as anxiety and depression rose, nurses sought less social support. Our study aligns with Babore et al. (2022), who identified the escape-avoidance strategy as a stress risk factor for healthcare workers, including nurses. However, unlike

Table 4. Inter-correlations between the mental health status (stress, anxiety and depression) with the ways of coping sub-scales

Variables	1	2	3
Stress	1		
Anxiety	0.308**	1	
Depression	0.179*	0.699**	1
Planful problem-solving	-0.038	0.031	-0.088
Confrontative coping	0.349**	0.172	-0.092
Seeking social support	-0.036	-0.197*	-0.205*
Distancing	0.256**	0.044	-0.158
Self-controlling	0.077	0.104	-0.063
Accepting responsibility	0.200**	0.206*	-0.029
Escape-avoidance	0.485**	0.356**	0.193*
Positive reappraisal	-0.157	-0.066	-0.128

Health in
Emergencies and Disasters Quarterly

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

our findings, their study found that as stress increased, nurses were more likely to seek social support [58]. This misalignment likely arises from differing levels of access to social support and its significance within the organizational contexts of the two studies. Implementing effective programs that provide accessible social support resources and establish a straightforward mechanism for seeking social support can help maintain the mental health of emergency nurses. Pang et al. (2021) found that as anxiety and depression increased, frontline nurses caring for COVID-19 patients employed more negative coping strategies [53]. Inappropriate coping strategies in frontline nurses facing stress, anxiety, and depression highlight the need for greater focus on their coping strategies. Health managers and policymakers should implement interventions to educate and support emergency nurses in adopting positive coping strategies [14, 18, 20, 55]. Providing readily accessible support resources, such as social support networks and psychiatric counseling centers, for nurses can improve patient care in the ED during pandemics by helping nurses manage emotional and psychological problems, utilize effective coping strategies, and enhance their resilience. Further studies are needed to examine emergency nurses' experiences of the influencing factors and predictors of mental health and coping strategies during the COVID-19 pandemic, which can provide more information to improve nurses' mental health. Also, examining and determining effective solutions for using appropriate coping strategies in stressful situations, such as during the pandemic, using interventional research designs can yield results for increasing the quality of care for critically ill patients in the ED.

Conclusion

Identifying the symptoms of stress, anxiety, and depression, along with effective coping strategies for emergency nurses based on their mental health status, offers valuable insights for prioritizing the appropriate use of these strategies and enhancing the quality of nursing care in disaster situations. Our study revealed that a significant number of emergency nurses experience stress, anxiety, and depression. They primarily employed positive emotion-focused coping strategies; however, as their symptoms intensified, they tended to adopt negative coping behaviors, such as escape-avoidance, and relied less on social support. This indicates the need for better planning for ongoing training for nurses to manage mental health symptoms and use effective coping strategies, as well as increasing access to and promoting the use of social support strategies. Planned, effective actions in this

regard can ensure the quality of patient care during disasters while preserving the health of emergency nurses, who are on the front lines of the health workforce.

Some limitations of the present study included the self-report nature of some questionnaires and the possibility that participants may have incorrectly completed them due to the high workload of nurses in the ED during the pandemic, which could lead to bias. The researchers tried to collect data in conditions where the participants had a suitable opportunity. Also, the researchers attempted to collect and analyze more reliable data using standard instruments.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Research Ethics Committee of [Zanjan University of Medical Sciences](#), Zanjan, Iran (Code: IR.ZUMS.REC.1400.442). The researchers received a written introduction from the Vice President of [Zanjan University of Medical Sciences](#) Research and Technology and the management of teaching hospitals. Participants were provided with information about the purpose of the study, confidentiality of information, voluntary participation, and their right to withdraw at any time. All participants provided written informed consent.

Funding

The Research and Technology Deputy of [Zanjan University of Medical Sciences](#) provided support for this work (Grant No.: A-11-78-19)

Authors' contributions

Supervision: Farhad Ramezani-Badr; Conceptualization, methodology, investigation, data curation, and writing: All authors; Data analysis: Farhad Ramezani-Badr and Kouros Amini; Funding acquisition and resources: Farhad Ramezani-Badr.

Conflict of interest

The authors declared no conflict of interests.

Acknowledgments

The authors thank the nurses in the ED of teaching hospitals for their cooperation with this study.

References

- [1] Grochtdreis T, de Jong N, Harenberg N, Görres S, Schröder-Bäck P. Nurses' roles, knowledge and experience in national disaster pre-paredness and emergency response: A literature review. *South Eastern European Journal of Public Health* 2016; 7(1):1-19. [DOI:10.4119/seejph-1847]
- [2] Hammad KS, Arbon P, Gebbie K, Hutton AJAENJ. Nursing in the emergency department (ED) during a disaster: A review of the current literature. *Australasian Emergency Nursing Journal*. 2012; 15(4):235-44. [DOI:10.1016/j.aenj.2012.10.005] [PMID]
- [3] Rizqillah AF, Suna J. Indonesian emergency nurses' pre-paredness to respond to disaster: A descriptive survey. *Australasian Emergency Care*. 2018; 21(2):64-8. [DOI:10.1016/j.auec.2018.04.001] [PMID]
- [4] Seyedin H, Abbasi Dolatabadi Z, Rajabifard F. Emergency nurses' requirements for disaster preparedness. *Trauma Monthly*. 2015; 20(4):e29033. [DOI:10.5812/trauma-mon.29033] [PMID]
- [5] Woo BFY, Lee JXY, Tam WWS. The impact of the advanced practice nursing role on quality of care, clinical outcomes, patient satisfaction, and cost in the emergency and critical care settings: A systematic review. *Human Resources for Health*. 2017;15(1):63. [DOI:10.1186/s12960-017-0237-9] [PMID]
- [6] Joshi S. Coronavirus disease 2019 pandemic: Nursing challenges faced. *Cancer Research, Statistics, and Treatment*. 2020; 3(Suppl 1):S136-S7. [DOI:10.4103/crst.Crst_148_20]
- [7] Norful AA, Rosenfeld A, Schroeder K, Travers JL, Aliyu S. Primary drivers and psychological manifestations of stress in frontline healthcare workforce during the initial COVID-19 outbreak in the United States. *General Hospital Psychiatry*. 2021; 69:20-6. [DOI:10.1016/j.genhosppsych.2021.01.001] [PMID]
- [8] An Y, Yang Y, Wang A, Li Y, Zhang Q, Cheung T, et al. Prevalence of depression and its impact on quality of life among frontline nurses in emergency departments during the COVID-19 outbreak. *Journal of Affective Disorders*. 2020; 276:312-5. [DOI:10.1016/j.jad.2020.06.047] [PMID]
- [9] Balai MK, Avasthi RD, Raghu V, Jonwal A. Psychological impacts among health care personnel during COVID-19 pandemic: A systematic review. *Journal of Caring Sciences*. 2022;11(2):118. [DOI:10.34172/jcs.2022.14] [PMID]
- [10] Çınar D, Kılıç Akça N, Zorba Bahçeli P, Bağ Y. Perceived stress and affecting factors related to COVID-19 pandemic of emergency nurses in Turkey. *Journal of nursing management*. 2021; 29(7):1916-23. [DOI:10.1111/jonm.13329] [PMID]
- [11] Cui S, Jiang Y, Shi Q, Zhang L, Kong D, Qian M, et al. Impact of COVID-19 on psychology of nurses working in the emergency and fever outpatient: A cross-sectional survey. 2020 [Unpublished]. [DOI:10.21203/rs.3.rs-20777/v1]
- [12] İlhan B, Küpeli İ. Secondary traumatic stress, anxiety, and depression among emergency healthcare workers in the middle of the COVID-19 outbreak: A cross-sectional study. *The American Journal of Emergency Medicine*. 2022; 52:99-104. [DOI:10.1016/j.ajem.2021.11.051] [PMID]
- [13] Hachesu VR, Naderyan Fe'li S, Maajani K, Hokmabadi R, Golbabaie F. Prevalence of anxiety and depression in Iranian Health care workers during the COVID-19 pandemic: A systematic review and meta-analysis. *Journal of Health and Safety at Work*. 2022; 12(1):123-40. [Link]
- [14] Hamed RA, Abd Elaziz SY, Ahmed AS. Prevalence and predictors of burnout syndrome, post-traumatic stress disorder, depression, and anxiety in nursing staff in various departments. *Middle East Current Psychiatry*. 2020; 27(1):36. [DOI:10.1186/s43045-020-00044-x]
- [15] Sharifi A, Fallahi-Khoshknab M, Mohammadi S, Zeraati M, Jamshidi Z, Aghabeygi-Arani M, et al. Depression, anxiety, and stress among Iranian nurses in COVID-19 care wards. *BMC Psychology*. 2022; 10(1):205. [DOI:10.1186/s40359-022-00911-8] [PMID]
- [16] Sheikhbardsiri H, Doustmohammadi MM, Afshar PJ, Heidarjamebozorgi M, Khankeh H, Beyramijam M. Anxiety, stress and depression levels among nurses of educational hospitals in Iran: Time of performing nursing care for suspected and confirmed COVID-19 patients. *Journal of Education and Health Promotion*. 2021; 10:447. [DOI:10.4103/jehp.jehp_1319_20] [PMID]
- [17] Centers for Disease Control and Prevention. About Mental Health [Internet]. Atlanta (GA): National Center for Chronic Disease Prevention and Health Promotion; 2026. [Link]
- [18] Chirico F, Nucera G, Magnavita N. Protecting the mental health of healthcare workers during the COVID-19 emergency. *BJPsych International*. 2021; 18(1):E1. [DOI:10.1192/bji.2020.39]
- [19] Isa KQ, Ibrahim MA, Abdul-Manan HH, Mohd-Salleh ZAH, Abdul-Mumin KH, Rahman HA. Strategies used to cope with stress by emergency and critical care nurses. *British Journal of Nursing*. 2019; 28(1):38-42. [DOI:10.12968/bjon.2019.28.1.38]
- [20] Chen H, Sun L, Du Z, Zhao L, Wang L. A cross-sectional study of mental health status and self-psychological adjustment in nurses who supported Wuhan for fighting against the COVID-19. *Journal of Clinical Nursing*. 2020; 29(21-22):4161-70. [DOI:10.1111/jocn.15444] [PMID]
- [21] Naushad VA, Bierens JJ, Nishan KP, Firjeeth CP, Mohammad OH, Maliyakkal AM, et al. A systematic review of the impact of disaster on the mental health of medical responders. *Prehospital and Disaster Medicine*. 2019; 34(6):632-43. [DOI:10.1017/S1049023X19004874] [PMID]
- [22] Lazarus RS. Coping theory and research: Past, present, and future. *Psychosomatic Medicine*. 1993; 55(3):234-47. [DOI:10.1097/00006842-199305000-00002] [PMID]
- [23] Lazarus RS, Folkman S. Stress, appraisal, and coping. New York: Springer Publishing Company; 1984. [Link]
- [24] Franco JA, Leví P. Feelings, Stress, and Adaptation Strategies of Nurses against COVID-19 in Guayaquil. *Investigacion y Educacion En Enfermeria*. 2020; 38(3):e07. [DOI:10.17533/udea.iee.v38n3e07] [PMID]
- [25] Htay MNN, Marzo RR, Bahari R, AlRifai A, Kamberi F, El-Abasiri RA, et al. How healthcare workers are coping with mental health challenges during COVID-19 pandemic? A cross-sectional multi-countries study. *Clinical Epidemiology and Global Health*. 2021; 11:100759. [DOI:10.1016/j.cegh.2021.100759] [PMID]

- [26] Munawar K, Choudhry FR. Exploring stress coping strategies of frontline emergency health workers dealing Covid-19 in Pakistan: A qualitative inquiry. *American Journal of Infection Control*. 2021; 49(3):286-92. [DOI:10.1016/j.ajic.2020.06.214] [PMID]
- [27] Labrague LJ. Psychological resilience, coping behaviours and social support among health care workers during the COVID-19 pandemic: A systematic review of quantitative studies. *Journal of Nursing Management*. 2021; 29(7):1893-905. [DOI:10.1111/jonm.13336] [PMID]
- [28] Maiorano T, Vagni M, Giostra V, Pajardi D. COVID-19: Risk factors and protective role of resilience and coping strategies for emergency stress and secondary trauma in medical staff and emergency workers-An online-based inquiry. *Sustainability*. 2020; 12(21):9004. [DOI:10.3390/su12219004]
- [29] Vagni M, Maiorano T, Giostra V, Pajardi D. Coping with COVID-19: emergency stress, secondary trauma and self-efficacy in healthcare and emergency workers in Italy. *Frontiers in psychology*. 2020; 11:566912. [DOI:10.3389/fpsyg.2020.566912] [PMID]
- [30] Bolarinwa OA. Sample size estimation for health and social science researchers: The principles and considerations for different study designs. *Nigerian Postgraduate Medical Journal*. 2020; 27(2):67-75. [DOI:10.4103/npmj.npmj_19_20] [PMID]
- [31] Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *Journal of Health and Social Behavior*. 1983; 385-96. [PMID]
- [32] Şanlıtürk D. Perceived and sources of occupational stress in intensive care nurses during the COVID-19 pandemic. *Intensive and Critical Care Nursing*. 2021; 67:103107. [DOI:10.1016/j.iccn.2021.103107] [PMID]
- [33] Mondo M, Sechi C, Cabras C. Psychometric evaluation of three versions of the Italian perceived stress scale. *Current Psychology*. 2021; 40(4):1884-92. [DOI:10.1007/s12144-019-0132-8]
- [34] Hamilton M. Diagnosis and rating of anxiety. *British Journal of Psychiatry*. 1969; 3(special issue):76-9. [Link]
- [35] Matza LS, Morlock R, Sexton C, Malley K, Feltner D. Identifying HAM-A cutoffs for mild, moderate, and severe generalized anxiety disorder. *International Journal of Methods in Psychiatric Research*. 2010;19(4):223-32. [DOI:10.1002/mpr.323] [PMID]
- [36] Hamilton M. Development of a rating scale for primary depressive illness. *British Journal of Social and Clinical Psychology*. 1967; 6(4):278-96. [DOI:10.1111/j.2044-8260.1967.tb00530.x] [PMID]
- [37] Sharp R. The hamilton rating scale for depression. *Occupational Medicine*. 2015; 65(4):340. [DOI:10.1093/occmed/kqv043] [PMID]
- [38] Slater PF, Bunting B, Hasson F, Al-Smadi A, Gammouth OS, Ashour A, et al. An examination of factor structure of the Hamilton anxiety rating scale in a non-clinical Persian sample. *International Journal of Research in Nursing*. 2019; 10:1-9. [DOI:10.3844/ijrns.2019.1.9]
- [39] Vindbjerg E, Makransky G, Mortensen EL, Carlsson J. Cross-cultural psychometric properties of the hamilton depression rating scale. *The Canadian Journal of Psychiatry*. 2019; 64(1):39-46. [DOI:10.1177/0706743718772516] [PMID]
- [40] Folkman S, Lazarus RS. If it changes it must be a process: Study of emotion and coping during three stages of a college examination. *Journal of Personality and Social Psychology*. 1985; 48(1):150-70. [DOI:10.1037/0022-3514.48.1.150] [PMID]
- [41] Folkman S, Lazarus RS. Coping as a mediator of emotion. *Journal of Personality and Social Psychology*. 1988; 54(3):466-75. [PMID]
- [42] Folkman S, Lazarus RS. Manual for the ways of coping questionnaire: Research edition. Palo Alto: Consulting Psychologists Press; 1988. [Link]
- [43] Lundqvist L-O, Ahlström G. Psychometric evaluation of the ways of coping questionnaire as applied to clinical and nonclinical groups. *Journal of Psychosomatic Research*. 2006; 60(5):485-93. [DOI:10.1016/j.jpsychores.2005.08.019] [PMID]
- [44] Mekonen E, Shetie B, Muluneh N. The psychological impact of COVID-19 outbreak on nurses working in the north-west of Amhara regional state referral hospitals, Northwest Ethiopia. *Psychology Research and Behavior Management*. 2021; 13(null):1353-64. [DOI:10.2147/PRBM.S291446] [PMID]
- [45] Simonetti V, Durante A, Ambrosca R, Arcadi P, Graziano G, Pucciarelli G, et al. Anxiety, sleep disorders and self-efficacy among nurses during COVID-19 pandemic: A large cross-sectional study. 2021; 30(9-10):1360-71. [DOI:10.1111/jocn.15685] [PMID]
- [46] Zakeri MA, Rahiminezhad E, Salehi F, Ganjeh H, Dehghan M. Burnout, anxiety, stress, and depression among Iranian nurses: Before and during the first wave of the COVID-19 Pandemic. 2021; 12:789737. [DOI:10.3389/fpsyg.2021.789737] [PMID]
- [47] Al Maqbali M, Al Sinani M, Al-Lenjawi BJ. Prevalence of stress, depression, anxiety and sleep disturbance among nurses during the COVID-19 pandemic: A systematic review and meta-analysis. 2021; 141:110343. [DOI:10.1016/j.jpsychores.2020.110343] [PMID]
- [48] Varghese A, George G, Kondaguli SV, Naser AY, Khakha DC, Chatterji R. Decline in the mental health of nurses across the globe during COVID-19: A systematic review and meta-analysis. *Journal of Global Health*. 2021; 11:05009. [DOI:10.7189/jogh.11.05009] [PMID]
- [49] Nie Master A, Su X, Zhang S, Guan W, Li J. Psychological impact of COVID-19 outbreak on frontline nurses: A cross-sectional survey study. *Journal of Clinical Nursing*. 2020; 29(21-22):4217-26. [DOI:10.1111/jocn.15454] [PMID]
- [50] Habibi Soola A, Mozaffari N, Mirzaei AJ. Spiritual coping of Emergency Department Nurses and emergency medical services staff during the COVID-19 pandemic in Iran: An exploratory study. *Journal of Religion and Health*. 2022; 61(2):1657-70. [DOI:10.1007/s10597-019-00410-y] [PMID]
- [51] Mahgoub IM, Abdelrahman A, Abdallah TA, Ahmed KAHM, Omer MEA, Abdelrahman E, et al. Psychological effects of the COVID-19 pandemic: Perceived stress, anxiety, work-family imbalance, and coping strategies among healthcare professionals in Khartoum state hospitals, Sudan, 2021. *Journal of the Neurological Sciences*. 2023; 455. [DOI:10.1016/j.jns.2023.122559]
- [52] Salman M, Mustafa ZU, Raza MH, Khan TM, Asif N, Tahir H, et al. Psychological effects of COVID-19 among health care workers, and how they are coping: A web-based, cross-sectional study during the first wave of COVID-19 in Pakistan. *Disaster Medicine and Public Health Preparedness*. 2023; 17:e104. [DOI:10.1017/dmp.2022.4] [PMID]

- [53] Pang Y, Fang H, Li L, Chen M, Chen Y, Chen M. Predictive factors of anxiety and depression among nurses fighting coronavirus disease 2019 in China. *International Journal of Mental Health Nursing*. 2021; 30(2):524-32. [DOI:10.1111/inm.12817] [PMID]
- [54] Pinho L, Correia T, Sampaio F, Sequeira C, Teixeira L, Lopes M, et al. The use of mental health promotion strategies by nurses to reduce anxiety, stress, and depression during the COVID-19 outbreak: A prospective cohort study. *Environmental Research*. 2021; 195:110828. [DOI:10.1016/j.envres.2021.110828] [PMID]
- [55] Riedel B, Horen SR, Reynolds A, Hamidian Jahromi AJ, Fiph. Mental health disorders in nurses during the COVID-19 pandemic: Implications and coping strategies. *Frontiers in Public Health*. 2021; 9:707358. [DOI:10.3389/fpubh.2021.707358] [PMID]
- [56] Santana TDS, Servo MLS, Sousa ARD, Fontoura EG, Góis RMO, Mercês MCD. Coping strategies used by hospital emergency nurses. *Texto & Contexto-Enfermagem*. 2021; 30:e20200435. [DOI:10.1590/1980-265X-TCE-2020-0435]
- [57] Xu H, Johnston ANB, Greenslade JH, Wallis M, Elder E, Abraham L, et al. Stressors and coping strategies of emergency department nurses and doctors: A cross-sectional study. *Australasian Emergency Care*. 2019; 22(3):180-6. [DOI:10.1016/j.auec.2018.10.005] [PMID]
- [58] Babore A, Lombardi L, Viceconti ML, Pignataro S, Marino V, Crudele M, et al. Psychological effects of the COVID-2019 pandemic: Perceived stress and coping strategies among healthcare professionals. *Psychiatry Research*. 2020; 293:113366. [DOI:10.1016/j.psychres.2020.113366] [PMID]

This Page Intentionally Left Blank