http://jhmi.sums.ac.ir
Health Man & Info Sci 2023, 10(4), 208–216

HMIS
Health Management and Information Science

Original Article

Fear and Anxiety of COVID-19 and Its Relationship with Nurse Caring Behaviors of Nursing Students: A Cross-sectional Study

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Abstract

Introduction: The emergence of COVID-19 and its pandemic nature has caused great fear worldwide. The pandemic led to economic, social, and mental health problems. Fear and anxiety are some of the main factors affecting the life and mental health of students, which can affect the caring behaviors of nurses. The aim of the present study was to determine the correlation between the fear and anxiety of COVID-19 and the nurse caring behaviors of nursing students at College of Nursing and Midwifery in Shiraz.

Methods: This descriptive-analytical study was conducted on 236 nursing students in 2021 at College of Nursing and Midwifery in Shiraz. The census sampling method was used. Data collection was done using Internet links through Whats app given to the participants. The data collection tool included the fear of COVID-19 designed by Ahorsu et al. which has 7 items., the COVID-19 Disease Anxiety Scale designed by Alipour et al. which consists of 18 questions, and the Caring Behavior Inventory (CBI) designed by Wolf et al. which has 42 questions. Data collection was carried out within 2 months. Data analysis was also done in SPSS v. 21, using descriptive analysis including frequency, percentage, mean and standard deviation, and inferential statistics including Spearman's correlation coefficient.

Results: The highest percentage of students had moderate (30.9%) and high (20.7%) anxiety levels represented by scores 17-29, and 30-54, respectively. 85.2% of the students were not afraid of COVID-19. There was no significant correlation between fear of COVID-19 disease and care behavior (r=0.3, P=0.644) and anxiety with care behaviors (r=-0.17, P=0.801).

Conclusion: Nursing students experienced moderate and high levels of COVID-19 anxiety, while few of them were afraid of COVID-19. However, their average caring behavior was desirable. Managers and officials of the nursing profession should take measures to manage the nursing students' anxiety during the epidemic.

Keywords: Fear, Anxiety, COVID-19, Nurse caring behaviors, Nursing students

Article History:
Received: 3 July 2023
Accepted: 2 September 2023

Please cite this paper as:
Homayouni L, Fereidouni A, Zare A. Fear and Anxiety of COVID-19 and Its Relationship with Nurse Caring Behaviors of Nursing Students: A Cross-sectional Study. Health Man & Info Sci. 2023; 10(4): 208-216. doi: 10.30476/jhmi.2024.102520.1219.

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Introduction

The widespread outbreak of the SARS-COV-2 virus caused the World Health Organization (WHO) to declare a public health emergency worldwide (1). With the increasing death rate, the COVID-19 pandemic has become one of the biggest threats to human health in the recent century and has created a historical emergency even worse than World War II (2). Pandemics such as COVID-19 cause economic and social problems and lead to an increase in mental health problems (3). Some of these problems include the fear of getting infected, stress, insomnia, hopelessness, and depression (4).

Fear is a natural and adaptive response to threat and danger, which can become chronic and exhausting under continuous and ambiguous conditions such as the COVID-19 pandemic, which ultimately makes it more difficult to control the disease (5). The emergence of COVID-19 and its pandemic nature has caused great fear worldwide (6). Nursing students face the fear of contracting the disease due to clinical education (7). In addition, another psychosocial problem that is seen during the outbreak of

diseases is anxiety (3). Anxiety is known as a very common disorder among all students, but nursing education has been associated with higher anxiety due to clinical challenges, which can reduce the quality of care, and patient safety and lead to medical errors (7, 8). Anxiety has negative effects on students' quality of life, their academic status, and clinical education, and can even lead to dropout (9).

On the other hand, during the COVID-19 pandemic, students were prone to mental problems due to travel restrictions, social distancing, quarantine, as well as the closing of dormitories and borders all over the world (10, 11). The results of a study on more than 7000 students during the COVID-19 outbreak in China showed that 24.9% of students had anxiety (12); there are concerns about the caring behaviors of nurses under the pandemic conditions and subsequent negative impacts on their activities (13).

Therefore, despite the lack of manpower, limited resources, and high risk of infection, nurses work under highly stressful conditions and are thus exposed to the risk of physical, emotional, and psychological problems that hurt the quality of care (14). In this regard, the study of Rabia and Koca showed that there was a positive and inverse correlation between anxiety and fear of the COVID-19 disease (15). The study of Alagamy et al. also indicated that the nurses studied had mild levels of fear and stress of COVID-19, which had negatively affected their healthcare behaviors. On the other hand (16), Asadi et al.'s study also revealed that nurses working in the COVID-19 wards suffered from moderate anxiety, but the level of caring behavior provided by nurses was desirable (17).

Caring behaviors are a combination of purposeful nursing actions and attitudes that meet the physical, emotional, spiritual, social, and psychological needs of the patient. These behaviors ultimately increase the feeling of security in patients and shorten the course of the disease (18, 19). Developing care competencies is one of the most important goals of nursing education and the main pillar of this profession (20). People who enter the nursing profession should improve their caring skills at the same time as they progress in different levels of education, which ensures proper caring behavior (21, 22). If nurses do not pay attention to the correct caring behavior, the desired educational outcomes will not be achieved (23).

Previous studies have emphasized the need to investigate the mental health status of students during the pandemic (12, 24, 25). However, few studies have evaluated the psycho-social impacts of COVID-19 disease on nursing students (12). Most of the studies conducted during the COVID-19 era have investigated the psychological effects of caring for the COVID-19 disease in nurses(26-28), and fewer have targeted nursing students, since anxiety and fear may affect nursing students' caring behavior and patient safety. Therefore, this research aimed to investigate the hypothesis that there is a correlation between fear and anxiety of COVID-19 and the nursing care behaviors of nursing students.

Materials and Methods

Study Design and Participants

This descriptive-analytical study was conducted on 236 nursing students of the College of Nursing and Midwifery in Shiraz (largest city in southern Iran), from December 2021 to July 2022. The census sampling method was used in the present research which included all undergraduate nursing students. Inclusion criterion was passing at least one nursing internship. Exclusion criteria also included transferring from other universities, failure to complete the entire questionnaire, and the presence of self-reported mental illness. Before we conducted this research, permissions were obtained from the Ethics Committee of the university.

The researcher obtained the names and phone numbers of the students from the nursing faculty. The researcher called the students, explained the purpose of the research, and emphasized the anonymity of the questionnaires and the confidentiality of the information. The researcher provided the informed consent and questionnaires via Internet link through WhatsApp and then called the students and encouraged them to complete the questionnaires faster. It should be noted that the participants were assured that they could withdraw from the study at any time they wished. Finally, among 260 nursing students, 245 participated in the study, and after collecting the questionnaires, 9 questionnaires were excluded from the study due to incomplete information. Therefore, finally, the data of 236 nursing students were analyzed.

Data Collection Tools

Four questionnaires including a demographic information questionnaire (age, gender, marital status, place of residence, GPA (Grade Point Average), academic semester), Fear of COVID-19 questionnaire (29), COVID-19 Disease Anxiety Scale (CDAS) (30) and Caring Behaviors Inventory (CBI) (31) were used.

Fear of COVID-19 Questionnaire

This scale was designed by Ahorsu and colleagues in Iran in 2020 and has 7 items. Answers were rated using a five-point Likert scale (Strongly disagree, Disagree, neither agree nor disagree, agree and completely agree). The minimum and maximum scores for each question are 1 to 5, respectively, and the total score range from 7 to 35. A higher score indicates a greater fear of COVID-19. The correlation between each item and the total score ranged from 0.47 to 0.56 and the factor analysis ranged from 0.66 to 0.74. Internal consistency of 0.82 and test-retest reliability of 0.72 were obtained for this scale. Validity was estimated simultaneously with the Hospital Anxiety and Depression Scale (HADS) and Perceived Vulnerability to Disease Scale (PVDS) questionnaires and showed a significant correlation (both P<0.001) (32).

COVID-19 Disease Anxiety Scale (CDAS)

This scale was designed by Alipour and colleagues in Iran in 2020 and consists of 18 questions and 2 dimensions. Questions 1 to 9 measure psychological symptoms and questions 10 to 18 measure physical symptoms. All the questions of this questionnaire are scored based on a 4-point Likert scale, ranging from Never (score 0) to Always (score 3). The possible scores range from 0 to 54. No anxiety or mild anxiety, moderate anxiety, and severe anxiety are represented by scores 0-16, 17-29, and 30-54, respectively. Face and content validity were evaluated based on the opinions of professors and experts. To check the criterion validity of this questionnaire, we used the GHQ-28 questionnaire, and all the coefficients were significant (P<0.01). The reliability of the whole questionnaire was reported as 0.91 using Cronbach's alpha method (30).

Questionnaire Caring Behavior Inventory (CBI)

The 75-item caring behavior inventory (CBI) was designed by Wolf et al. (1998) and finally reduced to 42 questions after revision. Wolf et al. reported the Cronbach's alpha of this questionnaire as 0.93 (31). In Iran, this questionnaire has been used by Hajinezhad and Azodi (2014). The questions are scored based on a six-point Likert scale, ranging from Always: 1 to Never: 6. This questionnaire consists of 5 subscales, which include respect for others (questions 1 to 12), assurance of human presence (questions 13 to 24), positive communication and attitude (questions 25 to 33), professional knowledge and skills (questions 34 to 38), and attention to the experiences of others (questions 39 to 42). The possible score range is from 42 to 252. A higher score indicates a high caring behavior. To examine the narrative of the content, the text Questionnaire simply and fluently way in Persian language was translated and then available for polling ten members of the nursing faculty and the research council and verification the final inventory was prepared and last reviewed by Faculty Council. Then, internal consistency was used to determine the reliability of the instrument of caring behaviors with alpha coefficient(r=0.93) (33).

Data Analysis

Data analysis was carried out using descriptive analysis including frequency, percentage, mean, and standard deviation, and analytical statistics were used for qualitative and quantitative normal data. Spearman's correlation coefficient was used to determine the correlation between fear and anxiety of COVID-19 and students' caring behaviors. Spearman's correlation coefficient was used to determine the correlation between demographic variables and nurses' caring behavior, fear, and anxiety about COVID-19. Also, to investigate the correlation between the mentioned variables with demographic characteristics, we used analysis of variance and an independent t-test. The collected data were analyzed using SPSS v.21. P-value < 0.05 was considered as the statistically significant level.

In this study, only the sample that had values for all variables was used in calculations and analyses; if there was missing data for a variable, that sample was completely excluded.

Results

The mean (SD) age of 236 participants in the present study was 22.40±2.27 years. Most of the participants were male (n=121, 51.3%) and

single (n=220, 93.2%). There was a positive and significant correlation between the nursing care behavior of nursing students and the level of interest in the nursing field (P=<0.001, r=0.287).

Table 1 shows the frequency distribution of demographic characteristics and their correlation with the 3 variables studied (nurse caring behavior, fear, and anxiety of COVID-19). The results showed an inverse and significant correlation between COVID-19 fear in the state of residence (P=0.003, r=-0.191) and anxiety about COVID-19 and the state of residence (r=-0.146, P=0.02).

The results of the study showed that there was a significant correlation between gender and caring behaviors (P=0.03, r=0.141). The mean score of fear of COVID-19 was 15.5±5.5 in female students and 14±6.9 in males; As to anxiety about COVID-19, the mean score was 12.6±19 in females and 16.95±16 in males. As for caring behaviors, the mean score of was 200±24 in female students and 192±31 in male students. The details of the mean and standard deviation for nursing students' caring behavior, COVID-19 fear, and anxiety are presented in Table 2.

The mean mental anxiety was 11.52±7.6 and the mean physical anxiety was 6.7±7.9, which indicates that students had higher mental anxiety. In the present study, 48.3% of students reported low anxiety levels, 30.9% reported moderate anxiety levels, and 20.7% reported high anxiety levels. 85.2% of students' fear of COVID-19 was lower than the mean. In the present study, using Spearman's correlation coefficient, it was determined that there was no correlation between fear of COVID-19 disease and caring behavior (r=0.3, P=0.644) and anxiety of COVID-19 with caring behaviors (r=- 0.17, P=0.801).

Also, there was no significant correlation between the mental and physical dimensions of anxiety of COVID-19 with subgroups of caring behavior including "respect for others, assurance of human presence, communication and positive attitude, professional knowledge and skills, and attention to others' experiences" (P>0.05).

Discussion

The present study aimed to determine the correlation between the fear and anxiety of COVID-19 and the caring behavior of nursing students. The results generally showed that more than half of the nursing students experienced

Table 1: Frequency distribution of demographic characteristics and their correlation with 3 variables in 236 participants

Variable	Category	Frequency (%)	mean±SD	Caring behavior of the nurse	Fear of COVID-19	Anxiety of covid 19 disease
Age(year)	≤20	32 (13.5%)	22.4±2.27	r=0.033 P=0.613	r=0.03 P=0.642	r=-0.008 P=0.901
	21-25	188(79.9%)				
	<26	16 (6.8%)				
Gender	Female	115 (48.7%)	----	r=0. 141* P=0.031	r=0.115 P=0.078	r=0.073 P=0.267
	Male	121 (51.3%)				
Marital status	Single	220 (93.2%)	----	r=0.054 P=0.406	r=0.495 P=0.865	r=0.045 P=0.495
	Married	16 (6.8%)				
Interest in the field	Low	20(8.5%)	----	r=0.287** P<0.001	r=0.38 P=0.556	r=0.041 P=0.530
	Mediate	125 (53%)				
	High	91 (38.6%)				
Dwelling	Home	81 (34.3%)	----	r=0.024 P=0.715	r=0.191** P=0.003	r=0.146* P=0.025
	Dormitory	155 (65.7%)				
Academic year	First year	21 (8.9%)	-----	r=-0.64 P=0.331	r=0.002 P=0.979	r=-0.016 P=0.811
	Second year	61 (25.9%)				
	Third year	71 (30.1%)				
	Fourth year	83 (35.2%)				

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

Table 2: Mean and standard deviation of caring behavior of nursing students, fear, and anxiety of Covid 19 disease

Variables	Min	Max	Mean	SD
Caring behavior of the nurse	44	228	196.29	28.07
Fear of COVID-19	7	35	15.24	6.29
Anxiety of COVID-19	17	85	18.2	14.4

moderate and high levels of COVID-19 anxiety, while many maintained lower fear of COVID-19 and manifested desirable caring behaviors. In addition, the fear and anxiety of COVID-19 did not significantly correlate with the caring behaviors of nursing students.

According to the results of the present study, more than half of the nursing students suffered from moderate and high levels of anxiety. In this regard, Babadi et al. (2021) in Ahvaz showed that 29% of students revealed anxiety, stress, and depression symptoms due to the COVID-19 disease (34). Furthermore, Cao et al. (2020) found that 24.9% of students experienced anxiety due to the outbreak of COVID-19 (12). A descriptive study in Turkey showed that nursing students obtained high scores on the COVID-19 fear and anxiety test, and 51.5% suffered from severe anxiety (35). The findings of the mentioned study are in the same line with our results concerning the high anxiety experienced by nursing students. In this respect, a study reported that the severe anxiety of nursing students negatively influenced their anxiety levels during the pandemic, leading to social isolation, economic instability, future uncertainty, remote learning challenges, and fear of infection (7). In addition, other reasons, such as the lack of masks and disinfectants and the report of exciting and incorrect news and headlines, raise anxiety (36). High anxiety in nursing students can also result from quarantine conditions and physical distances, where reduced interpersonal correlations can significantly contribute to anxiety incidence and intensification (37).

The present study also found that many nursing students manifested a low fear of COVID-19. In this regard, with similar results to our findings, Tekir (2022) in Turkey reported that students' fear of the COVID-19 disease was below the average (38). Likewise, Rana et al. (2022) discovered that fear of COVID-19 was moderate, mild, and severe in 61%, 28.1%, and 10.8% of the participants, respectively (39). On the other hand, the results of the study carried out by Albikawi (2023) during the COVID-19 pandemic in Saudi Arabia contradicted our findings, indicating that 79.3% of nursing students were afraid of this disease (40). Since our study coincided with the second year of the pandemic, the lower fear of nursing students might result from their adaptation to the current situation, injection of two doses of the COVID-19 vaccine at the minimum, and competence to cope with the conditions.

Among the other findings of this study, we can refer to the nursing students' high mean score of caring behaviors. These findings are in line with the results of the study by Asadi et al. (2020), who found that nurses working in COVID-19 wards manifested extensively desirable caring behaviors. These results imply that nurses do their best to provide nursing care to patients despite any critical conditions (17). The nursing students in the present study acted according to their ethical and professional commitments and cared for the patients properly. Furthermore, the circumstances were more stable during the sampling time regarding the prevalence of COVID-19 disease, and a large portion of the population was fully vaccinated. Hence, the students were engaged in providing nursing care to patients with peace of mind.

The results of the present study showed that the fear and anxiety of COVID-19 did not correlate with the caring behaviors of nursing students. In this concern, the findings of a cross-sectional study in Kerman revealed that nurses experienced moderate degrees of anxiety, and there was no significant correlation between COVID-19 anxiety and the caring behaviors of nurses working in COVID-19 wards. To justify the absence of such a correlation, the researchers argue that although nurses experience moderate levels of anxiety, this issue does not interfere with their nursing care and caring behavior as fundamental nursing responsibilities since nurses are committed to their accomplishment (17). However, a cross-sectional and descriptive study in Egypt has yielded different results, i.e., a positive and significant correlation between fear of COVID-19 disease and stress among nurses. This study also reported a negative and significant correlation between stress and fear of COVID-19 and the caring behaviors of nurses (16). A similar study in Australia reached the same results. The researchers claim that nurses' inadequate fear and stress management during this global crisis negatively influence their performance and caring quality, as well as patients' security (41).

Besides, the researchers found significant correlations between demographic variables such as the place of residence (dormitory or home with family), degree of interest in nursing, and gender and anxiety, fear, and caring behaviors. The results showed a negative and significant

correlation between the place of residence of nursing students and their COVID-19 fear and anxiety. In this regard, our results are consistent with those of a descriptive study carried out in Turkey, where the researchers enumerated the strict quarantine conditions in cities on weekends and long home-stay times as the reasons for their results (12). The findings of a similar study also revealed that during the COVID-19 pandemic, nursing students living in cities experienced higher levels of anxiety than their peers in villages (42, 43). In this respect, the outcomes of another quest reported that the living of students in rural regions was an influential protective factor in experiencing the anxiety of COVID-19 (7). Thus, the results of the present study also correspond with the findings of the mentioned research.

Our study also found that the degree of interest in the nursing field and gender were positively and significantly correlated with the students' caring behaviors. These results indicate that more interest in and enthusiasm for the field make nursing students outperform in caring behaviors. In this regard, the findings of a cross-sectional study entitled "Effective Factors in Medicine and Nursing Students' Eagerness to Care for COVID-19 Patients in South Korea" showed that high knowledge of the COVID-19 pandemic, positive attitudes, and preventive behaviors contributed to students' willingness to take care of COVID-19 patients (44). Perhaps the factor that caused a non-significant relationship between the fear and anxiety of nursing students and caring behaviors established in this study was the time of performing the study, considering that the COVID-19 disease was introduced as a new disease in the world in 2018, but this study was done three years after the incidence of disease. The other reason is all nursing students were vaccinated against COVID-19, and also the faculty officials had provided sufficient personal protection facilities to the students, so the students' fear and anxiety were affected and they cared for patients more confidently.

Furthermore, based on the outcomes of the current study, female students manifested more desirable caring behaviors than their male peers. However, in their research, Asadi et al. (2020) found no significant differences between male and female nurses in their caring behaviors with COVID-19 patients (17). Another research compared the quality of safe nursing care in COVID-19 and non-COVID-19 hospital wards in Tehran and found significant differences between gender and the dimensions of safe care quality; the mean scores of safe care quality in all its dimensions were higher in males than in females in both wards. These differences in the measurement dimensions of nursing skills, evaluation of physical needs, assessment of teamwork, and total safe care quality score were significant (45). The difference between the results of the present work and the mentioned studies can be due to the groups examined and instruments employed.

The most important strength of the present study is that, to the best of the researchers' knowledge, it is the first study determining the correlation between fear and anxiety of COVID-19 and the caring behaviors of nursing students.

Limitation of Study

This research suffered from some limitations. The most crucial one was the presence of individual differences among the students mentally and psychologically. By applying the census sampling method and reaching the maximum sample size, the researchers endeavored to keep the impact of these differences at a minimum. In addition, since the samples comprised students of a nursing faculty in Iran, the results are not generalizable to all Iranian nursing students. Moreover, the sampling did not coincide with the COVID-19 peak days; thus the results do not reflect the examined variables in the critical conditions of this disease. Therefore, the researchers suggest investigating the correlation between the fear and anxiety of COVID-19 and the caring behaviors of nursing students in larger samples and several nursing faculties throughout the country in the future.

Conclusion

The results of the present study showed that nursing students experienced moderate and high levels of COVID-19 anxiety while mildly fearing this disease. However, their average caring behavior was desirable. Furthermore, according to the findings, the fear and anxiety of COVID-19 disease were not significantly correlated with the caring behaviors of the nurses. All in all, the results imply that despite experiencing fear and anxiety, nursing students attempted to provide

nursing care properly. Desired caring behavior led to the safety and satisfaction of patients. Hence, nursing managers and authorities are suggested to consider some approaches to managing nursing students' anxiety and stress during the pandemic. Officials can provide a protective environment for students by providing them with necessary facilities in crises; also, by holding educational workshops, they can increase students' skills in cognitive, motor, and emotional dimensions: The researchers suggest that qualitative studies should be conducted on the mentioned variables in crisis conditions.

Acknowledgment
The authors sincerely appreciate the Research Administration of Shiraz University of Medical Science for providing financial support, the clinical research development center of Namazee Hospital, and also appreciate the participation of all nursing students in the study.

Authors' Contribution
L.H. and A.Z. conceptualized the study AND conducted the research. L.H and A.Z. and A.F. wrote the manuscript and approved the final version of the manuscript.

Funding
The study was supported by Shiraz University of Medical Sciences, Shiraz, Iran.

Ethics Approval and Consent to Participate
This study was approved by the Ethics Committee of Shiraz University of Medical Sciences with the ethics code of IR.SUMS.NUMIMG.REC.1400.067. The access link to the ethics permission is https://b2n.ir/k40471. In the present study, the participants were not asked to write their names, and they were assured about the confidentiality of their information.

Consent for publication
Not applicable.

Conflict of Interest
There are no conflicts of interest

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