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Anxiety and Resilience in Nurses Caring for COVID-19 Patients: A Cross-Sectional Study

Narges Hashemi[1], Mostafa Foroghi[2], Aref Faghih[3,*]

1. Nursing and Midwifery Care Research Centre, Department of Medical-Surgical Nursing, Faculty of Nursing and Midwifery, Isfahan University of Medical Sciences, Isfahan, Iran
2. Department of Managment, Faculty of Literature and Humanities, Islamic Azad University, kerman, Iran
3. Department of Nursing, Faculty of Nursing and Midwifery, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

*Corresponding Author: Department of Nursing, Faculty of Nursing and Midwifery, Hormozgan University of Medical Sciences, Bandar Abbas, Iran
Email: Aref_faghih@yahoo.com

Abstract

Background and Objective: The COVID-19 pandemic has placed significant psychological strain on healthcare workers, particularly nurses. Resilience, as a dynamic process, enables individuals to exhibit positive adaptive behaviors in challenging situations. This study aimed to assess the relationship between anxiety and resilience among nurses caring for COVID-19 patients.

Methods: This cross-sectional study was conducted in 2021 and included 100 nurses from various hospital wards treating COVID-19 patients. Participants were selected using a convenience sampling method. Data were collected through a structured questionnaire comprising demographic information, the Beck Anxiety Inventory, and the Connor-Davidson Resilience Scale. Statistical analysis was performed using SPSS 18, employing descriptive statistics (frequency, mean and standard deviation) and inferential statistics (Pearson correlation test).

Findings: The mean age of participants was 34.6 ± 8.19 years, with an average work experience of 11.33 ± 8.55 years. Among them, 42% were male, and 58% were female. Most nurses were married (65%) and held a bachelor's degree in nursing (67%). The mean anxiety score was 17.12 ± 7.8, indicating moderate anxiety levels. The mean resilience score was 50.37 ± 7.86. A statistically significant inverse correlation was observed between anxiety and resilience ($p < 0.05$).

Conclusion: The findings suggest an inverse relationship between anxiety and resilience among nurses. Given the moderate anxiety levels observed, strategies such as workload reduction, enhanced supervision, and psychological support programs are recommended. Additionally, promoting physical well-being can help strengthen nurses' resilience.

Keywords: Anxiety, resilience, nurses, COVID-19, psychological well-being.

1. Introduction

The coronavirus outbreak began in December 2019 in Wuhan, China, with the first symptomatic case reported on December 12. Since then, COVID-19 has rapidly spread worldwide through various means, including air travel, becoming a global pandemic that has significantly impacted individuals and healthcare organizations (1). According to the World Health Organization, more than 778,433,861 cases of the disease have been reported, resulting in approximately 7,099,104 deaths. Iran has also been affected by this disease, with 7,626,863 confirmed cases and 146,837 deaths as of March 2, 2024 (2).

Even several months after the identification of the first human infection, the infection and mortality rates remain high, and COVID-19 has become a major public health concern worldwide. So far, no specific antiviral drugs have been recommended (3), making prevention the most effective approach to reducing infections. The widespread prevalence of the disease appears to be partially attributed to delays in diagnosis and weaknesses in infection control measures (4).

Infectious diseases like COVID-19 affect large populations and various aspects of life, significantly impacting mental health, particularly among healthcare workers on the front lines of patient care (5). Healthcare providers face the challenges of working in resource-limited environments while managing the increasing burden of disease worldwide (6, 7). Psychological stress among caregivers is linked to long working hours, job uncertainty, lack of personal protective equipment (PPE), and fear of infection for themselves and their families (8, 9).

Nurses play a crucial role in the healthcare system, serving as one of its most essential components. Their primary responsibility is to care for individuals who are ill or disabled, ensuring that patients receive appropriate treatment and attention. In addition to providing direct patient care, nurses contribute significantly to the overall functioning of medical facilities. Given the critical, sensitive, and high-pressure nature of their role, they frequently experience severe psychological stress and are at risk of developing mental health disorders (10).

Nursing is widely regarded as one of the most stressful professions. Constant interaction with patients, the responsibility of providing care, performing clinical procedures, dealing with terminally ill patients, and handling emergency situations can reduce the optimal performance of medical staff and negatively affect their physical and mental well-being. Anxiety is one of the most common psychological disorders experienced by healthcare workers in their workplace (11). This disorder is characterized by an unpleasant and vague feeling of unease, often accompanied by physical symptoms such as shortness of breath, heart palpitations, sweating, headaches, and restlessness (12).

One psychological factor that can improve nurses' quality of life and help manage anxiety is resilience. Resilience refers to the ability to adapt and overcome challenges. Resilient individuals and groups share specific traits that enable them to navigate life's difficulties more effectively (13). People with high resilience assess stressful situations logically and adopt appropriate coping strategies, leading to greater satisfaction, self-belief, and confidence (14). This trait is influenced by an individual's internal abilities, social skills, and environmental interactions, making it a positive psychological characteristic (15). A study by Huang et al. in China reported that anxiety levels among healthcare workers during the COVID-19 pandemic were moderate and higher among women than men (16). Similarly, a study by Tan et al. in Singapore found that approximately 14.5% of healthcare workers experienced anxiety (17). Liu et al. conducted a study in China that reported an overall anxiety prevalence of 5.12%, with 10.35% of employees experiencing mild anxiety, 1.36% experiencing moderate anxiety, and 0.78% experiencing severe anxiety (18).

As the literature suggests, most studies have been conducted in China, and there is limited information regarding the psychological impact of the pandemic on healthcare providers in countries such as Iran. Additionally, no studies have specifically examined nurses' resilience during the COVID-19 outbreak. The psychological burden of the pandemic on medical staff has become a major concern for healthcare systems. Given the high sensitivity of the nursing profession, any errors resulting from psychological distress can lead to irreparable harm to patients, families, and society, as well as impose a significant economic burden on the healthcare system. Therefore, this study aimed to assess the severity of anxiety and resilience among nurses caring for COVID-19 patients, ultimately contributing to strategies for reducing anxiety and enhancing resilience in this critical workforce.

2. Methods

2.1. Study Design and Participants

This descriptive-analytical cross-sectional study was conducted in 2021 among nurses Caring for COVID-19 Patients. A total of 100 nurses from Shahid Mohammadi Hospital in Bandar Abbas were selected through convenience sampling.

2.2. Inclusion and Exclusion Criteria

1. Inclusion criteria

Nurses working in COVID-19 care units

Minimum of one year of clinical experience

Willingness to participate in the study

2. Exclusion criteria

Nurses on long-term leave or absent during data collection

2.3. Data Collection and Ethical Considerations

Before participation, written informed consent was obtained from all nurses. The study received ethical approval (IR.HUMS.REC.1399.355) from Hormozgan University of Medical Sciences. Participants were assured that all information would remain confidential, stored anonymously on a password-protected computer, and used exclusively for research purposes. Data were collected via a three-part questionnaire assessing demographics (age, gender, marital status, years of experience, workplace unit, household members, and source of COVID-19-related information), anxiety (Beck Anxiety Inventory), and resilience (Connor-Davidson Resilience Scale [CD-RISC-25]).

2.4. Measurement Tools

1. Beck Anxiety Inventory (BAI)

The Beck Anxiety Inventory (BAI), developed in 1990 by Aaron Beck, assesses clinical anxiety severity. It includes 21 items, each scored from 0 to 3, measuring cognitive, physical, and panic-related symptoms. The total score ranges from 0 to 63, categorized as follows:

- 0–7: Minimal anxiety

- 8–15: Mild anxiety

- 16–25: Moderate anxiety

- 26–63: Severe anxiety

The Persian version of the BAI demonstrated good reliability ($r=0.72$, $p<0.001$) and validity ($r=0.83$, $p<0.001$), with excellent internal consistency ($\alpha=0.92$) (19). Kaviani & Mousavi validated the Persian version, confirming a Cronbach's alpha of 0.92 (20).

2. Connor-Davidson Resilience Scale (CD-RISC-25)

The Connor-Davidson Resilience Scale (CD-RISC-25), developed in 2003, assesses psychological resilience across four dimensions:

- Hardiness (8 items)

- Optimism (6 items)

- Self-efficacy (8 items)

- Meaningfulness/Purpose (3 items)

Participants rated their responses on a 5-point Likert scale (0 = not true at all, 4 = true nearly all the time). The total resilience score ranges from 0 to 100, with higher scores indicating greater resilience. The CD-RISC-25 has demonstrated strong psychometric properties, with Cronbach's alpha reported at 0.89 and test-retest reliability at 0.87 (21, 22). In the study of Rezaei et al., the validity was 0.98 and the reliability was 0.82 (23).

2.5. Statistical Analysis

Data were analyzed using SPSS 18. Descriptive statistics, including mean, standard deviation, and frequency, were used to summarize participants' characteristics. To assess relationships between variables, the Pearson correlation test was performed. The Shapiro-Wilk test confirmed the normality of data distribution, allowing the use of parametric tests. A p-value <0.05 was considered statistically significant.

3. Results

Among the 100 participants, the mean age was 34.6 ± 8.19 years, and the mean work experience was 11.33 ± 8.55 years. Of these, 42 (42%) were male, and 58 (58%) were female. Additionally, 65% were married, and 67% held a bachelor's degree in nursing. Other demographic information is described in Table 1.

This table presents the demographic characteristics of the nurses participating in the study, including gender, marital status, education level, and sources of information about COVID-19. Understanding these factors can help analyze their relationship with anxiety and resilience levels.

Table. 1 Demographic characteristics of nurses (N=30)

Variable	Class	F (%)
Sex	Men	42 (42.0)
	Women	58 (58.0)
Marital status	Married	65 (65.0)
	Single	35 (35.0)
Education	Associate	21 (21.0)
	Bachelor	67 (67.0)
	Master	11 (11.0)
	PhD	1 (1.0)
Source of information about the disease	Ministry of Health and Medical Education	39 (39.0)
	WHO	15 (15.0)
	Social applications	31 (31.0)
	Others	15 (15.0)
Adequacy of available information about the disease	Yes	63 (63.0)
	No	37 (37.0)
People who live in the same place as nurses	Nobody	5 (5.0)
	Parent	32 (32.0)
	Husband/Wife and Children	61 (61.0)
	Friends	0 (0.0)
	Others	2 (2.0)

F: Frequency , %: Percentage

Nurses' mean anxiety score was 17.12 ± 7.8, indicating a moderate level of anxiety. Anxiety levels were categorized as follows: no anxiety (n=8), mild (n=37), moderate (n=41), and severe (n=14) (Fig. 1).

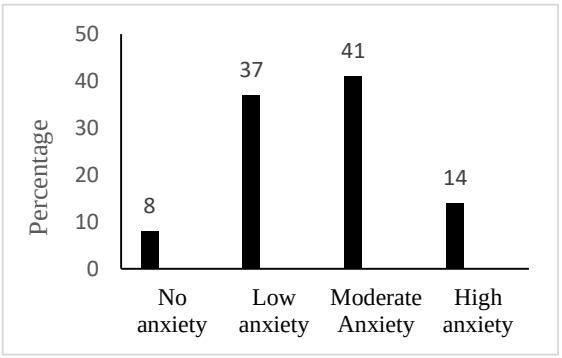

Fig.1 Percentage of nurses based on anxiety levels (N=100)

This figure illustrates the distribution of "anxiety levels" among nurses. The majority of nurses fall into the "moderate anxiety" category, indicating that many healthcare workers experience psychological distress due to the COVID-19 pandemic. This finding emphasizes the need for mental health support programs.

The mean resilience score was 50.37 ± 7.86, with 25% exhibiting high resilience and 52% reporting low resilience (Fig. 2).

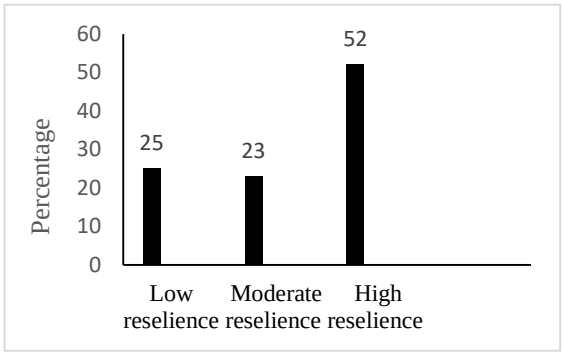

Fig.2 Percentage of nurses based on resilience levels (N=100)

This figure represents the "resilience levels" among nurses. A significant proportion of nurses exhibit "low resilience", which may negatively impact their ability to handle job-related stress and patient care. Training programs focusing on resilience-building strategies are recommended to enhance nurses' psychological well-being.

Higher scores indicate greater resilience. Mean scores for resilience aspects were: hardiness (20.3 ± 3.62), self-efficacy (19.16 ± 3.75), optimism (15.32 ± 4.29), and meaningfulness/purpose (9.50 ± 3.48) (Table 2).

Table. 2 Mean resilience scores among nurses during COVID-19 pandemic (n = 100)

Aspects of resilience		Mean ± SD, f (%)
Hardiness		20.3 ± 3.62
	High (24–28)	24 (24)
	Moderate (17–23)	56 (56)
	Low (<16)	20 (20)
Self-efficacy		19.16 ± 3.75
	High (26–32)	36 (36)
	Moderate (16–25)	61 (61)
	Low (<15)	3 (3)
Meaningfulness/purpose		9.50 ± 3.48
	High (11–16)	12 (12)
	Low (<10)	88 (88)
Optimism		15.32 ± 4.29
	High (21–24)	26 (26)
	Medium (16–20)	19 (19)
	Low (<16)	55 (55)

SD: Standard Deviation

*This table displays the mean resilience scores among nurses. Resilience is categorized into four key components:

- Hardiness: The ability to cope with challenges and adversity.
- Self-efficacy: Confidence in one's ability to handle difficulties.
- Meaningfulness/Purpose: A sense of purpose in work.
- Optimism: A positive outlook on the future.

Higher scores indicate greater resilience, which plays a crucial role in reducing anxiety and improving nurses' ability to cope with stressful work environments.

Pearson correlation analyses revealed a significant inverse relationship between nurses' anxiety and hardiness ($r = -0.016$), self-efficacy ($r = -0.057$), meaningfulness/purpose ($r = -0.095$), and optimism ($r = -0.042$) ($p < 0.05$) (Table 3).

Table.3 Correlation between Anxiety and resilience among nurses (n = 100)*

Variable	Anxiety score	
	r	p-value**
Hardiness	-0.016	0.028
Self-efficacy	-0.057	0.026
Meaningfulness/purpose	-0.095	0.035
Optimism	-0.042	0.031

***Significant level: p≤0.05*

This table shows the correlation between "anxiety levels" and different aspects of "resilience". Negative correlation values (r) suggest that higher resilience is associated with lower anxiety. For example:

- Self-efficacy ($r = -0.057$, $p = 0.026$) → Nurses with greater confidence in their abilities tend to experience lower anxiety levels.
- Meaningfulness/Purpose ($r = -0.095$, $p = 0.035$) → Nurses who find greater meaning in their work tend to have lower anxiety levels.

These findings highlight the importance of resilience-building programs to help nurses manage job-related stress effectively.

4. Discussion

This study was conducted among 100 nurses to assess anxiety levels and resilience across various wards of Shahid Mohammadi Hospital. In recent months, COVID-19 has emerged as a life-threatening disease, raising concerns in many countries (24). The pandemic has placed a significant workload on medical staff, particularly nurses, who are in close contact with patients. This proximity increases the risk of infection for both the nurses themselves and their families, making it a major concern (25). Iran is among the ten countries with a high prevalence of the disease (26).

This study conducted on 100 nurses revealed that their anxiety levels were moderate. In this regard, Nemati et al. found that nurses' anxiety during the crisis ranged from moderate to high (26). Similarly, Huang and Zhao's study in China reported high levels of anxiety among medical staff at the onset of the outbreak (27). In another study conducted in Saudi Arabia during the MERS virus outbreak, medical students were found to experience high levels of anxiety (28). Lee et al.'s research indicated that approximately 44.6% of healthcare providers treating COVID-19 patients suffered from anxiety (29). Additionally, Kang et al. found that among 994 nurses, 56.8% experienced mental health disorders (30). Factors contributing to this anxiety may include fear of infection, lack of specific treatment, rapid disease transmission, concern about infecting family members, and social isolation due to hospital work.

Nursing is a profession that encompasses physical, mental, and emotional dimensions. Nurses work under challenging conditions, particularly during the COVID-19 pandemic. Various studies have examined nurses' resilience and found that enhancing resilience skills helps them cope with crises and difficult situations (31). Kornhaber & Wilson highlighted that workplace challenges, stress, loss of internal balance, and feelings of disconnection significantly affect resilience in the nursing profession (32). Strengthening resilience and well-being enables nurses to provide high-quality care and achieve professional success, even in stressful environments. Key strategies for building resilience include supervision, training, maintaining a healthy work-life balance, and fostering a positive work environment. Additionally, organizations can promote well-being through supportive management, effective leadership, and stress management training. Studies have also shown that holistic approaches, such as mindfulness and meditation programs, contribute to stress reduction and improved resilience among nurses (31).

The results of this study further indicate a significant relationship between anxiety and resilience. However, findings from Jafar Jalal et al. suggest that while no significant correlation exists between stress and resilience, nurses generally experience mild to moderate stress levels and above-average resilience (33). Conversely, Mahdieh et al. reported a strong and significant correlation between job stress and resilience (34). The disparity in these findings may be attributed to differences in questionnaires, data collection methods, locations, and timeframes. To manage anxiety among nurses, strategies such as reducing workload, increasing supervision, and enhancing employee support are recommended. Additionally, improving nurses' physical and mental well-being can strengthen their resilience. This study's generalizability is limited by the small sample size and low nurse participation. Furthermore, the cross-sectional design precludes causal inferences. Future research should employ larger, multi-site samples and a mixed-methods approach to more comprehensively investigate nurses' anxiety, resilience, and associated factors.

5. Conclusion

This study highlights the moderate levels of anxiety and resilience among healthcare workers during the COVID-19 pandemic. A negative correlation was observed between anxiety and resilience, suggesting that higher resilience may help mitigate stress and anxiety among nurses. These findings highlight the importance of addressing nurses' mental health and strengthening their resilience when facing stressful work conditions. It is recommended that healthcare organizations implement psychological support programs, reduce workload, and provide resilience training to improve nurses' mental health and professional performance.

Footnotes

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Data Availability: No new data were created or analyzed in this study. Data sharing does not apply to this article.

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