Original Article

Association between COVID-19 Anxiety and Cognitive Failure and Temperament Components in the Personnel of an Iranian Hospital, Iran, 2021

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Article Info

Abstract

Background: The outbreak of COVID-19 has a serious crisis for health systems in different countries. This study aimed to investigate the association between COVID-19 anxiety and cognitive failure and temperament components in the personnel of a hospital in the Yazd Province.

Materials and Methods: This was a cross-sectional study. The participants were the personnel of a hospital. The convenience sampling method was used for the sampling purpose. The participants were the personnel of COVID-19 and non-COVID-19 sections of a hospital. Data collection tools included a demographic questionnaire, the Corona Disease Anxiety Scale (CDAS), the Cognitive Failure Questionnaire (CFQ), and the Emotionality Activity Sociability (EAS) Questionnaire. Data analysis was performed in SPSS-24 software.

Results: The mean age of the participants was 33.45 (6.42) years. COVID-19 anxiety was significantly higher in the non-COVID-19 personnel than in the COVID-19 personnel (P < 0.001). In addition, a positive correlation was found between COVID-19 anxiety scores and cognitive failure scores (P = 0.04). After investigating the simultaneous relation of COVID-19 anxiety with cognitive failure and temperament components, the model results showed that cognitive failure (P = 0.02) and sociability (P < 0.001) had a significant effect on COVID-19 anxiety.

Conclusions: High levels of COVID-19 anxiety in non-COVID-19 section personnel indicated the importance of paying more attention to all hospital occupations. To reduce cognitive failure and anxiety, it is recommended to provide psychological training, workloads reduction, and the number of personnel be increased.

Keywords: Temperament, Cognitive Dysfunction, Anxiety, COVID-19, Nurses.

Introduction

COVID-19 was first reported in December 2019 in Wuhan, China [1]. The cause of this disease was a new coronavirus named SARS-CoV-2. In terms of its case, this virus is similar to the severe acute respiratory syndrome (SARS) and the Middle East

Respiratory Syndrome (MERS) [2]. This virus is highly contagious, so it spread rapidly from Wuhan to other countries, thereby infecting all over the world in a short time [3]. This disease can be accompanied by mild symptoms, such as fever, sore throat, and dry cough. Acute respiratory distress syndrome (ARDS) and death are among severe complications of the disease [4]. The outbreak of COVID-19 was accompanied by the death of a large number of people all around the world. That death rate is affected by various factors [5]. About 241 million people contracted COVID-19, and 4.91 million people died of COVID-19 worldwide [6]. In Iran, as of 31 August 2021, about 4 million people contracted COVID-19, and 100 thousand people died of it [7].

Following the outbreak of COVID-19 and the increase in mortality rates, planning to prevent and control the disease began and implementation of health policies were put on the agenda of the world countries. However, implementation of such health policies, despite positive consequences, has exerted negative psychological effects in communities [8]. Factors, such as the fear of the disease, fear of death, reduced social relationships, interferences in daily activities, and occurrence of occupational and financial problems can threaten people's mental health in society [9]. Undoubtedly, COVID-19-related anxiety is one of the major factors among the aforementioned ones. In fact, during the pandemic of a disease, such as COVID-19, fear of the disease, fear of death, and daily disturbances make healthy people become obsessed with disease anxiety [10]. Anxiety is one of the most common mental disorders and a distressing feeling indicating an ambiguous danger [11]. In the first phase of the COVID-19 outbreak in China, over half of the study population reported severe to moderate psychological impacts, and about one-third reported moderate anxiety [12].

When an outbreak occurs, various groups in a community become involved in providing services. Hospital health personnel are on the first line of defense against specific pandemics, such as COVID-19, who risk their lives performing their duties [13, 14]. Nurses make up considerable of the treatment team and are at the forefront of fighting the COVID-19 pandemic [15]. Factors, such as the high probability of disease contraction, work nature, use of heavy personal protective equipment (PPE) during working shifts, and possibility of infecting others can cause psychological disorders among nurses [16]. The nature of this disease sets off reactions, such as anxiety, depression, and fatigue in nurses [17]. Lai et al conducted a study on nurses and hospital physicians in Wuhan, China, during the spread of

COVID-19. The results of this study showed that medical care workers displayed a lot of anxiety (44.6%) and depression (50.4%) symptoms [18]. Likewise, a study was conducted to determine stress, anxiety, and depression among nurses working in wards assigned to hospitalization of COVID-19 patients in the Torbat-e Heydarieh County. In this study, depression, anxiety, and stress were reported to have been moderate in nurses [19].

Research shows that cognitive traits can affect anxiety [20, 21]. In fact, cognitive failure can be defined as inadvertent mistakes in common and everyday behaviors [22]. Results of a study show that people with high cognitive failure experience more anxiety and stress [23]. Santangelo et al found that cognitive failure was associated with anger and depressive symptoms [24]. Petitta et al, in their study, showed that cognitive failure was directly related to negative emotions, such as anger, and inversely related to positive emotions, such as happiness. In their study, high cognitive failure was reported to be associated with high accident rates [25]. The results of a study showed that cognitive failure had a negative effect on job performance [26]. Abbasi et al found that cognitive failure in nurses affected their work ability index [27].

Temperament is another factor affected by human vulnerability to stress, mood disorders, depression, anxiety, and physical disorders [28]. A person's reactions to different physiological, psychological, and social stimuli are different. This innate biological state is called the temperament of the person [29]. The results of a study showed that temperament could affect stress [30]. Similarly, the results of the study by Burenkova et al showed that stress responses were associated with temperament [31]. A study found a relationship between the fear of COVID-19 and temperament [32]. Similarly, Jaracz et al found that cyclothymic and anxious temperaments in nurses were associated with more severe stress and burnout symptoms [33].

With the spread of the COVID-19, provision of health services received special attention in every country. Nurses are the most important human resources of hospitals, so hospitals and healthcare organizations will not have necessary productivity and success without efficient nursing staff [34]. Stress and anxiety are very important issues for nurses' lives because, in addition to mental health, they affect the quality of services they provide and the occurrence of clinical errors [35]. Anxiety can decrease mental concentration and increase errors in performing tasks [36]. High stress and anxiety among nurses, in addition to contributing to

causing psychological disorders, can affect their caring behavior and raise concerns over their capability of caring behaviors [37]. Given the threat to nurses' mental health under COVID-19 conditions and their professional role in combating the COVID-19 pandemic, it is necessary to identify underlying factors as much as possible. By determining the role of different variables as well as formulating effective strategies to control them, the anxiety caused by COVID-19 can be reduced in nurses. The relationship of COVID-19 anxiety with temperament variables and cognitive failure in hospital personnel has not been investigated so far. Accordingly, the present study was conducted to investigate the relationship of COVID-19 anxiety with cognitive failure and temperament variables.

Materials and Methods

The participants of this cross-sectional study were the personnel of a hospital in the Yazd Province. Additionally, the convenience sampling method was used in this study. The personnel were selected from the two COVID-19 and non-COVID-19 sections and compared with each other. The inclusion criteria included being under age 50, having at least 6 months of work experience, not being in critical situations, such as having been hospitalized or experienced a family death in the last month, not being involved with mental illnesses, such as depression, and attendance at work in the last week. In this study, the sample size was determined using formula 1.

Formula 1.

$$n_1 = n_2 = \frac{(S_1^2 + S_2^2)(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta})^2}{(\bar{X}_1 - \bar{X}_2)^2}$$

Where the probability of committing a type I error (α), the probability of committing a type II error (β), the sample mean responses in each group ($\bar{X}_1$, $\bar{X}_2$), and sample standard error of responses in each group (S_1, and S_2) were determined based on pilot sampling from the personnel of the COVID-19 and non-COVID-19 sections (n = 15 in each section) and psychological factors. Given that $\alpha = 0.05$, $\beta = 0.10$, $\bar{X}_1 = 5.73$, $\bar{X}_2 = 8.30$, $S_1 = 4.60$, and $S_2 = 4.51$, the sample size was equal to 50 for each section. To meet requirements, supervisors of each section were selected as the link between the researchers and the participants. All supervisors were briefed on the study objectives and methods. Besides, informed consent forms were given to the supervisors, with inclusion criteria and data collection tools explained to them. Incomplete questionnaires were excluded from this study. Additionally, the supervisors were assured that their information and details would remain confidential. The study protocol was approved by the Ethics Committee of Shahid Sadoughi University of Medical Sciences under code IR.SSU.SPH.REC.1400.118.

Demographic Information Questionnaire: This questionnaire was designed to obtain personal information including age, gender, marital status, educational level, satisfaction with PPE, and history of COVID-19. In addition, satisfaction with PPE was measured qualitatively at the three levels of low, medium, and high.

Corona Disease Anxiety Scale (CDAS): This questionnaire was developed by Alipour et al (2020) to measure COVID-19 anxiety in Iran, being an 18-item two-component self-report tool (psychological and physical factors). Each component contained nine questions, with their score ranging from zero to 27. All components were investigated in this study. This questionnaire was scored on a 4-point Likert scale (0 = never, 3 = always), with the lowest and highest scores being zero and 54, respectively. Higher scores in this questionnaire indicated a higher level of anxiety in individuals. Reliability of this tool was obtained using the Cronbach's alpha method, having been (α = 0.87) for the first factor, (α = 0.86) for the second factor, and (α = 0.91) for the whole questionnaire. Validity of this questionnaire was calculated by correlating this tool with the general health questionnaire. Correlation of CDAS with the total score of the general health questionnaire, anxiety components, physical symptoms, social dysfunction, and depression was reported to be 0.48, 0.50, 0.42, 0.33, and 0.27, respectively [38]. In the study of Mohamadzadeh Tabrizi et al, validity of this questionnaire was assessed for Iranian nurses, with the Cronbach's alpha values for psychological symptoms, physical symptoms, and the whole questionnaire having been 0.92, 0.89, and 0.94, respectively [39]. In the present study, Cronbach's alpha was calculated at 0.90.

Cognitive Failure Questionnaire: Broadbent et al designed the Cognitive Failure Questionnaire (CFQ) in 1982 to assess cognitive impairment in individuals. This questionnaire consisted of 25 questions, with the four components of which being distractions, memory problems, inadvertent mistakes, and remembering names. All components were investigated in this study. The sum of questions 1, 2, 5, 6, 13, 16, 17, 21, 22, and 23 indicates the component of memory problems; the sum of questions 8, 9, 10, 11, 14, 15, 18, 19, and 25 indicates the component of distractions; the

sum of questions 3, 4, 12, and 24 indicates the component of inadvertent mistakes; and the sum of questions 7 and 20 indicates the component of remembering names. The questions were scored on a 5-point Likert scale. Accordingly, "never" received score zero, and "always" received score 4. Besides, the questionnaire scores were within the range of 0 and 100, with higher scores indicating more cognitive failure [40]. In the study of Allahyari et al, the content validity index (CVI) was calculated at 0.7, and the Cronbach's alpha coefficient was 0.96 [41]. In the present study, the Cronbach's alpha of the questionnaire was calculated at 0.95.

Emotionality Activity Sociability (EAS): This questionnaire was designed by Buss and Plomin (1984), which has 15 questions and five subscales, including sociability, anger, activity, helplessness, and anxiety. The questions in this questionnaire were scored from 1 (not at all like me) to 5 (quite like me). The sum of questions 1, 7, and 11 indicates the component of sociability; the sum of questions 2, 6, and 12 indicates the component of activities; the sum of questions 3, 10, and 15 indicates the component of anxiety; the sum of questions 4, 8, and 14 indicates the component of helplessness; and the sum of questions 5, 9, and 13 indicates the component of anger. In this study, all components were investigated [42]. In the present study, content validity and reliability of this questionnaire were calculated. In addition, the mean of the Content Validity Ratio (CVR) was calculated at 0.99. Furthermore, Cronbach's alpha was calculated at 0.86.

In this study, frequency, percentage frequency, mean, and standard deviation were used to describe the information. Additionally, the Mann-Whitney U test, the Kruskal–Wallis test, and the multiple regression model were used for statistical analysis. Besides, the Kolmogorov-Smirnov test was used to test the normality of the data. Considering non-normal data, the variables of median and interquartile range were used to describe the data. Data analysis was performed in SPSS-24. In addition, the significance level was considered at 5 %.

Results

In this study, the mean (standard deviation) age was 33.45 (6.42) years. Besides, the mean (standard deviation) work experience was 9.18 (6.50) years. Accordingly, Table 1 presents demographic information on the personnel in the two COVID-19 and non-COVID-19 sections.

Table 1. Frequency distribution of the personnel's demographic characteristics among COVID-19 and non-COVID-19 sections

Variables	Grouping	Frequency (Percent)	
		COVID-19 section (n = 50)	Non-COVID-19 sections (n = 50)
Gender	Men	22 (44)	22 (44)
	Women	28 (56)	28 (56)
Marital status	Married	35 (70)	43 (86)
	Single	15 (30)	7 (14)
Education status	High school diploma	5 (10)	9 (18)
	Bachelor's	40 (80)	32 (64)
	Master's	5 (10)	9 (18)
Satisfaction with PPE *	Low	4 (8)	4 (8)
	Moderate	42 (84)	41 (82)
	High	4 (8)	5 (10)
History of COVID-19	Yes	26 (52)	24 (48)
	No	24 (48)	26 (52)

* Personal Protective Equipment

In this study, the mean (standard deviation) score of COVID-19 anxiety in the total personnel was 9.58 (7.74). Data analysis results showed no significant relationship between demographic variables and COVID-19 anxiety scores. Due to the non-normal distribution of COVID-19 anxiety scores, the Mann-Whitney U test was used to compare anxiety scores in the two groups of the personnel. Accordingly, the test results showed that COVID-19 anxiety scores were significantly higher in the personnel working in the non-COVID-19 sections than in those working in the COVID-19 section (P < 0.001) (Table 2).

Table 2. Comparison of COVID-19 anxiety scores in the personnel of COVID-19 and non-COVID-19 sections

Variables	COVID-19 section			Non-COVID-19 section			P-value*
	First quartile (Q$_1$)	Median	Third quartile (Q$_3$)	First quartile (Q$_1$)	Median	Third quartile (Q$_3$)	
Psychological factor	1	5	8	5	7	10	< 0.001
Physical factor	0	1	2	0.5	3	6	< 0.001
Total (COVID-19 anxiety)	1.75	6	11	7	10	15	< 0.001

* Mann-Whitney U Test

In this study, the mean (standard deviation) score of cognitive failure was 30.74 (18.09). The results showed a significant relationship between cognitive failure scores and work experience (P = 0.01). However, there was no significant relationship between other demographic variables and cognitive failure scores. In fact, data analysis results showed a significant relationship between satisfaction with PPE and temperament (activity) (P = 0.02).

Due to the normal distribution of cognitive failure scores, an independent samples t-test was used to compare cognitive failure scores between the two groups of the personnel. Accordingly, cognitive failure and its components were significantly higher in the personnel working in the COVID-19 section than in other non-COVID-19 sections (P < 0.05) (Table 3).

Table 3. Comparison of cognitive failure scores in the personnel of COVID-19 and non-COVID-19 sections

Variables	COVID-19 section		Non-COVID-19 section		P-value*
	Mean	Standard deviation	Mean	Standard deviation	
Memory problems	10.5	4.63	6.94	5.64	<0.001
Distractions	13.68	6.96	9.36	6.43	<0.001
Inadvertent mistakes	9.32	5.43	6.78	4.52	0.01
Remembering names	3.32	2	2.16	1.95	<0.001
Total (cognitive failure)	36.82	17.46	24.42	16.95	<0.001

* Independent samples t test

As Table 3 shows, cognitive failure scores and their components were significantly different between the two groups. In addition, results of the Mann-Whitney U test showed that anger, anxiety, and helplessness were significantly higher in COVID-19 personnel than in non- COVID-19 personnel (Table 4).

Table 4. Comparison of temperament component scores in the COVID-19 and non-COVID-19 personnel

Variables	COVID-19 section			Non-COVID-19 section			P-value*
	First quartile (Q$_1$)	Median	Third quartile (Q$_3$)	First quartile (Q$_1$)	Median	Third quartile (Q$_3$)	
Sociability	2.67	3	3.67	2.67	3	3.83	0.85
Anger	2.33	3	3.33	1.67	2	2.67	<0.001
Activity	2	2.67	3.08	2	2.67	3	0.44
Helplessness	2	2.33	3	1.33	2	2.67	<0.001
Anxiety	1.58	2.33	3	1.33	1.67	2	0.02

* Mann-Whitney U Test

In this study, we found a significant positive relationship between COVID-19 anxiety scores and cognitive failure scores (P = 0.04). Besides, a significant relationship was found between COVID-19 anxiety scores and inadvertent mistakes (P = 0.03). However, COVID-19 anxiety had no significant relationship with memory problems, distractions, and remembering names.

Due to the non-normality of data distribution, the Spearman's correlation was used to investigate the relationship between COVID-19 anxiety scores and temperament components (Table 5).

Table 5. Relationships between temperament components and COVID-19 anxiety scores

Temperament components	COVID-19 anxiety	
	Correlation coefficient	P-value*
Sociability	0.32	< 0.001
Anger	-0.008	0.93
Activity	0.25	0.01
Helplessness	0.12	0.20
Anxiety	0.31	< 0.001

* Spearman's Correlation

To assess COVID-19 anxiety predictors, in this study, a multiple linear regression model was fitted using the forward method. To this end, the demographic variables and scores of all questionnaires were included in the model. In addition, normality of residuals was checked using a normal probability plot and a z-test using skewness and kurtosis [43]. Table 6 shows the results of this model. To check the goodness-of-fit of the model, adjusted R squared was calculated. This index showed that about 38% of total variability in anxiety scores could be explained by predictors in the model. The results of the regression model showed a significant relationship between the COVID-19 anxiety scores and being exposed to COVID-19 patients (P < 0.001). Given the level of other variables fixed, the mean score of anxiety in the group working in non-COVID-19 sections was 5.90 units higher than that in those working in the COVID-19 section. Additionally, the results of the final regression model showed the significant relationship of COVID-19 anxiety scores with temperament (sociability) (P < 0.001) and cognitive failure (P = 0.02).

Table 6. The final model of the multiple linear regression of the factors related to anxiety in the personnel

	Unstandardized coefficients	Std. Error of unstandardized coefficients	P-value	Adjusted R Squared
Gender	3.42	1.46	0.02	
Section of work	5.90	1.53	P < 0.001	
Sociability	4.14	1.03	P < 0.001	0.38
Cognitive failure	0.11	0.05	0.02	

Given the estimated regression coefficients and considering the level of other variables fixed, a unit increase in the sociability score increased the mean anxiety score by 4.14 units. Besides, with one unit increase in the cognitive failure score, the mean anxiety score increased by 0.11 unit, keeping other independent variables constant. Furthermore, the results of fitting the regression model show that gender had a significant relationship with anxiety scores; accordingly, given the level of all variables fixed, the mean anxiety score was by 5.90 units higher in females than in males (P = 0.02).

Discussion

Today, COVID-19 has sparked off a serious public health crisis in the world, with hospital personnel being among the main groups at the risk of contracting this disease. This study aimed to investigate the relationship of COVID-19 anxiety with cognitive failure and temperament components. According to the results, the median of anxiety in the personnel of COVID-19 and non-COVID-19 sections was 6 and 10, respectively. Besides, the results showed that COVID-19 anxiety was higher in the personnel working in the non-COVID-19 section. Additionally, the scores of cognitive failure and its components were higher in the COVID-19 personnel than in others. Furthermore, anger, anxiety, and helplessness were significantly higher in COVID-19 personnel than in others. In addition, cognitive failure and temperament (sociability) were able to significantly predict disease anxiety in the personnel.

In the study of Asadi et al, the mean COVID-19 anxiety in nurses was 21.39 (9.8), being much higher than that in the present study [44]. In the study of Eyni et al (2020), the mean COVID-19 anxiety in nurses was calculated at 18.34 (10.40) [45]. In another study, the mean COVID-19 anxiety among nurses was 28.98 (13.84) [46]. In a study in August 2020, the mean COVID-19 anxiety in health workers was 16.24 (11.39) [47]. The differences in the mean anxiety in different studies can be due to differences in the time of the study, research community, health status of the workplace, and disease status in the city studied [48]. One can conclude that the passage of time and vaccination have been able to reduce anxiety among nurses. In this study, 48% of the nurses

reported a history of COVID-19. In another study, 70% of nurses reported a history of Covid-19 disease [49]. The reason for this inconsistency could be differences in the methods of the studies and the study populations. This study showed that nurses with a history of COVID-19 reported significantly lower rates of anxiety. Gallagher et al found that people who contracted COVID-19 experienced higher levels of stress and mental disorders [50]. The results of another study showed increased symptoms of stress and anxiety in people with a history of COVID-19 contraction [51]. Research shows that the relationship of a history of COVID-19 contraction with stress and anxiety is influenced by consequences of the disease [50]. People in more serious situations would certainly report higher levels of stress and anxiety. According to a study, the death of loved ones from the disease affects anxiety among people [52].

In the present study, a significant relationship was found between satisfaction with PPE and temperament (activity). Accordingly, satisfaction with PPE could reassure nurses, with this affecting their performance. Besides, the results of this study showed that most of the personnel were moderately satisfied with PPE. In the study of Deressa et al, the majority of healthcare personnel were dissatisfied with PPE [53]; accordingly, in their study, no significant relationship was found between COVID-19 anxiety and satisfaction with PPE. Sampaio et al, in their study, showed that the lack of appropriate PPE affected stress and anxiety among nurses [54]. Factors, such as the type of the population studied and workplace conditions seem to affect this relationship.

According to the results of the present study, cognitive failure is related to work experience. In the study of Yousef Zade et al, a significant relationship was found between work experience and cognitive failure [55]. In the same vein, the results of a study showed a significant positive correlation between cognitive failure and work experience in nurses [27]. However, in another study, no significant relationship was found between work experience and cognitive failure, being inconsistent with the results of the present study [56]. The results of a study on employees in an industry showed that cognitive failure was associated with work experience [57]. This difference could have been due to the type of the study population or the study method. High cognitive failure scores among nurses in the COVID-19 section could be due to the nature of their work in the COVID-19 pandemic. In emergencies, such as the COVID-19 pandemic, nurses cope with huge workloads. In fact, heavy workloads cause fatigue, thereby increasing cognitive failure [58]. Elfering et al believe that individual differences in conscientiousness are among the factors affecting cognitive failure among nurses [59]. Poor work ability is one of the factors increasing cognitive failure among nurses. In fact, excessive workloads can reduce nurses' abilities. Therefore, taking measures, such as increasing the number of nurses and reducing durations of work shifts can reduce cognitive failure [27]. In a study, nurses' working conditions during the COVID-19 epidemic were associated with various psychological consequences [60]. A study in Portugal showed that nurses had higher levels of anxiety and depression than the general population [54]. Similarly, May Li et al reported that working conditions associated with COVID-19 were correlated with poor mental health among nurses [61]. In fact, changing working conditions, increasing workloads, and threats of COVID-19 have increased stress among health workers [62].

The results of this study showed that cognitive failure could affect COVID-19 anxiety. A study by Sheykholeslami et al showed that cognitive failure could affect anxiety among the elderly [63]. In the study of Aneeza et al, cognitive failure was reported as a significant predictor of interpersonal relationship anxiety [64]. The results of the study by Carrigan et al showed that cognitive failure was one of the factors affecting anxiety among nurses [65]. Cognitive failure is associated with factors, such as drowsiness, anxiety, and work pressure in the workplace. The results of another study showed a significant relationship among cognitive failure, anxiety, stress, and emotional disorders [66]. In a study, cognitive failure was observed among individuals stressed [67]. Cognitive failure can make a person unable to complete tasks that they are naturally able to perform [68]. The results of various studies show that cognitive failure can cause problems, such as anxiety, through interfering with daily activities and impaired concentration [65, 69]. In fact, cognitive failure can affect performance by interfering with daily activities [63]. In this study, among all subscales of temperament, only sociability was able to predict COVID-19 anxiety. In actuality, the nature of COVID-19 anxiety is different from other social anxieties. The authors of the present study can conclude that sociability and being present in the community can increase the risk of contracting the disease, thereby increasing anxiety. Since no similar study has been conducted on COVID-19 anxiety with cognitive variables involved, it was not possible to compare the present study with similar ones.

To our knowledge, this is the first study to have investigated the relationship between temperament and COVID-19 anxiety. In this study, relationship analysis was performed using a regression model. Although the present study provides evidence helping personnel in pandemics, it has its limitations. The present study was cross-sectional, so the results may not be verified in a longitudinal study. In addition, the personnel were from only one province of Iran, so the results could not be generalized to all over Iran or the world.

Conclusion

The results of the present study showed that cognitive failure and temperament (sociability) could affect COVID-19 anxiety among nurses. To maintain the mental health of the personnel and increase work efficiency, it is recommended that interventions be focused on these components. Such interventions can include reducing sociability at the time of the outbreak of the disease, paying attention to the factors reducing cognitive failure, as well as providing related information and psychological training. Researchers in the future can conduct similar studies, taking into account variables, such as personality types and social situations. Besides, it is suggested that a similar study be conducted on different populations, with its results be compared with those of the present study.

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