

## The associated factors of COVID-19-related anxiety and its relationship with resilience among nurses working in Corona wards

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### Abstract

**Introduction:** It is vital to identify psychological disorders and their effective elements among nurses working in acute wards. As a result, the current study was carried out with the goal of determining the link between COVID-19-related anxiety and nurse resilience.

**Methods:** At 2021, 249 nurses working in Qazvin teaching hospitals participated in this descriptive cross-sectional survey. A three-part tool was used to gather information: a demographics questionnaire, the Corona Disease Anxiety Scale, and the Connor-Davidson Resilience Scale.

**Results:** The mean resilience and COVID-19-related anxiety scores were  $66.28 \pm 14.12$  and  $9.81 \pm 9.74$  ( $p < 0.001$ ), respectively. Resilience, job tenure in corona wards, work experience in corona wards, and workplace are the most effective and significant factors on nurses' COVID-19-related anxiety, while marital status and workplace are the most effective and significant factors on nurses' resilience, according to the results of univariate regression analysis.

**Conclusions:** COVID-19-related anxiety was reduced in the wards by nurses with higher resilience levels. This discovery can be used in management planning to help nurses feel less anxious.

**Keywords:** Anxiety, Psychological problem, Resilience, COVID-19, Health staff

### Introduction

The coronavirus illness (COVID19) pandemic, which started in China in December 2019 and has since spread around the world, has sparked new discussions and challenges (1). Because the disease is still spreading, precautions must be taken to reduce the danger of infection and transmission. Nurses, as the first line of care for hospitalized patients, play a critical role in the treatment and prevention of the disease's rising trend (2). Pandemics like this create difficult and unpredictable circumstances. Nurses' opinions of their readiness to respond to uncertainty and security in a pandemic, as well as to supply the right services for the community's requirements during this period, have a significant impact on community health. According to previous study, providers who have a lower risk assessment of nursing services are more courageous and willing to

deliver care, and vice versa (3). Nurses who are directly involved in the care of COVID-19 patients are at a higher risk of mental illness than other healthcare workers. While there has been few research on the impact of the pandemic on nurses' health and well-being, a number of recent studies have identified a number of stresses that may lead to mental health issues in nurses (4). Anxiety is one of the difficulties that might arise during this condition and harm the mental health of individuals and medical personnel (5).

In the absence of identifiable objects, stimuli, or situations, anxiety is defined as a vague, overwhelming, and uncontrollable worry linked with bodily symptoms. Corona anxiety is a sensation of fear associated with being infected with COVID19 (6). This concern has been widely documented among medical personnel. According to a poll of physicians and nurses working in a Wuhan hospital, 55 percent of healthcare workers had

significant levels of sadness, 44 percent had anxiety, and 34 percent had insomnia (7). The most prominent causes of weariness and anxiety in nurses are extended periods of wearing heavy personal protection equipment and the difficulties of providing care services (8). As a stressful profession, it is vital to pay attention to a person's individual and psychological capacities because they can help them resist and avoid injury in tough situations. Resilience is one of the most important human abilities for adaptive adaptation to changes, risk factors, and stressors in tough and stressful situations (9). Although little has been agreed on the nature of this idea, it is extremely important because it has an impact on one's mental health (10).

Resilience is described as an individual's ability to cope with adversity or the degree to which they respond to situations. It is a skill that enables people to overcome challenges and issues (11). Resilience, according to Fletcher et al., is the mental processes and behavior involved in enhancing personal assets and safeguarding oneself from potential negative consequences (12). Many specialists in the field of organizational behavior feel that many nurses are currently facing a number of issues, including managing work and family life (13). In addition, nurses, particularly those who care with patients who have proven or suspected COVID-19, are more prone to contract the virus and develop mental health difficulties, as well as to spread it to their family, friends, or coworkers (14). As a result, nurses should not only focus on mental health during the pandemic, but they should also focus on flexibility and resilience as soon as possible. It is critical to employ ways to strengthen their resilience in the face of the stressors posed by the virus's propagation at both the individual and societal levels (15).

Nurses in long-term care homes who miss their partners and children but are unable to see them because to COVID-19 policies are more stressed and anxious (8). In addition, resilience is one of the most important and effective variables affecting people's mental health and performance in a variety of scenarios. The requirement for efficient and effective manpower is necessitated by the mechanization of human existence, the development of industry, and the advancement of society, which necessitates the study of fundamental behavioral antecedents such as resilience. Identifying the characteristics that contribute to resilience can help to prevent a variety of harmful environmental behaviors (16). Cognitive variables have a role during chronic stress, and stress hormones like cortisol can keep stress levels circulating. This could explain why some people have negative stress reactions while others are able to adjust better (17). Nurses who are resilient may be better able to cope with and endure the challenges they face. Personal resilience may aid nurses in properly coping with the stress generated by the COVID-19 pandemic. Previous research has highlighted the favorable impacts of social support on nurses' job satisfaction and resilience, and it has been stated that proper social support is critical in assisting healthcare workers in efficiently managing stressful events such as infectious disease outbreaks (18). Age, sex, educational level,

work experience, working hours, perceived social support, and job happiness are all important determinants in nurses' resilience (19). According to what has been said, the current circumstances and crisis have prompted a shift in the way nurses, medical personnel, and other people interact, which has several ramifications. Because no research has been done in this area, the goal of this study was to look at the link between COVID-19-related anxiety and resilience among nurses who served as the first line of care during the pandemic.

## Methods

The study population in this descriptive cross-sectional study done in 2021 included all nurses working in Qazvin teaching hospitals. The results of the Nasirzadeh and colleagues' study were used to estimate the sample size (20). The average resilience score in nurses' families was  $37.55 \pm 19.18$  in this study. The sample size was computed using type I error ( $= 0.05$ , 95 percent confidence level), type II error ( $= 0.2$ , 80% test power), minimum error ( $= 19.18$ ), and  $d = 3.40$ .

The participants were chosen using a simple random sample technique based on the nurse-to-patient ratio in each institution. To that aim, the four teaching hospitals connected with Qazvin University of Medical Sciences have compiled their own list of eligible nurses. The number of samples in each hospital was then calculated using the ratio formula and the total number of nurses in that hospital. The total number of nurses in each ward in different shifts was used to determine the number of samples in each ward. Finally, the individuals were selected using basic random sampling. The study required participants to have at least a bachelor's degree in nursing and experience working in acute wards. Those samples that were either unavailable or unwilling to participate in the study were excluded.

A three-part tool was used to gather information: a demographics questionnaire, the Corona Disease Anxiety Scale (CDAS), and the Connor-Davidson Resilience Scale (CD-RISC). Nurses' age, sex, marital status, educational level, and work experience in Corona wards were all gathered using the demographic characteristics questionnaire.

In Iran, the CDAS was created and validated to assess COVID-19-related anxiety. There are 18 components and two factors in the final version. The psychological symptoms are measured on items 1 to 9, whereas the physical symptoms are measured on items 10 to 18. It is graded on a four-point Likert scale (never=0, occasionally=1, frequently=2, and always=3). The minimum and highest scores are 0 and 54, respectively. Individuals with high scores have a higher level of anxiousness (21). Preliminary investigations on healthy people and patients (alpha Cronbach 0.91) have also verified the scale's reliability and validity (21).

The CD-RISC is a 25-item scale that uses a 5-point Likert scale from 0 to 4 to assess resilience. Between 0 and 100 are the minimum and maximum scores. Individuals with high scores have a stronger level of resilience (22). The reliability and validity of this scale

were confirmed by the results of a preliminary research on its psychometric features (23). Preliminary investigations on healthy people and patients (alpha Cronbach 0.86) have also proven the reliability and validity of the Persian version of this scale (24).

SPSS16 was used to analyze the data. The mean, standard deviation, frequency, and percentage were utilized to describe the data. The Kolmogorov-Smirnov test was employed to determine whether the data were normal. Independent t-tests or Mann-Whitney tests were used to compare the mean anxiety and resilience scores for two-state demographic factors, and one-way analysis of variance or Kruskal-Wallis tests were used to compare them for multimode variables. Pearson's correlation coefficient was employed to look at the relationship between anxiety and resilience. In all tests, the significance level was set at 0.05.

All the participants in the current study gave their informed consent. Furthermore, the study has received its ethical approval from the Ethics Committee of Qazvin University of Medical Sciences, and the research was carried out under their supervision.

## Results

Only 189 (75.9%) of the 249 nurses were female. 123 people (49.4%) were single. A bachelor's degree was held by most of them ( $n = 233$ , or 93.6 percent). They were  $30.25 \pm 6.04$  years old on average. Their average employment experience in Corona wards was  $6.88 \pm 6.78$  months, with a monthly average of  $31.43 \pm 14.22$  shifts. The mean resilience and COVID-19-related anxiety scores in this study were  $66.28 \pm 14.12$  and  $9.81 \pm 9.74$ , respectively, for the two major variables (Table 1). The degree of correlation between them was estimated to be ( $r = -0.201$ ), showing an inverse and indirect association between the variables. When a result, as nurses' resilience improves, COVID-19-related anxiety decreases. This was a statistically significant connection ( $p < 0.001$ ) (Table 2).

According to the findings, there was no statistically significant relationship between mean resilience scores and sex ( $p = 0.39$ ), educational level ( $p = 0.22$ ), work experience in corona wards ( $p = 0.60$ ), age ( $p = 0.72$ ), job tenure in corona wards ( $p = 0.62$ ), or the number of shifts per month ( $p = 0.70$ ). There was, however, a statistically significant link between mean resilience scores and marital status ( $p = 0.03$ ) and workplace ( $p = 0.002$ ). (Table 3).

Furthermore, there was no significant link between COVID-19-related anxiety mean scores and sex ( $p = 0.159$ ), married status ( $p = 0.624$ ), educational level ( $p = 0.369$ ), age ( $p = 0.657$ ), or the number of shifts per month ( $p = 0.676$ ). There was, however, a statistically significant association between COVID-19-related anxiety mean scores and work experience in Corona wards ( $p = 0.049$ ), the workplace ( $p = 0.003$ ), and employment duration ( $p = 0.015$ ). (Table 3).

Resilience ( $p = 0.001$ ,  $\beta = -0.220$ ), job tenure in corona wards ( $p = 0.015$ ,  $\beta = -0.220$ ), work experience in corona wards ( $p = 0.48$ ,  $\beta = 0.122$ ), and workplace (Qods ( $p = 0.049$ ,  $\beta = 0.124$ ) and Kowsar ( $p = 0.009$ ,  $\beta = 0.172$ ))

were among the effective and significant factors on COVID-19-related anxiety in nurses ( $p < 0.05$ ), according to In other words, a one-unit increase in nurse resilience reduces anxiety by 0.201, whereas a one-month increase in corona ward employment tenure reduces anxiety by 0.220. In terms of work experience, nurses who had no work experience in acute wards had 0.122 greater anxiety levels than those who had. Nurses working in Qods, and Kowsar hospitals have higher levels of anxiety than those working in Velayat Hospital by 0.124 and 0.172, respectively, in the workplace. All of the variables stated had a statistically significant impact ( $p < 0.05$ ).

Furthermore, a one-year rise in the age of nurses ( $p = 0.657$ ,  $\beta = -0.030$ ) reduces their anxiety by 0.030, and a one-shift increase in the number of shifts ( $p = 0.676$ ,  $\beta = -0.019$ ) reduces their anxiety by 0.019. There were no statistically significant differences ( $p > 0.05$ ).

Nurses who were married ( $p = 0.624$ ,  $\beta = 0.031$ ) had 0.031 higher anxiety levels than those who were single. Nurses with a master's degree had 0.057 lower anxiety levels than those with a bachelor's degree ( $p = 0.369$ ,  $\beta = -0.057$ ). Female nurses have 0.089 higher anxiety levels than male nurses ( $p = 0.159$ ,  $\beta = 0.089$ ).

**Table 1.** Demographic characteristics of participants

Variable		Frequency	%
sex	male	60	24.1
	female	189	75.9
marital status	single	123	49.4
	married	126	50.6
educational level	Bachelor	233	93.6
	Master	16	6.4
work experience in corona wards	yes	209	83.9
	no	40	16.1
workplace	Qods	28	11.2
	Velayet	104	41.8
	Booali	40	16.1
	Shahid Rajaie	52	20.9
	Kowsar	25	10.0
Quantitative variable		Mean	SD
Age (years)		30.25	6.04
job tenure (months)		3.88	6.78
number of shifts per month		31.43	14.22
resilience		66.28	14.12
COVID-19-related anxiety		9.81	9.74

**Table 2.** Relationship between resilience and COVID-19-related anxiety

variable	Resilience	
	r	p-value*
COVID-19-related anxiety	-0.201	0.001

\*. Pearson's Correlation Coefficient

**Table 3.** Relationship between resilience and COVID-19-related anxiety with demographic variables

variable		Mean ± SD	
		resilience	COVID-19-related anxiety
sex	male	67.63±13.05	8.26±8.15
	female	65.85±14.44	10.30±10.17
t-test		p=0.397, t=0.849	p=0.159, t=-1.41
marital status	single	64.34±12.45	9.50±9.45
	married	68.17±15.38	10.11±10.00
t-test		p=0.032, t=-2.15	p=0.624, t=-0.491
educational level	BS	66.00±14.09	9.95±9.90
	MS	70.43±14.29	7.68±5.96
t-test		p=0.225, t=-1.21	p=0.369, t=0.901
work experience in corona wards	yes	66.48±14.30	9.29±9.20
	no	65.22±13.19	15.52±11.59
t-test		p=0.605, t=0.518	p=0.049, t=-1.59
workplace	Qods	66.32±12.10	13.42±11.20
	Velayet	66.04±13.89	9.33±9.86
	Booali	73.80±12.12	8.30±6.43
	Shahid Rajaie	61.96±14.73	7.40±7.57
	Kowsar	64.20±15.02	15.16±13.06
ANOVA		P=0.002, F=4.42	P=0.003, F=4.14
Quantitative variable		Pearson's Correlation Coefficient	
Age (years)		p=0.722, r=-0.024	p=0.657, r=-0.030
job tenure (months)		p=0.619, r=0.032	p=0.015, r=-0.157
number of shifts per month		p=0.700, r=0.025	p=0.676, r=-0.027

**Table 4.** Predictive factors of COVID-19-related anxiety using univariate and multivariate regression model

variable	regression coefficient $\beta$ univariate	p-value	regression coefficient $\beta$ multivariate	95% CI		p-value	vif	
				upper	lower			
resilience	-0.201	0.0001*	-0.202	-0.051	-0.225	0.002	1.08	
age	-0.030	0.657						
job tenure	-0.220	0.015*	-0.116	0.029	-0.356	0.096	1.27	
number of shifts per month	-0.019	0.676						
marital status	single	-	-	-	-	-	-	
	married	0.031	0.624					
educational level	BS	-	-	-	-	-	-	
	MS	-0.057	0.369					
sex	male	-	-	-	-	-	-	
	female	0.089	0.159					
work experience in corona wards	yes	-	-	-	-	-	-	
	no	0.122	0.048*	0.039	4.56	-2.60	0.597	1.32
workplace	Velayet	-	-	-	-	-	-	
	Qods	0.124	0.049*	0.052	5.96	-2.61	0.443	1.19
	Booali	-0.067	0.317	-0.021	2.95	-4.02	0.762	1.22
	Shahid Rajaie	-0.098	0.147	-0.134	0.012	-6.29	0.048	1.21
	Kowsar	0.172	0.009*	0.141	8.95	0.341	0.035	1.16

F=4.207, p<0.001, R=0.335, R<sup>2</sup>=0.112, Durbin-Watson=1.66

Nurses at Booali ( $p=0.317$ ,  $\beta=-0.067$ ) and Shahid Rajaie ( $p=0.147$ ,  $\beta=-0.098$ ) hospitals have 0.067 and 0.098 lower levels of anxiety than those at Velayat Hospital, respectively. There were no statistically significant differences ( $p>0.05$ ).

Resilience ( $p=0.002$ ,  $\beta=-0.220$ ) and workplace (Shahid Rajaie ( $p=0.048$ ,  $\beta=-0.134$ ) and Kowsar ( $p=0.035$ ,  $\beta=0.141$ ) hospitals) were among the effective factors on COVID-19-related anxiety in nurses in the final model, which included resilience, job tenure in corona wards, work experience in corona wards, and workplace.

The Kolmogorov-Smirnov test was used to confirm the assumption of data normality of the dependent variable (COVID-19-related anxiety), the assumption of nonlinearity was confirmed using vif values, and the assumption of error independence was established using the Durbin-Watson test. With a statistical value of  $F=4.207$  and  $p < 0.001$ , the final model was also declared statistically significant.

## Discussion

The purpose of this study was to determine the characteristics that predict COVID-19-related anxiety and its association with resilience among nurses working in acute wards. The findings revealed a statistically significant and negative association between COVID-19-related anxiety and resilience, implying that an increase in the mean resilience score leads to a reduction in nurses' anxiety.

Ariapooran and colleagues' work might be referenced in conjunction with this one. Anxiety among nurses working on pediatric wards was explored in this study, and the results revealed that a large number of nurses have high levels of anxiety (25). Mohamadzadeh Tabrizi and colleagues found that a considerable percentage of nurses working in corona wards have high levels of anxiety in another study (26). Researchers looked at nurses' anxiety levels during the COVID-19 pandemic in a 2019 study. When compared to our findings, the amount of anxiety reported by nurses in that study was higher. This discrepancy could be due to a temporal gap in the studies' execution. Within the first month of the pandemic's commencement, the above-mentioned study was completed. Furthermore, the tool employed to determine the level of anxiety was different; the individuals' anxiety was assessed using the DASS21. Sharififard and colleagues found that nurses in the study had higher levels of anxiety (27). This type of anxiousness can have serious consequences for nurses. A deterioration in their quality of life, a drop in the quality of care they provide despite their desire, dread, extreme weariness, and burnout can all be cited in this regard (28-31). As a result, nursing managers should think about the steps that need to be taken in this regard. Among these is the usage of psychological counselors for this group of nurses.

The results of the study's second section revealed that nurses with higher degrees of resilience had lower levels of worry. When confronted with COVID-19-related difficulties, Majipour and colleagues discovered that people who are more resilient are less likely to

experience anxiety, tension, and concern (32). During the COVID-19 pandemic, however, the results of one study in Yazd showed that there was no significant link between anxiety and resilience (20). There are two possible explanations for this disparity. To begin, there is a time difference between the two studies: The first study took place during the early stages of the COVID-19 pandemic, whereas the current study took place 1.5 years after the pandemic. Second, there is a difference in sampling: the samples in the previous study were recruited from the entire population of the city, but only nurses were selected in the current study.

Previous research' findings on demographic characteristics associated to nurses' anxiety are relatively consistent. Alipour and colleagues found a strong link between job experience and stress and anxiety in nurses in a study on demographic characteristics associated to depression and anxiety in nurses. This conclusion is consistent with the findings of the current investigation. The findings also revealed that there is no link between depression, anxiety, and stress with education, sex, or marital status in this study. This discovery is similar to the current study's findings (33). According to the findings of Akhondi and colleagues' study, there is a substantial association between anxiety and education, employment, and age, as well as depression and job levels. This finding is inconsistent with the current study. The disparity could be related to the two research' samples (20). Age, work experience, and the ability to control emotional expression were all significant predictors of anxiety in another study by Lenzo and colleagues (34). The results of another study by Zheng et al. revealed that nurses' levels of COVID-19-related anxiety are affected by their workload, demographic characteristics such as age, sex, educational level, ward, hospital type, and workplace. The results of this study contradict those of the current study in terms of age and gender, but they are consistent in terms of the other variables (35).

The generalizability of the findings reduces in this study, which was undertaken at a single university. Another weakness of this study was the self-report data gathering approach.

## Conclusion

Corona ward nurses had a higher level of anxiety than other nurses. This anxiety was found to be linked to their level of resilience, with nurses who had higher levels of resilience having lower levels of anxiety. Given the beneficial function of resilience in reducing anxiety, nursing management should consider this issue when managing the anxiety of nurses working in acute wards. Due to the scarcity of research, more research is recommended in this area. It is also suggested that nurses working in acute wards study the association between resilience and other psychological variables such as stress, depression, and quality of life.

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