ORIGINAL ARTICLE

Anxiety and fear of COVID-19 among nursing students during the COVID-19 pandemic: A descriptive correlation study

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Abstract

Purpose: The aim of this study was to assess current situations regarding anxiety and fear of coronavirus disease 2019 (COVID-19) level among nursing students.

Design and Methods: A descriptive correlation design was adopted. The sample consisted of 234 nursing students. Data were collected using sociodemographic form, Beck Anxiety Inventory (BAI), and Fear of COVID-19 scale.

Findings: The mean BAI score of the students was 26.56 ± 8.86 and Fear of COVID-19 total score was 18.95 ± 7.00. A positive correlation between total scores of the BAI and Fear of COVID-19. The results of this study reveal that anxiety and fear of COVID-19 levels were high among nursing students.

Practice Implications: These findings have underlined there is an urgent need for interventions to reduce anxiety and fear of COVID-19 among nursing students.

KEYWORDS
anxiety, COVID-19, fear, nursing, nursing students

1 | INTRODUCTION

Severe acute respiratory syndrome (SARS) coronavirus 2 disease is an infectious disease caused by the newly discovered coronavirus 2019 (COVID-19). Cases of the COVID-19 have been reported in a growing number of countries, and World Health Organization (WHO) declared a global pandemic.[1] According to WHO, there are 7,145,539 confirmed cases with 408,025 deaths in the world, and 2,321,147 confirmed cases and 185,537 confirmed deaths in Europe as of June 10, 2020. The first case of COVID-19 was recorded on March 11, 2020 in Turkey. As of June 10, 2020, the total number of reported cases in Turkey is 172,114 with 4729 deaths.[2] Restriction measures have been introduced as a result of the increased number of the confirmed cases, such as immediate closure of the hotels and restaurants. All conferences, events, gatherings, and concerts have been postponed or canceled. Disadvantaged groups (those with immune problems, cancer, chronic respiratory diseases, obesity and diabetes, cardiovascular diseases and organ transplant patients, and overall chronic

diseases patients) have been granted administrative leaves as of March 16, 2020.[3] Turkish Council of Higher Education decided to close the onsite education for the spring term and shifted to remote teaching due to coronavirus as of March 23, 2020. Remote teaching is still ongoing.[4] Turkey is the second largest country of the European Higher Education Area; 7.5 million students are currently receiving education at 207 universities. Turkish Council of Higher Education seeks to manage the remote teaching process successfully. It announced that Turkish higher education institutions should approach these challenges carefully and pay maximum attention to the values that keep students motivated socially, emotionally, and mentally.[4]

Previous studies have shown that the psychological impact of the pandemic affects the young population more adversely.[5–7] A longitudinal study on the mental health of the general population has shown that; the respondents especially among the ages of 12–21 demonstrate a higher psychological impact of COVID-19 in China.[6] A phenomenological study has shown that college students have developed negative

emotions, confusion and pessimism, sleep problems, fear, concerns about family health, economic, and social concerns because of COVID-19.[5,8]

It is suggested that the mental health of college students should be monitored during epidemics.[9,10] However, there is limited study on the psychological effects of COVID-19 on undergraduate students, especially nursing students.[10] Nursing students already have high levels of anxiety due to nursing education.[11–13] Academic stressors, difficult learning materials, long hours of study, physical, and emotional demands of the nursing programs are some of the stressors indicated by nursing students.[14–16] During the COVID-19 pandemic, most of nursing students have experienced more anxiety. The studies conducted so far have revealed the relationship between anxiety and gender, parental status, income, concerns about future careers, family support, helplessness, and doubt among nursing students, that is, statistically significant. In addition, anxiety may be triggered by the fear of being infected by COVID-19.[17,18] Fear of COVID-19 is directly associated with COVID-19 morbidity and mortality rate.[19] Pandemic and epidemics can induce fear among people, and it is important to measure the level of fear and anxiety among nursing students so that they can cope with these emotions successfully.[10,20,21] The predictors of anxiety and fear of COVID-19 may change among different population groups in a pandemic situation. However, to our knowledge, anxiety, and fear of COVID-19 among nursing students have not been investigated yet in the Turkish population.

2 | METHODS

2.1 | Aim

The aim of this study was to assess the current situation regarding anxiety and fear of COVID-19 among nursing students and to determine whether anxiety was associated with nursing students' fear of COVID-19 during the pandemic.

2.2 | Design

This was a descriptive correlational study.

2.3 | Sample and setting

The study was conducted during the first semester of the academic year 2020–2021, at a public university in Turkey between June and July 2020. The population of the present study comprises 304 nursing students. Power analysis was conducted to determine the level of statistical power and estimate the minimum sample size needed. The required sample size was determined as 170 with 0.05 level of error with a 95% confidence interval and 90% power according to the post hoc statistical power analysis. Inclusion criteria were as follows: willingness to take part in the study, being enrolled in the 2020–2021 academic year, and completing the questionnaires. Finally, data of 234 nursing students were analyzed (response rate: 78%).

2.4 | Data collection tools

Data were collected using an online questionnaire survey. This questionnaire consisted of sociodemographic information form, Beck Anxiety Inventory (BAI) and Fear of COVID-19 scale.

Sociodemographic information form was used to collect nursing students' sociodemographic characteristics such as age, gender, education level, their experience of COVID-19, and remote education.

2.4.1 | Beck Anxiety Inventory (BAI)

Anxiety symptoms were measured using BAI, with 21 item screening instruments. Each item was measured via a 4-point Likert scale that ranges from "strongly disagree (0)" to "strongly agree (3)." Scores may range from 0 to 63, with higher scores indicating higher severity of anxiety.[22] Validity and reliability tests of the Turkish version were performed by Ulusoy.[23] Alpha reliability coefficients for state anxiety have been reported as 0.93. In the present study, the Cronbach's α score was 0.85.

2.4.2 | Fear of COVID-19 scale

Fear of COVID-19 was assessed via the fear of COVID-19 scale. The scale was developed by Ahorsu et al.[19] to provide a self-report measure of fear levels of COVID-19. This is a unidimensional 7-item, 5-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Total scores may range from 7 to 35, with higher scores indicating higher levels of fear for COVID-19.[19] Fear of COVID-19 scale was adapted to Turkish by Satici et al.[24] The Turkish version of the fear of COVID-19 has also shown acceptable psychometric properties as 0.84. In the present study, Cronbach's α was 0.91.

2.5 | Ethical considerations

The study was approved by the Ethical Commission of a Public University (2020/20). Permission was obtained from the Ministry of Health to conduct the study. All participants received an information sheet outlining the purpose of the study and a statement that the responses would remain anonymous. Written informed consent was obtained from each participant. Contact details of the researchers were also given to allow participants to gain further details about the study.

2.6 | Data analyses

The data were analyzed using SPSS for Windows 25.0: SPSS Inc. Descriptive statistics (frequencies and percentages) were used to analyze nursing students' sociodemographic data. The independent *t*-test and analysis of variance (ANOVA) were used to examine the presence of statistically significant differences in the mean BAI and Fear of COVID-19 scores between the categorical variables. Pearson's and

Spearman's correlation coefficients were used to examine the correlations among the study variables. The significance level of 0.05 was employed.

3 | RESULTS

A total of 234 nursing students (first year 32.9%, second year 32.9%, third year 18.8%, and fourth year 15.4%) completed the questionnaire. Most of the participants were female (67.9%) and the mean age was 20.12 ± 4.09. In relation to place of residence, 61.5% of participants lives in rural areas and the majority of participants (97.0%) live with their parents or family. Most of the participants (69.2%) also live with parents or families (*60 + years old or with health conditions like lung or heart disease, diabetes or conditions that affect their immune system*) vulnerable to COVID-19. Most participants (42.79%) had experienced home-quarantine during the pandemic. Many participants (41.5%) stated that a family member become unemployed during the pandemic. Almost all students (84.2%) expressed that they were not satisfied with the remote learning. The study sample demographic characteristics are shown in Table 1.

The mean total BAI score was 26.56 ± 8.86. According to the BAI score, 3% of the participants reported symptoms of very low anxiety, while 39.2% and 51.5% reported moderate to severe anxiety respectively. The mean Fear of COVID-19 total score is 18.95 ± 7.00. Mean scores of the BAI and Fear of COVID-19 are demonstrated in Table 2. As shown in Table 3, there is a positive correlation between total scores of the BAI and Fear of COVID-19 ($r = 0.172$, $p = 0.000$).

The mean BAI and Fear of COVID-19 scores were compared between participants' demographic variables (Table 4). There was statistically significant difference between the BAI scores and gender, year in nursing school, place of residence, family or relatives with COVID-19, home-quarantine, and satisfaction with the remote learning. The BAI was found to be higher in female students than males ($t = 2.043$, $p = 0.042$). First-year students suffer more severe anxiety than the other students ($f = 3.141$, $p = 0.026$). Students living in urban areas scored higher for anxiety than those living in rural cities ($t = 3.203$, $p = 0.002$). Students who had experienced home-quarantine during the pandemic had more anxiety than those who did not ($t = 2.121$, $p = 0.017$). Students whose family or relatives had COVID-19, had higher levels of anxiety than those with family or relatives without COVID-19 ($t = 2.320$, $p = 0.012$). Students who were not satisfied with the remote learning had more anxiety than those who were ($t = 2.142$, $p = 0.021$).

The Fear of COVID-19 was found to be significantly higher in female participants compared to male participants ($t = 2.465$, $p = 0.000$). There was no significant difference in the participants' mean scores of fear of COVID-19 based on year in nursing school, place of residence, family or relatives with COVID-19, home-quarantine, satisfaction with the remote learning ($p > 0.05$).

4 | DISCUSSION

Mental health problems, such as anxiety and depression are frequently observed during pandemics. However, there has been paucity of literature that focuses on anxiety and fear of COVID-19 among nursing students. To our knowledge, this is the first descriptive correlation study regarding anxiety and fear of COVID-19 among nursing students during the COVID-19 pandemic in Turkey. The results of this study reveal that anxiety and fear of

TABLE 1 Sample characteristics ($n = 234$)

Characteristics	n	%
Gender		
Female	159	67.9
Male	75	32.1
Year in nursing school		
First	77	32.9
Second	77	32.9
Third	44	18.8
Fourth	36	15.4
Place of residence		
Metropolis (urban)	90	38.5
Rural	144	61.5
Living with family		
Yes	227	97.0
No	7	3.0
Living with vulnerable people for COVID-19[a]		
Yes	162	69.2
No	72	30.8
Family or relatives with COVID-19 test positive		
Yes	31	13.2
No	203	86.6
Stay home-quarantine		
Yes	100	42.7
No	134	57.3
Family members become unemployed		
Yes	97	41.5
No	137	58.5
Satisfied with remote education		
Yes	37	15.8
No	197	84.2

Abbreviation: COVID-19, coronavirus disease 2019.

[a]Vulnerable people for COVID-19; 60+ years or with health conditions like lung or heart disease, diabetes or conditions that affect their immune system.

TABLE 2 Students' mean scores of the BAI and Fear of COVID-19

	n (%)	Mean ± SD	Min–Max	Cronbach's α value
BAI	234 (100)	26.56 ± 8.86	4–49	0.85
Very low anxiety	3 (1.3)	4.33 ± 0.57	4–5	
Mild anxiety	16 (6.8)	13.10 ± 1.74	10–15	
Moderate anxiety	93 (39.2)	20.70 ± 3.06	16–25	
Severe anxiety	122 (51.5)	33.34 ± 5.90	26–49	
Fear of COVID-19	234 (100)	18.95 ± 7.00	7–35	0.91

Abbreviations: BAI, Beck Anxiety Inventory; COVID-19, coronavirus disease 2019; SD, standard deviations.

TABLE 3 The correlations among BAI and Fear of COVID-19 scores (n = 234)

Variables	B	t	p	R^2	Adjust R^2
BAI	0.409	15.76	0.000	0.030	0.026
Fear of COVID_19	0.010	18.58	0.000	0.030	0.026

Abbreviations: BAI, Beck Anxiety Inventory; COVID-19, coronavirus disease 2019.

COVID-19 levels were extremely high among nursing students during COVID-19 pandemic.

In this study, anxiety score and fear of COVID-19 score were high among nursing students and 51.5% of the students suffered from severe anxiety. This finding is in line with the previous literature that is rather limited.[10,18,25–28] Similarly, Huang et al.[17] found that young people reported a significantly higher prevalence of generalized anxiety and depressive symptoms than older people.[29] A study reported that high-level anxiety among nursing students besides social isolation, economic instability, uncertainty about future, challenges of remote learning, and fear of getting infected affect anxiety levels of nursing students adversely during the ongoing COVID-19 pandemic in Israel.[18] A study found that health professional students experienced significant distress during the COVID-19.[30] In addition, the important shortage of masks and disinfectants, dramatic headlines, and inaccurate news reported increase anxiety and fear.[27] Besides, students' anxiety levels may increase due to ever-growing distances among people, because of quarantine conditions. It is known that anxiety disorder can occur and worsen due to a lack of interpersonal communication.[31] Nursing students have already high levels of anxiety due to nursing education.[11–13] Because of the pandemic, nursing students had to face new problems such as online education, and uncertain future.[17,32,33] Furthermore, additional factors may cause nursing students feel more stressful such as, the uncertainty about the future and the idea of playing an active role in the fight against epidemic if needed.

Anxiety level among female students was usually higher than males before the pandemic.[11,15] During the COVID-19 pandemic, it was found that anxiety level among female students was higher than males also in Israel[18] and this study results agree with findings reported by Savitsky et al.[18] Similarly, female students were found to have higher levels of anxiety than male students in the study of Zhi et al.[34] in which nursing students examined the relationship between psychological stress and professional identity during the COVID-19 outbreak. Although there are studies in the literature showing that female students have higher anxiety levels,[35,36] there is also one study indicating that male students experience more anxiety.[37]

In a study, it was determined that students studying in health sciences (nursing, medicine, etc.) got higher scores on the COVID-19 fear scale compared to other student groups.[38] It was found that female nursing students had higher levels of Fear of COVID-19 associated with the pandemic in this study. A study conducted with Cuban Population Sample found that being female was a predictor of medium and high levels of fear of COVID-19 and the odds of a female with high fear levels compared to low fear was 3.45 times more than for a male.[39] These results are consistent with previous reports that show being a female is a greater vulnerability compared with being a male during the COVID-19 pandemic.[6,39–42] These results can be expected because usually, females have higher anxiety levels and fear compared to males because of gender traits.[43] It can be explained due to the greater hippocampal activation in men which may sub-serve an enhanced capacity for contextualizing fear-related stimuli.[44]

The highest level of anxiety was observed in first and fourth-year students during the pandemic. First-year students are affected by many factors in the learning process in clinical settings, living with stress and anxiety.[45] In the pandemic, these worries may increase because of insufficient knowledge, insufficient instructor, and peer support. Fourth-year students are concerned not only about the cancellation of their graduation ceremony but also about finding a job.[46] Because of COVID-19, most nursing students' family members and a lot of other people got unemployed (41.5%). In such stressful life events, an increase in anxiety levels of students' is a predictable and expected result. During the outbreak, an unknown future can affect students' level of anxiety. According to the study of Sheroun et al.,[47] the group with the highest perceived stress score was determined as fourth-year nursing students.[47] It may be thought that the senior students experience anxiety due to the idea of the possibility of being infected or infecting others because they will play an active role in the epidemic when they begin working after graduation. In a study of Li et al.,[30] the psychological stress among healthcare professional students during the COVID-19 outbreak is examined, and approximately one-fifth of the students stated that the outbreak could affect their future career plans.

Results indicate that nursing students' anxiety levels were significantly related to place of residence and living in towns due to a higher prevalence of anxiety during the pandemic. In a similar study, nursing students who live in urban areas have been determined to have more anxiety than those

TABLE 4 The relationship between the demographic variables, BAI and Fear of COVID-19

	BAI (M ± SD)	Fear of COVID-19 (M ± SD)
Gender		
Female	1.34 ± 0.39	2.94 ± 0.96
Male	1.22 ± 1.34	2.20 ± 0.88
	p = 0.042	*p = 0.000*
Year in nursing school		
First	1.36 ± 0.44	2.66 ± 0.96
Second	1.21 ± 0.36	2.69 ± 0.99
Third	1.14 ± 0.37	2.91 ± 1.06
Fourth	1.26 ± 0.42	2.70 ± 1.00
	p = 0.026	*p = 0.471*
Place of residence in during pandemic		
Urban	1.40 ± 0.35	2.76 ± 1.00
Rural	1.11 ± 0.44	2.66 ± 1.00
	p = 0.002	*p= 0.458*
Living with family in during pandemic		
Yes	1.26 ± 0.42	2.69 ± 1.04
No	1.20 ± 0.20	3.18 ± 0.59
	p = 0.698	*p = 0.203*
Living with vulnerable people for COVID-19		
Yes	1.27 ± 0.42	2.67 ± 0.98
No	1.24 ± 0.40	2.79 ± 1.43
	p = 0.567	*p = 0.385*
Family or relatives with COVID-19 test positive		
Yes	1.28 ± 0.36	2.79 ± 1.08
No	1.09 ± 0.42	2.68 ± 0.97
	p = 0.021	*p = 0.449*
Stay with home quarantine		
Yes	1.30 ± 0.39	2.79 ± 1.03
No	1.12 ± 0.42	2.68 ± 0.97
	p = 0.017	*p = 0.449*
Family members become unemployed in pandemic	1.26 ± 0.39	2.68 ± 0.97
Yes	1.26 ± 0.44	2.72 ± 1.02
No	*p = 0.925*	*p = 0.794*
Satisfied with remote education		

(Continues)

TABLE 4 (Continued)

	BAI (M ± SD)	Fear of COVID-19 (M ± SD)
Yes	1.26 ± 0.46	2.53 ± 1.05
No	1.28 ± 0.41	2.75 ± 0.98
	p = 0.021	*p = 0.167*

Abbreviations: BAI, Beck Anxiety Inventory; COVID-19, coronavirus disease 2019; SD, standard deviations.

who live in rural areas.[34,48] A study reveals that living in rural areas was a protective factor for college students against experiencing anxiety during the COVID-19 outbreak.[10] Moreover, students who experienced quarantine had high levels of anxiety. In a study that investigated the psychological impact of quarantine during the SARS outbreak indicated depression prevalence was 31.2%.[49] The result of the nursing students from Turkey revealed in this study may have been affected by the strict implementation of lockdowns during weekends in the urban cities, besides the long durations of staying at home.

There is a significant relation between having anxiety and having COVID-19 positive family members or relatives among the nursing students according to the results of the study. Previous studies found that anxiety was common among patients with COVID-19.[17,32,35,50] Having a relative or a family member who is infected with COVID-19 is a risk factor for anxiety.[17] The results showed that people suffered serious psychological trauma due to observing other people's death and fear of death.[51]

In the study, 84.2% of nursing students were not satisfied with remote teaching and this situation adversely affected their anxiety level during the pandemic. Previous studies have shown that the distance education system caused anxiety in nursing students.[52,53] Nursing education comprising of both theoretical and practical studies was moved to the alternative of remote teaching with E-exams in Turkey. It was found that medical sciences students had stress with remote E-exams during the COVID-19 pandemic.[54] A study[55] found that students encountered barriers and difficulties such as device issues, internet connectivity, cost of technology, and lack of technology skills while using information and communication technology during the COVID-19. Students had to share devices with other family members and internet access was a big problem in Turkey. According to the study of Lovric et al.,[32] nursing students reported that they experienced lack of motivation, concentration and learning difficulties due to the epidemic crisis. According to the results of another study, while students were worried about sudden changes in the curriculum, quality of courses, technical problems with online applications, and the difficulty of online learning, 82% reported anxiety about academic performance and 89% had difficulty in concentration.[33] All these factors can increase anxiety levels of nursing students in the learning process.[56]

4.1 | Limitations

This study had a few limitations. First, the data were collected from only one nursing school department in Kilis, Turkey; therefore, the results may not be generalized to all nursing students in Turkey. Second, the data were investigated in June and July 2020 and were collected using convenience sampling. Third, all factors were not investigated that may affect anxiety and fear of COVID-19 among nursing students.

5 | CONCLUSIONS

The findings suggest a high level of anxiety and fear of COVID-19 among nursing students during the pandemic. It was found that the anxiety level of nursing students is positively correlated with the fear of COVID-19 and vice versa. Sociodemographic factors such as gender, year in nursing school, place of residence, family or relatives infected with COVID-19, home quarantine, and satisfaction with the remote learning had an impact on students' anxiety level. The Fear of COVID-19 was found to be significantly higher in female participants compared to male participants.

5.1 | Implications for nursing practice

Anxiety and fear of COVID-19 are serious health problems among nursing students during the pandemic. Nursing students have experienced severe anxiety and fear of COVID-19. Urgent intervention is recommended to reduce the anxiety and fear of COVID-19 among nursing students. Therefore, these nursing students with severe levels of anxiety and fear of COVID-19 may receive counseling for their psychological problems from psychiatric nurses who can help and support students' psychological wellbeing with potentially appropriate strategies to help them cope with challenges under conditions inducing anxiety and fear. Moreover, nursing students should learn coping skills such as meditation and stress management techniques for reducing anxiety and fear. In addition, the nurse educator and academic advisors who actively engage with students also need to be aware of the potential harms associated with the COVID-19 pandemic. Nurse educator should use stress management procedures by providing a student-centered remote learning atmosphere and academic advisors must implement strategies to improve the mental health of students.

CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

AUTHOR CONTRIBUTIONS

Conception and design of the study: Nilgun Kuru Alici. *Collection of data*: Ebru Ozturk Copur. *Analysis of data*: Nilgun Kuru Alici. *Drafting the article*: Nilgun Kuru Alici and Ebru Ozturk Copur. *Final approval*: Nilgun Kuru Alici and Ebru Ozturk Copur.

ETHICS STATEMENT

The ethical approval was obtained from Ethical Commission of Kilis 7 Aralık University (2020/20). Permission was obtained from the Ministry of Health to be able to conduct the study. All participants received an information sheet outlining the purpose of the study and a statement that responses were anonymous. Written informed consent was obtained from each participant. Contact details of the researchers were also given to allow participants to gain further details about the study.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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