

Access this article online

Quick Response Code:



Website:  
www.jehp.net

DOI:  
10.4103/jehp.jehp\_1634\_21

# Correlations of resilience with coping strategies, and the underlying factors in the nurses working in COVID-19 hospitals

Fatemeh Ruhabadi, Abdolghader Assarroudi<sup>1</sup>, Neda Mahdavifar<sup>2,3</sup>, Mostafa Rad<sup>1</sup>

Department of Nursing,  
Student Research  
Committee, School of  
Nursing and Midwifery,  
Sabzevar University  
of Medical Sciences,  
Sabzevar, Iran,

<sup>1</sup>Department of Nursing,  
School of Nursing  
and Midwifery, Iranian  
Research Center of  
Healthy Aging, Sabzevar  
University of Medical  
Sciences, Sabzevar,  
Iran, <sup>2</sup>Department  
of Biostatistics and  
Epidemiology, School of  
Health, Noncommunicable  
Diseases Research  
Center, Sabzevar  
University of Medical  
Sciences, Sabzevar,  
Iran, <sup>3</sup>PhD Student in  
Epidemiology, Department  
of Epidemiology and  
Biostatistics, School of  
Public Health, Tehran  
University of Medical  
Sciences, Tehran, Iran

## Address for correspondence:

Dr. Mostafa Rad,  
Department of Nursing,  
School of Nursing  
and Midwifery, Iranian  
Research Center of  
Healthy Aging, Sabzevar  
University of Medical  
Sciences, Sabzevar, Iran.  
E-mail: mostafarad633@  
yahoo.com

Received: 07-11-2021  
Accepted: 30-01-2022  
Published: 28-12-2022

## Abstract:

**BACKGROUND:** As the core of a health-care team, nurses play a key role in promoting community health, and their job involves witnessing human suffering and pain in health-care settings. The present study aimed to evaluate the correlations between resilience coping strategies, and the underlying factors in the nurses working in COVID-19 hospitals.

**MATERIALS AND METHODS:** This descriptive, cross-sectional study was conducted on 320 nurses working in COVID-19 wards for a minimum of 6 months in 2021. The participants were selected via multistage sampling. Data were collected using demographic, resilience, and coping strategy instruments. Data analysis was performed in SPSS version 20.

**RESULTS:** The mean resilience score was  $76.94 \pm 11.33$ . The mean scores of emotion-focused and problem-focused strategies were  $59.65 \pm 4.40$  and  $96.08 \pm 5.38$ , respectively. The assessment of the correlation between resilience with the emotion-focused and problem-focused strategies showed a positive significant correlation ( $r = 0.25$ ;  $P < 0.001$  and  $r = 0.33$ ;  $P < 0.001$ , respectively).

**CONCLUSION:** According to the results, the nurses working in COVID-19 wards mostly adopted problem-focused strategies in difficult work conditions depending on the required care provision. Both coping strategies significantly affected the subscales of resilience in the nurses. Therefore, it is recommended that special attention be paid to teaching strategies to cope with anxiety and resilience and develop problem-solving skills in nursing personnel during the emergence and outbreak of new diseases in order to reduce their anxiety.

## Keywords:

Adaptation, COVID-19, nursing, psychological, resilience

## Introduction

As the core of the health-care team, nurses play a key role in promoting community health.<sup>[1]</sup> The nursing profession involves witnessing human tragedies, suffering, and distress in the health-care environments.<sup>[2]</sup> Fatigue and stress in nurses affect the sensitive and vital aspects of their performance, such as problem-solving, decision-making, and creativity. Meanwhile, patient safety and welfare largely depend on

nurses, and any nursing mistake could lead to severe damage, death, or mistreatment.<sup>[3]</sup>

General health crises (e.g., epidemics and pandemics) are associated with considerable health risks, as well as stress, fear, poor sense of control, and uncertainty, which could directly impact the physical and psychological health of nurses.<sup>[4]</sup> Such issues have become highly common in the COVID-19 pandemic. Recent findings have shown that a large part of the health-care staff in China who work in COVID-19 wards of 34 hospitals experience symptoms

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow\_reprints@wolterskluwer.com

**How to cite this article:** Ruhabadi F, Assarroudi A, Mahdavifar N, Rad M. Correlations of resilience with coping strategies, and the underlying factors in the nurses working in COVID-19 hospitals. J Edu Health Promot 2022;11:398.

of depression, anxiety, insomnia, and psychological distress.<sup>[5]</sup> In a study conducted in 2019 on the health-care personnel in Iran, several challenges were reported among the health-care staff during the COVID-19 pandemic, which have led to psychological distress and the need for mental support.<sup>[6]</sup>

Resilience is a characteristic that helps nurses adapt to the stressors in their work environment.<sup>[7]</sup> Resilience is associated with effective adjustment to changes and stressful factors in difficult situations and under mental pressures. In addition, resilience could be beneficial in managing a wide range of problems. Resilience is defined as the ability to successfully adapt to threatening situations.<sup>[8]</sup> The improvement of resilience in nurses enhances skills such as self-confidence, autonomy, coping and adaptation, and motivation for life and growth after an incident. Moreover, resilience affects personal and organizational outcomes, the professional skills of nurses, life/job satisfaction, turnover levels and intention, burnout, and psychological issues such as depression.<sup>[9]</sup>

Some strategies that could improve resilience are implementing training programs to enhance personal skills, such as building positive interpersonal relations, flexible thinking, critical/creative thinking, self-efficacy, altruism, humor, protecting personal/professional ethical boundaries, emotional intelligence, problem-solving, and coping skills. According to the literature, some of the skills required to successfully manage stressors and traumas might differ from the skills needed to manage other harmful situations.<sup>[10]</sup> Coping strategies are a set of behavioral and cognitive efforts used to manage internal and external stresses and reduce the resulting pain. Several coping strategies are adopted for the management of stressful situations,<sup>[11]</sup> and the intervention implemented for resilience enhancement in health-care employees must identify and eliminate external, structural, and organizational factors, as well as internal and individual influences.<sup>[12]</sup>

The mentioned factors have been separately investigated in previous domestic and foreign studies. However, these variables have not been evaluated together, and their independent impact on each other should be assessed simultaneously so that the results regarding health-care employees would differ under the current circumstances due to the extreme mental pressure imposed on health-care staff during the current COVID-19 pandemic.<sup>[4]</sup> This is mainly because no extreme stress was involved in the work of health-care employees in the previous studies in this regard, and these issues have been studied in normal work conditions.<sup>[11]</sup> Today, nurses are constantly faced with environmental disasters over long periods.<sup>[10]</sup> On the

other hand, correlations have been reported between coping strategies and the goals and cultural backgrounds of individuals, and no research has investigated the coping strategies of nurses within a community where social restrictions are enforced by the government due to the COVID-19 pandemic. The results of the study can be presented to nursing leaders to be used for planning to increase resilience and coping strategies and increase the motivation and ability of nurses in different situations, especially in epidemic and critical situations.

The present study aimed to evaluate the correlations between resilience coping strategies, and the underlying factors in the nurses working in COVID-19 hospitals.

## Materials and Methods

### Study design and setting

This descriptive-correlational, cross-sectional study was conducted on 320 nurses working in the COVID-19 wards of selected hospitals from Razavi Khorasan Province (22 Bahman Hospital of Neishabour, Imam Reza and Shariati Hospitals of Mashhad, and Shahid Vasei Hospital of Sabzevar), Iran in 2021.

### Study participants and sampling

Considering a correlation of  $r = -0.49$  (32), confidence interval (CI) of 0.95, and  $\beta = 80\%$ , the minimum sample size was estimated at 80. Based on the number of the nurses working in COVID-19 wards, a sample size of 240 (three times larger) was formulated. Considering a 20% attrition rate, a total of 300 subjects were enrolled in the study.

$$\omega = \frac{1}{2} \ln \frac{1+r}{1-r} = 0.5355$$

$$n = \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2}{(\omega)^2} = \frac{(20.61)^2}{0.286} = 80$$

Sampling was performed via multistage strategy, so that initially four hospitals in three cities were selected that admitted COVID-19 patients. Then, three wards were randomly selected from each hospital and at the end, the nurses were selected via convenience sampling in each shift. The inclusion criteria of the study were a minimum degree of BSc in nursing, minimum work experience of 1 year in a hospital and 6 months of experience in academic studies, and willingness to participate. The exclusion criterion was incomplete questionnaires at the rate of 10%.

### Data collection tool and technique

Data were collected using demographic, resilience, and coping strategy instruments. The demographic

questionnaire included data on age, marital status, type of employment, years of service, workplace section, work experience, and work shift. The Connor–Davidson resilience scale (CD-RISC) was also used, which consisted of 25 items and five dimensions, including the perception of personal competence, trust in one’s instincts, tolerance of negative events, positive acceptance of change and safe relations, control, and spirituality. The items in the CD-RISC were scored based on a 5-point Likert scale, and the total score of the instrument was 0–100; scores above 50 indicated high resilience. Connor and Davidson confirmed the reliability of the CD-RISC at the Cronbach’s alpha of 0.89, and its reliability coefficient has been obtained from a retest of 4 weeks and estimated at 0.87.<sup>[13]</sup> In Iran, Abdi *et al.* evaluated psychometric properties of the resilience questionnaire, which had acceptable construct validity in women with breast cancer based on exploratory and confirmatory factor analysis.<sup>[14]</sup> Cronbach’s alpha coefficient was calculated in a sample of thirty nurses, which was 0.81. As a result, the internal consistency or internal correlation of the whole questionnaire was very good. And these thirty samples were included in the study.

Coping strategies were assessed using the coping questionnaire by Lazarus based on Lazarus–Folkman’s theory of stress.<sup>[15]</sup> The instrument has 66 items and eight coping mechanisms of confrontive coping (emotion focused), distancing (emotion focused), self-controlling (emotion focused), seeking social support (problem focused), accepting responsibility (problem focused), escape avoidance (emotion focused), planned problem-solving (problem focused), and positive reappraisal (problem focused). The items in this tool are scored based on a 4-point Likert scale (Never–Always), and the score range is 0–99, with the higher scores of each subscale indicating the more frequency of using coping strategies.

Problem-focused coping strategies refer to actions aimed at changing or reducing stressful situations, which is manifested when proper solutions are speculated for psychological problems. On the other hand, emotion-focused coping strategies regulate one’s emotional responses to a problem. An emotion-oriented approach is used when a situation or phenomenon is definitely or assumed to be unchangeable, and the goal is to reduce stress without logically solving the problem.<sup>[15]</sup> The reliability of the coping questionnaire has been confirmed at the Cronbach’s alpha of 83.3 by Vahedi. In the present study, the reliability of the entire instrument and emotion-focused and problem-focused strategies have been confirmed at the Cronbach’s alpha coefficients of 86.3, 89.3, and 88.3, respectively.

In total, 320 questionnaires were distributed, all were returned, 21 were incomplete, and 299 questionnaires were completed and collected.

Data analysis was performed in SPSS version 20 (IBM cooperation, Armonk, NY, United States of America) using descriptive statistics to determine resilience and coping strategies (95% CI), independent *t*-test, analysis of variance, and Pearson’s correlation coefficient to evaluate the correlation between resilience and coping strategies. Additionally, Kolmogorov and Smirnov tests were used to evaluate the normality of the data.

### Ethical consideration

The code of ethics was obtained from the Vice-Chancellor for Research of Sabzevar University of Medical Sciences (IR. MEDSAB.REC.1399.143). Written consent was obtained from all participants in the study. The participants were assured that their information would be kept confidential and would be reported anonymously. It was also ensured that participation in the study is optional and there is no obligation to participate in the study.

### Results

Among the participants, 67.2% were single, 54.2% were married, 94.6% had a BSc degree, and 74.6% worked in rotating shifts. The majority of the participants (49.35%) were aged 31–40 years (mean age:  $32.5 \pm 5.8$  years). In addition, 74.9% of the subjects had recreational and leisure activities, which mostly included watching movies (37.1%) and other recreational activities (23.7%). Table 1 shows the demographic and social characteristics of the nurses.

The mean score of resilience was  $76.64 \pm 11.33$  in the nurses of various wards. However, a significant association was observed between the resilience score and having recreational/leisure activities, and higher resilience scores were obtained by the nurses who did not have recreational and leisure activities compared to the other participants ( $P > 0.05$ ) [Table 2].

The mean scores of emotion-focused and problem-focused strategies were estimated at  $59.65 \pm 4.40$  and  $96.08 \pm 5.38$ , respectively. Significant correlations were also observed between the mean scores of problem-focused strategies ( $P = 0.002$ ), emotion-focused strategies ( $P = 0.007$ ), and gender, and higher scores were obtained by the female nurses in both areas. Furthermore, age significantly correlated with emotion-focused strategies ( $r = -0.117$ ;  $P = 0.043$ ) and problem-focused strategies ( $r = -0.255$ ;  $P < 0.001$ ).

The mean scores of problem-focused strategies ( $P < 0.001$ ) and emotion-focused strategies ( $P < 0.001$ ) significantly

**Table 1: Demographic characteristics of nurses working in the studied hospitals - 2021**

Characteristics	n (%)
Gender	
Female	201 (67.2)
Male	98 (32.8)
Marital status	
Married	162 (54.2)
Single	127 (42.5)
Deceased	1 (0.3)
Divorced	9 (3.0)
City of place of service	
Mashhad	98 (32.8)
Neyshabur	100 (33.4)
Sabzevar	101 (33.8)
Level of education	
BSc	283 (94.6)
MSc	16 (5.4)
Smoking status	
Yes	8 (2.7)
No	291 (97.3)
Type of shift	
Morning	35 (11.7)
Evening	25 (8.4)
Night	16 (5.4)
Rotating	233 (74.6)
Immune system disorders	
Yes	65 (21.7)
No	234 (78.3)
Underlying diseases	
Yes	102 (34.1)
No	197 (65.9)
Recreational and leisure activities	
Yes	224 (74.9)
No	75 (25.1)
Type of activity	
Gym	71 (23.7)
Movies	111 (37.1)
Cooking	9 (3.0)
Visiting relatives	17 (5.7)
Shopping	45 (15.1)
Countryside promenading	7 (2.3)
Going for a walk	4 (1.3)
Exercising at home	25 (8.4)
Other	10 (3.3)

correlated with having recreational activities at home, and higher scores in both areas were obtained by the nurses who had no recreational activities at home. On the other hand, a negative significant correlation was observed between work experience and emotion-focused coping skills ( $r = -0.255; P < 0.001$ ). Positive correlations were observed between resilience with emotion-focused coping skills, and problem-focused coping skills ( $r = 0.25; P < 0.001$  and  $r = 0.33; P < 0.001$ , respectively). Pearson’s correlation coefficient indicated significant correlations between problem-focused skills and the

**Table 2: The relationship between level of resilience and demographic characteristics of participants**

Variable	Mean±SD	t	P
Gender			
Male	75.94±12.85	0.989	0.324
Female	77.42±10.50		
Smoking status			
Yes	77.87±6.24	0.235	0.814
No	76.91±11.44		
Immune system disorders			
Yes	75.47±12.94	1.180	0.239
No	77.35±10.83		
Underlying diseases			
Yes	76.34±12.79	0.619	0.537
No	77.25±10.51		
Recreational and leisure activities			
Yes	76.10±12.29	2.831	0.005
No	7.944±7.30		

SD=Standard deviation

perception of personal competence, trust, emotions, and spirituality. Positive significant associations were also denoted between emotion-focused skills and perception of personal competence, trust, emotions, and spirituality [Table 3].

## Discussion

The present study aimed to evaluate the correlation between resilience and coping strategies in nurses working in COVID-19 in selected hospitals of Khorasan Razavi in 2021. According to the obtained results, the mean score of resilience was higher compared to the reported values by Jafar Jalal.<sup>[16]</sup> According to the mentioned study, the difference between the current critical situation and the precorona conditions, as well as people’s awareness of their professional responsibilities, and the need for more cooperation and more interactions with colleagues could increase the resilience of nurses. The resilience scores of nurses were reported to be lower in a study by Barkhordari-Sharifabad *et al.* compared to that of the current research.<sup>[17]</sup> The higher mean score of resilience in the present study might be due to the COVID-19 crisis and people’s awareness of their job responsibilities and the need for cooperation and higher flexibility in working with colleagues during the coronavirus crisis.

In the current research, a significant correlation was observed between the total resilience score and recreational activities at home, and the nurses who had no leisure activities had a higher resilience score compared to those who had recreational activities at home. Virtual networks were the predominant entertainment in COVID-19 period because most people were quarantine at home, and given that the constant bad news about COVID-19 was the dominant news on these networks,



**Table 3: Evaluation of correlation between coping strategies and resilience factors in nurses working in coronavirus disease 2019 wards**

Variable	P			
	Personal competence	Trust	Emotions	Inhibition
Problem focused				
Correlation	0.348	0.314	0.168	0.111
Significance	<0.001	<0.001	0.004	0.055
Emotion focused				
Correlation	0.278	0.266	0.119	0.010
Significance	<0.001	<0.001	0.040	0.861

it could have a devastating effect on people's spirits. In a study, Sarafraz *et al.* found that social media had a significant effect on students' academic performance, psychological well-being, depression, stress, and anxiety.<sup>[18]</sup> Given a lack of similar studies in this regard, further investigations are recommended. Furthermore, significant correlations were denoted between the scores of the positive acceptance of change and safe relations with work experience, which is inconsistent with the study by Jafar Jalal *et al.*,<sup>[16]</sup> this could be attributed to the difference in the mean work experience of the nurses in the current research.

According to the results of the present study, the nurses used problem-focused strategies more frequently, which is consistent with the results obtained by Sinichi *et al.*<sup>[19]</sup> However, the mean score achieved in the mentioned study was lower compared to our findings. This discrepancy might be due to the difference between the communities under study. In the current research, the assessment of the correlations between adopting problem-focused and emotion-focused skills and gender indicated the higher mean score of the female nurses compared to male nurses. These results are inconsistent with the Alharbi *et al.*'s study which showed that there is no difference between the coping strategies of male and female nurses.<sup>[20]</sup> Perhaps, the reason for the heterogeneity of the results is the difference in culture and society. In congruence with this study, in the research by Mahmoudirad *et al.*, emotion-focused coping strategies were used more frequently by the female nurses compared to the male nurses.<sup>[21]</sup> A feminine role is described as justifiable by characteristics such as attachment, bond seeking, emotional revelation, lack of assertiveness, dependence of needs on others' needs, and more frequent emotional responses in the face of stress.

### Limitation and recommendation

One of the limitations of the study was the large number of questions that nurses had to answer despite their limited time and busy schedule. Moreover, it is worth noting that this study was conducted during the second wave of the epidemic in Iran. Therefore, more research

may be needed to explore how nurses' resilience and coping behaviors relate.

## Conclusion

According to the results, nurses working in COVID-19 wards used problem-focused strategies frequently due to the extreme difficulty of their job and the amount of care provision. Therefore, it is suggested in order to promote the mental health of nurses, health managers should adopt proper training strategies to manage their anxiety and improve their resilience and problem-solving skills during the outbreak of epidemic diseases. Our findings indicated a significant correlation between the coping strategies and resilience of the nurses working in COVID-19 wards, and problem-focused and emotion-focused strategies both significantly affected all the subscales of resilience. Given the correlations between various dimensions of resilience and coping strategies, it seems that training on the dimensions of resilience and coping strategies in the form of workshops could be beneficial for nurses working in hospitals. Furthermore, relevant units could be incorporated into the educational curriculum of nursing students. It is also suggested that similar studies be conducted after the COVID-19 pandemic for comparison purposes.

### Acknowledgments

This article was approved by the vice-chancellor in research and technology, Sabzevar University of Medical Sciences (code of ethics: IR.MEDSAB.REC.1399.143). Hereby, we extend our gratitude to the authorities and personnel of the Hospital of 22 Bahman of Neishabour, Imam Reza Hospital and Shariati Hospital. In addition, Authors sincerely thank form VaseiClinical Research Development Unit in Sabzevar University of Medical Sciences, for provide advice and guidance in conducting this research.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

## References

- Salimi S, Pakpour V, Feizollahzadeh H, Rahmani A. Resilience and its association with the intensive care unit nurses' intention to leave their profession. *Hayat* 2017;23:254-65.
- Kliwer W, Murrelle L. Risk and protective factors for adolescent substance use: Findings from a study in selected Central American countries. *J Adolesc Health* 2007;40:448-55.
- Turner SB. The resilient nurse: An emerging concept. *Nurse Leader* 2014;12:71-90.
- Heidarijamebozorgi M, Jafari H, Sadeghi R, Sheikhbardsiri H, Kargar M, Amiri Gharaghani M. The prevalence of depression, anxiety, and stress among nurses during the coronavirus disease

- 2019: A comparison between nurses in the frontline and the second line of care delivery. *Nurs Midwifery Stud* 2021;10:188-93.
5. Wald HS. Optimizing resilience and wellbeing for healthcare professions trainees and healthcare professionals during public health crises – Practical tips for an ‘integrative resilience’ approach. *Med Teach* 2020;42:744-55.
  6. Alizadeh A, Khankeh HR, Barati M, Ahmadi Y, Hadian A, Azizi M. Psychological distress among Iranian health-care providers exposed to coronavirus disease 2019 (COVID-19): A qualitative study. *BMC Psychiatry* 2020;20:494.
  7. Brown R, Wey H, Foland K. The relationship among change fatigue, resilience, and job satisfaction of hospital staff nurses. *J Nurs Scholarsh* 2018;50:306-13.
  8. Baumstarck K, Chinot O, Tabouret E, Farina P, Barrié M, Campello C, *et al.* Coping strategies and quality of life: A longitudinal study of high-grade glioma patient-caregiver dyads. *Health Qual Life Outcomes* 2018;16:157.
  9. Çam O, Büyükbayram A. Nurses’ resilience and effective factors. *J Psychiatr Nurs* 2017;8:118-26.
  10. Sahebi A, Yousefi A, Abdi K, Jamshidbeigi Y, Moayedi S, Torres M, *et al.* The prevalence of post-traumatic stress disorder among health care workers during the COVID-19 pandemic: An umbrella review and meta-analysis. *Front Psychiatry* 2021;12:764738.
  11. Abdollahyar A, Baniasadi H, Doustmohammadi MM, Sheikhbardesiri H, Yarmohammadian MH. Attitudes of Iranian nurses toward spirituality and spiritual care. *J Christ Nurs* 2019;36:E11-6.
  12. Cross W. Building resilience in nurses: The need for a multiple pronged approach. *J Nurs Care* 2015;4:e124.
  13. Connor KM, Davidson JR. Development of a new resilience scale: The Connor-Davidson resilience scale (CD-RISC). *Depress Anxiety* 2003;18:76-82.
  14. Abdi FA, Sh B, Ahadi HA, Sh K. Psychometric properties of the Connor-Davidson Resilience scale (CD-RISC) among women with breast cancer. *J Res Psychol Health* 2019;13:81-99.
  15. Kahraze F, Tamini BK, Daryasari SK, Mahdavi A, Kooteh BR, Qadimi A. Coping with stress, depression and fear of negative social evaluation through comparing wives of addicted and non-addicted men. *Maedica* 2018;13:305.
  16. Jafar Jalal E, Aziz Mohammadi F, Seyyed Fatemi N, Haghani HA. Secondary traumatic stress and resilience of the nurses at the psychiatric centers in Tehran City, Iran. *Iran J Nurs* 2019;32:33-45.
  17. Barkhordari-Sharifabad M, Hekayati M, Nasiriani K. The relationship between moral distress and resiliency in nurses. *Med Ethics J* 2020;14:1-14.
  18. Sarafraz MR, Chavoshi H, Alinaghi M. Social networks and students: Educational performance, psychological well-being, and mental health. *Int J Sch Health* 2019;6:1-6.
  19. Sinichi F, Faridhosseini F, Hajebi Khaniki S, Chalakinia N, Saadati Z, Tara F. Psychological symptoms and coping strategies of nurses caring for patients with COVID-19 pneumonia. *J Fundam Ment Health* 2020;22:481-9.
  20. Alharbi J, Jackson D, Usher K. Personal characteristics, coping strategies, and resilience impact on compassion fatigue in critical care nurses: A cross-sectional study. *Nurs Health Sci* 2020;22:20-7.
  21. Mahmoudirad G, Hosseini M, Kazemimajd R. The relationship between coping strategies and organizational commitment nurses. *Q J Nurs Manage* 2018;7:73-83.