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Relationships between Nursing Students' Attitudes Toward the Nursing Profession, Fear of COVID-19, and Intolerance of Uncertainty: A Cross-sectional Study

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Relationships between Nursing Students' Attitudes Toward the Nursing Profession, Fear of COVID-19, and Intolerance of Uncertainty: A Cross-sectional Study

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Abstract

Background: Nursing students were caught unprepared for the COVID-19 pandemic. Both the inability to control the epidemic and the interruption of education caused students to experience fear, anxiety, and uncertainty. This study investigates the relationships between nursing students' attitudes toward the nursing profession and their fear of COVID-19 and intolerance of uncertainty.
Methods: This cross-sectional study included 727 nursing students who were members of the Student Nurses Association and who volunteered to participate in the research. Research data were collected using the Student Information Form, The Fear of COVID-19 Scale, the Intolerance of Uncertainty Scale (IUS-12), and the Attitudes Towards Nursing Profession Scale.
Results: Statistically significant positive relationships were found between the fear of COVID-19 and intolerance of uncertainty levels ($p < 0.01$) and attitudes toward the nursing profession in general ($p < 0.05$).
Conclusions: Students had a mid-level of fear of COVID-19, a high level of intolerance of uncertainty, and positive attitudes toward the nursing profession. To decrease nursing students' intolerance of uncertainty during pandemic-like crisis situations, preventive and reformative activities should be planned.

Keywords: attitude, COVID-19, nursing students, uncertainty

INTRODUCTION

In February 2020, the World Health Organization declared the new coronavirus disease COVID-19 a pandemic; the COVID-19 has been the deadliest pandemic since the 1918 influenza and deeply affected the global society.[1] Because of the rapid spread of COVID-19 and the lack of information on exactly how the virus is transmitted, people have experienced fear and panic related to various issues. These fears have ranged from becoming infected to dying because of the virus, transmitting the virus to others, losing close ones due to the virus, not getting appropriate and adequate care, and losing their jobs.[2] Moreover, with the pandemic, intolerance to certain thoughts toward the future emerged due to the life threat caused by the virus. As Deniz stated, intolerance of uncertainty is defined as "the states in which there are strong perceptions towards the unknown, emphasizing the emotional difficulties causing anxiety and a tendency towards fear." Intolerance of uncertainty includes negative reactions in cases of uncertainty, except when there is a rational possibility of a phenomenon to happen.[2] In addition, researchers have stated that

intolerance of uncertainty causes anxiety disorders and increases anxiety levels.[3,4]

With the pandemic, as in all other countries in the world, nursing education in Turkey has been significantly affected by this unprecedented health crisis. On March 11, 2020, the day the first case of COVID-19 was detected in Turkey, the Council of Higher Education announced that the 2020 spring semester would be carried out entirely by distance education.[5] In this direction, higher education institutions providing nursing education began adapting distance education. Issues such as the duration of the pandemic, whether face-to-face education would start in the next fall semester, and where and how clinical applications for nurses would be carried out caused nursing students to experience some uncertainties.[6] In some countries, due to the inadequate number of nurses, nursing students were asked to provide support at the hospitals.[7] In a qualitative study carried out with nursing students during this period, the authors stated that students reported experiencing negative feelings such as fear, uneasiness, and serious anxiety about the critical health conditions caused by the pandemic.[7] The COVID-19 pandemic has had a noticeable impact on the experience of nursing students, ranging from organizational changes to uncertainty about their own competence and even having doubts about whether to continue their education. This situation caused practical concerns and sometimes inconsistencies between learning objectives and learning opportunities. This led to confusion and the feeling that

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they were not supported enough.[8] Moreover, in another research study that asked nursing students to evaluate the effects of the transition from traditional classes and clinical environments to the online environment on the quality of their learning, more than 65% of students evaluated the level of the effect as high.[9]

In another study investigating the effects of fear of COVID-19 on perceived clinical stress levels of senior nursing students in Turkey, the authors found that students experienced a medium level of COVID-19 fear.[10] In another study, nursing students were found to experience a high level of fear due to COVID-19.[11]

An investigation of the COVID-19 experiences of midwifery students reported that the pandemic caused confusion and uncertainty for students; these students stated that there were inconsistencies between the suggestions of the universities and healthcare institutions. The authors of that study also reported that some clinical internships were canceled and that students experienced anxiety regarding how to fulfill graduation requirements since they lost face-to-face contact with pregnant women.[12]

Nursing students have a strong need to be heard, be prepared, and get support during the pandemic. Students must be prepared for certain competencies. Despite the efforts of nursing schools and clinics, students generally got lost in the chaos of the pandemic, which caused practical concerns, fewer learning opportunities, and even doubts regarding their choice of being a nurse.[8]

In another study conducted among a total of 506 nursing students between May 18 and 29, 2020, in Turkey, the researchers found that as the students' intolerance of uncertainty increased their level of depression, anxiety and stress also increased.[13] It was also stated that individuals with high intolerance of uncertainty were repetitively exposed to many problematic situations due to the fact that they felt that life was unpredictable, and they interpreted emotionally stressful and uncertain situations as signs of danger or fear.[14] The aim of this research is to investigate the relationships between the fear of COVID-19 and intolerance of uncertainty among nursing students and their attitudes toward the nursing profession.

METHODS

Throughout the research, we abided by World Medical Association Declaration of Helsinki (2013) and students' willingness and voluntariness to participate in the research. Students who were willing to participate in the research were asked to open a message sent to their mobile phones, and they provided their written consent by clicking the "I agree to fill out the online questionnaire" statement. Written consents were obtained from the local

ethics committee of a university (04/03/2021, permission No. 259) and Ministry of Health Scientific Research Consent Portal (2021-02-20T22_22_05).

This study is descriptive and cross-sectional research with the population of the research comprised undergraduate and graduate nursing students from all universities in Turkey who were also members of the Student Nurses Association. The power of the study is expressed as 1 − β (β = probability of type II error); in general, research should have 80% power. In our study, we calculated the number of cases to be included as 537 to achieve 80% power at the level of α = 0.04. However, taking into consideration the losses, we predicted that the number of cases should be 650. The research was completed with a total of 727 nursing students who volunteered to participate in the research.

Research data were collected using the Student Information Form, Fear of COVID-19 Scale, Intolerance of Uncertainty Scale (IUS-12), and Attitudes Towards Nursing Profession Scale.

Student Information Form: The Student Information form consists of a total of 20 questions on how the COVID-19 pandemic affected students' thoughts regarding their jobs and future as well as sociodemographic information such as age, gender, program of study, and year of study.

Fear of COVID-19 Scale: This scale was developed by Abhors *et al.*[15] to measure the level of fear caused by COVID-19 and was adapted into Turkish by Satici *et al.*[16] Items in the scale were created by reviewing in detail the existing scales on fear and considering the expert opinion of and interviews conducted with the participants. The single-factorial, five-point Likert-type scale (1 = totally disagree, 5 = totally agree) consists of a total of seven items. There are no reverse-scored items on the scale. Higher scores indicate a higher level of fear of COVID-19. We found the internal consistency to be 0.82 and the test–retest reliability to be 0.72 for the original scale. The Cronbach's alpha coefficient for this study was 0.880.

IUS-12: The short form of the IUS-12 developed by Carleton *et al.*[17] was adapted into Turkish, and its validity and reliability were evaluated by Saricam *et al.*[18] The scale consists of a total of 12 items. The five-point Likert-type scale is scored between 1 and 5 (1 = not at all characteristic of me to 5 = entirely characteristic of me). Only the first item is reverse coded. A total of 12 to 60 points can be obtained from the scale. Higher scores indicate the presence of an intolerance of uncertainty. The scale has no cutoff point. The scale also has two subdimensions. The first seven questions indicate "forward-looking anxiety," and the other questions indicate "preventative anxiety." The Cronbach's alpha coefficient for the original scale was α = 0.88. We found the Cronbach's alpha coefficient to be 0.77 for the

preventative anxiety subdimension and 0.84 for the forward-looking anxiety subdimension.[18] In this research, we found the Cronbach's alpha coefficient to be 0.892 for the preventative anxiety subdimension and 0.805 for the forward-looking anxiety subdimension.

Attitude Scale for Nursing Profession: The scale developed by Çoban and Kaşıkçı[19] consists of a total of 40 questions and the following three subdimensions: Characteristics of Nursing Profession, Preferring Nursing Profession, and Attitude towards the General State of Nursing Profession. It is a 5-point Likert-type scale with answers ranging from 1 to 5 (1 = totally disagree to 5 = totally agree). The Attitude Scale for Nursing Profession was evaluated based on the average total score obtained from each subdimension, not on the total score from the scale.[19] Positive attitudes toward the nursing profession increase as the score obtained from the scale increases. Accordingly, scores of ≥3 indicate a positive attitude, and scores <3 indicate a negative attitude.[20] The Cronbach's alpha coefficient for the original validity reliability studies of the scale was 0.91. In this study, the Cronbach's alpha coefficient was calculated as 0.911 for the Characteristics of Nursing Profession subdimension, 0.480 for the Preferring Nursing Profession subdimension, and 0.820 for the Attitude towards the General State of Nursing subdimension.

Research data were collected using questionnaires that were converted into Google questionnaires and sent to the students in the research group via WhatsApp of MMS. Students were asked to click on the Google Questionnaire links in the message they received and fill out the forms.

We used the Number Cruncher Statistical System for the statistical analyses. Descriptive statistical methods (average, standard deviation, median, frequency, percentage, minimum, maximum) were used to evaluate the research data. We used the Shapiro–Wilk test and graphical examinations to test the conformity of the quantitative data to normal distribution. The Mann–Whitney *U* test was used to compare two groups for the nonnormally distributed quantitative variables. The Kruskal–Willis test and Dunn–Bonferroni test were used to compare more than two groups for the nonnormally distributed quantitative variables. We used the Spearman correlational analysis to evaluate the relationships between quantitative variables. A statistical significance level of $p < 0.05$ was accepted.

RESULTS

We examined the research results under the following three topics.

Characteristic features

The average age of the participants was 20.75 ± 2.51 years (range, 18–51 years), and 84.7% (N = 616) were female.

Most of the students were in their first year of undergraduate study (98.8%, N = 717). Of the students, 67.3% (N = 489) stated that they had chosen this profession willingly, 34.3% (N = 249) reported that they saw a positive future for the nursing profession, and 76.3% (N = 555) stated that the COVID-19 pandemic had negatively affected the nursing profession.

Relationships between the students' attitude level toward the nursing profession and their fear of COVID-19 and intolerance of uncertainty

The participants' average total score on the Fear of COVID-19 scale was 18.66   6.14 (range, 7 – 35). For the Intolerance of Uncertainty Scale, the average total score was 24.23 ± 5.03 (range, 10–35) for the Forward-Looking Anxiety subdimension and 15.93 ± 4.95 (range, 5 – 25) for the Preventative Anxiety subdimension. The average total score was 79.34 ± 9.19 (range, 25 – 90) for the characteristics of Nursing Profession subdimension, 36.19 ± 5.02 (range, 21–65) for the Preferring Nursing Profession subdimension, 38.64 ± 4.78 (range, 11 – 45) for the Attitudes towards the General State of Nursing Profession subdimension, and 154.16 ± 15.30 (range, 57 – 200) for the Attitude Scale for Nursing Profession. Relationships between the students' attitudes toward the nursing profession and the fear of COVID-19 and intolerance of uncertainty are given in Table 1 in detail.

Comparison of the scale scores with students' characteristics and opinions

We found a positive and statistically significant relationship between the students' ages and their average total scale scores and scores obtained from the Characteristics of Nursing Profession, Preferring Nursing Profession, and Attitudes towards the General State of Nursing Profession subdimensions of Attitude Scale for Nursing Profession ($p < 0.01$; Table 2).

Scores obtained from the Fear of COVID-19 Scale were significantly higher for female students compared with male students ($p = 0.001$ and $p < 0.01$, respectively; Table 2). There was no statistically significant difference detected according to gender in the scores obtained from the Forward-Looking Anxiety subdimension of the Intolerance of Uncertainty Scale ($p > 0.05$; Table 2).

The average scores of female students were significantly higher than those of male students for the Characteristics of Nursing Profession and Attitudes towards the General State of Nursing Profession subdimensions of Attitude Scale for Nursing Profession and the total Attitude Scale for Nursing Profession ($p = 0.003$, $p = 0.002$, $p = 0.014$, $p < 0.05$, respectively; Table 2).

A statistically significant difference was detected between the students' year of study and the average subdimension and total score from the Attitude Scale for Nursing Profession ($p < 0.01$; Table 2).

According to the answers that the students gave to the question of "Did you willingly choose the nursing profession?" we detected statistically significant differences between the Characteristics of Nursing Profession and Preferring Nursing Profession subdimensions of the Attitude Scale for Nursing Profession scale and the average total score from the scale ($p < 0.01$; Table 3). According to the answers that the students gave to the question of "How do you see the future of the nursing profession?" we detected statistically significant differences between the average scores of the Fear of COVID-19 Scale, Intolerance of Uncertainty Scale,

and Attitude Scale for Nursing Profession ($p < 0.01$; Table 3).

Based on the answers provided by students to the question of "Do you think that the COVID-19 pandemic negatively affected nursing profession?" we found statistically significant differences between the average scores of the Fear of COVID-19 Scale, Intolerance of Uncertainty Scale, and Attitude towards the General State of Nursing Profession subdimension of the Attitude Scale for Nursing Profession ($p < 0.01$; Table 3).

TABLE 1. Correlation between the scales

Scales	Intolerance of Uncertainty Scale		COVID-19 Fear Scale Total Score
	Forward Anxiety	Inhibitory Anxiety	
COVID-19 Fear Scale total score	0.212**	0.316**	
Attitude Scale towards Nursing Profession			
Characteristics of the Nursing Profession	0.179**	0.106**	0.041
Preference Status for Nursing Profession	0.115**	0.003	−0.001
Attitude towards the General Status of the Nursing Profession	0.237**	0.152**	0.077*
Total score	0.216**	0.117**	0.052

Spearman's correlation coefficient. *$p < 0.05$; **$p < 0.01$

TABLE 2. Comparison of demographic data and scale scores

Variable	COVID-19 Fear Scale	Intolerance of Uncertainty Scale		Attitude Scale toward Nursing Profession			
		Forward Anxiety	Inhibitory Anxiety	Characteristics of the Nursing Profession	Preference Status for Nursing Profession	Attitude toward the General Status of the Nursing Profession	Attitude Scale toward Nursing Profession total score
Gender							
Female (N = 616)	19 (7–35)	24 (10–35)	16 (5–25)	82 (49–90)	36 (24–65)	40 (23–45)	157 (57–200)
Male (N = 111)	16 (7–35)	24 (10–35)	15 (5–25)	79 (25–90)	37 (21–65)	38 (11–45)	154 (57–200)
p	[a]0.001**	[a]0.517	[a]0.001**	[a]0.003**	[a]0.160	[a]0.002**	[a]0.001**
Program							
Undergraduate (N = 717)	18.5 (7–35)	24 (10–35)	16 (5–25)	82 (25–90)	36 (21–65)	39 (11–45)	157 (57–200)
Postgraduate (N = 9)	19 (8–35)	22 (12–29)	15 (6–18)	81 (54–90)	37 (34–46)	40 (26–45)	157 (114–181)
p	[a]0.657	[a]0.241	[a]0.085	[a]0.945	[a]0.067	[a]0.342	[a]0.517
Class							
Prep class (N = 30)	17.5 (7–33)	22 (13–35)	16 (5–25)	80 (54–90)	35.5 (27–59)	38 (18–45)	149 (124–173)
First class (N = 248)	18 (7-35)	24 (10–35)	15 (5–25)	80 (38–90)	36 (24–63)	38 (18–45)	153 (82–180)
Second class (N= 187)	20 (7–35)	25 (11–35)	17 (5–25)	80 (35–90)	35 (23–65)	39 (18–45)	154 (81–200)
Third class (N = 134)	19 (7–33)	25 (10–35)	17 (5–25)	84 (49–90)	35.5 (24–59)	41 (26–45)	159 (110–187)
Fourth class (N = 128)	18 (7–35)	24.5 (13–35)	16 (5–25)	85 (25–90)	38 (21–65)	41 (11–45)	162.5 (57–200)
p	[b]0.051	[b]0.090	[b]0.089	[b]0.001**	[b]0.001**	[b]0.001**	[b]0.001**
Age							
r	−0.016	−0.009	−0.046	0.125	0.109	0.136	0.108
p	[r]0.658	[r]0.812	[r]0.212	[r]0.001**	[r]0.003**	[r]0.001**	[r]0.004**

[a]Mann–Whitney U test; [b]Kruskal–Wallis test; r: Spearman correlation coefficient; *$p < 0.05$; **$p < 0.01$.

TABLE 3. Comparison of students' opinions and scale scores

Students' opinion	COVID-19 Fear Scale	Intolerance of Uncertainty Scale		Attitude Scale towards Nursing Profession			
		Forward Anxiety	Inhibitory Anxiety	Characteristics of the Nursing Profession	Preference Status for Nursing Profession	Attitude towards the General Status of the Nursing Profession	Attitude Scale towards Nursing Profession total score
Did you choose the nursing profession on your own?							
Yes (N = 489)	18 (7–35)	24 (10–35)	16 (5–25)	84 (35–90)	37 (23–65)	39 (18–45)	160 (81–200)
No (N = 83)	20 (7–35)	25 (15–35)	15 (5–25)	81 (25–90)	35 (21–59)	41 (11–45)	153 (57–175)
Undecided (N = 155)	19 (7–35)	24 (10–35)	17 (5–25)	78 (54–90)	33 (27–65)	39 (23–45)	149 (114–200)
p	[b]0.574	[b]0.160	[b]0.059	[b]0.001**	[b]0.001**	[b]0.121	[b]0.001**
How do you see the future of the nursing profession?							
Very good (N = 98)	17 (7–35)	23.5 (10.35)	15.5 (5–25)	86 (36–90)	39 (27–65)	40.5 (18–45)	166 (81–200)
Good (N = 249)	18 (7–35)	24 (10–35)	15 (5–25)	82 (35–90)	36 (23–49)	39 (23–45)	156 (91–177)
Undecided (N = 284)	19 (7–35)	26 (12–35)	17 (6–25)	80 (38–90)	35 (24–65)	39 (18–45)	154 (82–200)
Bad (N = 79)	18 (7–35)	25 (14–35)	18 (6–25)	84 (58–90)	36 (27–47)	41 (26–45)	159 (121–177)
Very bad (N = 16)	17 (12–33)	21.5 (14–35)	15 (7–25)	79 (25–89)	34.5(21–42)	41 (11–45)	156 (57–171)
p	[b]0.001**	[b]0.003**	[b]0.001**	[b]0.001**	[b]0.001**	[b]0.045*	[b]0.001**
Do you think the COVID-19 pandemic has negatively affected the nursing profession?							
Yes (N = 555)	19 (7–35)	25 (11–35)	16 (5–25)	82 (35–90)	36 (23–65)	40 (18–45)	157 (81–200)
No (N = 92)	16 (7–33)	23 (10–35)	14 (5–25)	80.5 (25–90)	36 (21–52)	39 (11–45)	156.5 (57–174)
Undecided (N = 80)	16 (7–27)	22 (13–31)	15.5 (5–25)	82 (56–90)	35.5 (26–44)	38 (25–45)	154 (118–178)
p	[b]0.001**	[b]0.001**	[b]0.001**	[b]0.278	[b]0.553	[b]0.006**	[b]0.121

[b]Kruskal–Wallis test; *$p < 0.01$; **$p < 0.05$

DISCUSSION

In this study, we investigated the relationships between nursing students' attitudes toward the nursing profession and their fear of COVID-19 and intolerance of uncertainty and found that the nursing students experienced a medium level of fear of COVID-19. In the literature, it was reported that nursing students experienced a medium level[10,21,22] and high level[11] of fear of COVID-19. The fear of COVID-19 might have negative effects on students' mental, emotional, and psychological health.[23] Therefore, to overcome the pandemic-related fear, psychological support should be provided for students, and projects should be planned to enhance their psychological and emotional health.

In our study, we found that nursing students experienced a high level of intolerance of uncertainty during the pandemic. Intolerance of uncertainty, defined as being incapable of coping with uncertain or unpredictable situations, is considered an important factor affecting mental health, and it indicates serious psychological problems.[24] In another study conducted with healthcare professionals during the COVID-19 pandemic, the authors found that those who adapt to uncertainty are less likely to experience psychological problems.[25] In our study, we did not investigate the relationships between the students' intolerance of uncertainty and their psychological states. Therefore, using qualitative research

methods, students' uncertainty during pandemic conditions could also be investigated based on psychological dimension.

In our study, the students' attitudes toward the nursing profession was positive. There are similar research results in the literature showing that nursing students had positive attitudes toward the nursing profession during the COVID-19 pandemic.[21,26,27]

We found that students' forward-looking anxiety and preventative anxiety increased as their fear of COVID-19 increased. Similar to our results, Satici[16] and Bakioğlu *et al.*,[28] in their studies of university students in Turkey, found that individuals with a high level of fear of COVID-19 also had a high level of intolerance of uncertainty. In another study carried out with university students in Turkey during the pandemic, the authors found that the fear of COVID-19 and intolerance of uncertainty were related to each other.[29] Another resource indicated that uncertainty was positively related with insecurity in self-protection resources. During the COVID-19 pandemic, uncertainty and insecurity for self-protection emerged in society. Legislation requiring self-protection has been used and led to mass protests in many countries. Given the importance of establishing self-protection habits in society to manage COVID-19 and similar epidemics, it is

necessary to break this cycle of fear, insecurity, and uncertainty.[30]

In our study, the students' fear of COVID-19 did not affect their attitude toward the nursing profession. Contrary to the results of our study, Çalışkan *et al*.[21] found that as the fear of COVID-19 increased, the positive attitude toward the nursing profession decreased, and the positive attitude toward the general state of the nursing profession increased. Factors related to COVID-19, such as increased working hours, chaotic work environments, and fear of becoming infected, might have negatively affected the nursing candidates' attitudes toward the profession.[21] Conversely, at the time our research data were collected during the pandemic, the heroism of nurses came to the fore on social media platforms and mass media in both Turkey and all over the world. During this period, nurses remained loyal to the ethical codes of benefit and altruism. Despite being away from their families and the risk of infection transmission, nurses did their jobs in the best possible way and were praised by the public.[31] Therefore, although it did not seem to affect the results of our research, nurses' attitudes might have been positively affected by the fact that the nursing profession was glorified in the eyes of the Turkish nation as an indispensable part of society.

We found in our research that nursing students' level of intolerance of uncertainty increased as their attitude toward the nursing profession increased in a positive way. Contrary to this result, in another study by Chen *et al*.,[32] the authors reported that intolerance of uncertainty was negatively correlated with the career maturity of the students. Nurses in Turkey stood out as heroes on social media platforms during the pandemic. On the other hand, uncertainties about how long the pandemic would last and how to come out of it might have caused the students in the research group to feel anxiety about the future.

In our study, we found that students showed positive attitudes toward the nursing profession as they got older. This result is similar to some research results in the literature.[27] Similar to the results of other studies,[11,21,33] we also found that female students had a greater fear of COVID-19 compared with male students. Because Turkey is a male-dominant society, a greater fear of COVID-19 in female students was an expected result. Accordingly, it can be expected that male nurses may better develop coping mechanisms for the crisis in the case of a pandemic such as COVID-19.

Students' level of intolerance of uncertainty did not differ by gender. Studies in the literature have reported results similar to our findings.[14] The fact that the level of intolerance of uncertainty did not differ by gender could be attributed to the fact that all nursing students went through the same period under pandemic conditions.

Female students had more positive attitudes toward the nursing profession compared with male students. Similar to the results of our study, the authors of other studies found that positive attitudes toward the nursing profession were higher in female than in male students.[21,26,34] As stated by Yüksel and Bahadir Yılmaz,[34] previous research also showed that Turkish nurses had positive attitudes toward the profession. Moreover, nursing students who are female, looking forward to entering the profession, and satisfied with their career path especially had positive attitudes.[34]

Students' attitudes toward the nursing profession differed by their year of study. Senior students had more positive attitudes than the other students did. Similar to our results, another study reported that senior students had a more positive attitude toward the profession, and this positive attitude decreased as the year of study decreased.[21] The results of our study could be associated with the fact that most students included in this research were first-year students, and these students took all of their theoretical and practical classes through distance education. This is because these students had never had face-to-face contact with the nurses and professors who typically serve as role models, and therefore nursing students who willingly chose the nursing profession had a more positive attitude toward the profession. Similar to the results of our study, Zencir and Eşer[20] found that students willingly choosing the nursing profession had more positive attitudes in all three subdimensions (Characteristics of Nursing Profession, Preferring Nursing Profession, General State of Nursing Profession) compared with students who unwillingly chose the profession.

Although the students who predicted a very bad future for the nursing profession had high levels of COVID-19 fear and intolerance of uncertainty, the students who viewed the future of the nursing profession very positively had positive attitudes toward the profession. Moreover, students who thought the COVID-19 pandemic had negatively affected the nursing profession experienced a high level of COVID-19 fear and intolerance of uncertainty. Alternatively, these students also showed positive attitudes toward the general state of the nursing profession. Contrary to our research, another study investigating senior nursing students' thoughts on the nursing profession during the COVID-19 pandemic found that the pandemic did not negatively affect the students' opinions on the nursing profession.[35] A study carried out with international high school students showed that the fear of COVID-19 and intolerance of uncertainty were negative correlated with career maturity. In addition, the authors stated that intolerance of uncertainty played a mediating role in the relationship between the fear of COVID-19 and career maturity.[32]

Not being able to participate in regular clinical trainings, experiencing difficulties in reaching professors and resources in a virtual environment, encountering obstacles to education and evaluation, and facing economic issues due to the pandemic caused various problems. However, despite of all these problems, another study showed that the general attitude of the participant nursing students toward the nursing profession was not negatively affected by the pandemic.[34] On the other hand, nurses did not want to change their profession after the COVID-19 pandemic despite the heavy working conditions. In other words, they wanted to work as a nurse under every possible condition. We found that the nurses felt insecure about providing care for a patient diagnosed with COVID-19, and they stated that nursing is a promising profession.

The primary limitation of this research was the inability to reach all nursing students in Turkey. The second limitation was not being able to collect qualitative data due to the pandemic conditions. Another limitation was not being able to compare the levels of students' intolerance of uncertainty and their attitudes toward the profession with post-pandemic results.

CONCLUSIONS

In this study conducted in Turkey, nursing students had a medium level of fear of COVID-19 under pandemic conditions. Moreover, we showed that although the fear of COVID-19 affected the students' level of intolerance of uncertainty, it did not affect their attitude toward the nursing profession. In crisis situations such as this pandemic, which caught society unprepared, factors that affect students' intolerance should be eliminated. By doing so, the nurse candidate's concern for the future can be decreased. To this end, nursing schools should plan to hold trainings on crisis management skills, and these trainings can be integrated into the curriculum.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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REFERENCES

1. Arabi YM, Murthy S, Webb S. COVID-19: A novel coronavirus and a novel challenge for critical care. *Intensive Care Med*. 2020;46:833–6.

2. Deniz ME. Self-compassion, intolerance of uncertainty, fear of COVID-19, and well-being: A serial mediation investigation. *Pers Individ Dif*. 2021;177:110824.

3. Rettie H, Daniels J. Coping and tolerance of uncertainty: Predictors and mediators of mental health during the COVID-19 pandemic. *Am Psychol*. 2021;76:427–37.

4. Satici B, Gocet-Tekin E, Deniz ME, Satici SA. Adaptation of the fear of COVID-19 scale: Its association with psychological distress and life satisfaction in Turkey. *Int J Ment Health Addict*. 2021;19:1980–8.

5. Council of Higher Education. *COVID-19 briefing. Turkish higher education in pandemic days*. Ankara: Council of Higher Education, 2020.

6. Terzi B, Azizoğlu F, Özhan F. Factors affecting attitudes of nursing students towards distance education during the COVID-19 pandemic: A web-based cross-sectional survey. *Perspect Psychiatr Care*. 2021;57:1765–73.

7. Collado-Boira EJ, Ruiz-Palomino E, Salas-Media P, Folch-Ayora A, Muriach M, Baliño P. "The COVID-19 outbreak"-An empirical phenomenological study on perceptions and psychosocial considerations surrounding the immediate incorporation of final-year Spanish nursing and medical students into the health system. *Nurse Educ Today*. 2020;92:104504.

8. Ulenaers D, Grosemans J, Schrooten W, Bergs J. Clinical placement experience of nursing students during the COVID-19 pandemic: A cross-sectional study. *Nurse Educ Today*. 2021;99:104746.

9. Emory J, Kippenbrock T, Buron B. A national survey of the impact of COVID-19 on personal, academic, and work environments of nursing students. *Nurs Outlook*. 2021;69:1116–25.

10. Iyigun E, Arici Parlak E, Ayhan H. The effect of fear of COVID-19 on perceived clinical stress levels in senior nursing students: A cross-sectional study. *Teach Learn Nurs*. 2022;17:296–301.

11. Kuru Alici N, Ozturk Copur E. Anxiety and fear of COVID-19 among nursing students during the COVID-19 pandemic: A descriptive correlation study. *Perspect Psychiatr Care*. 2022;58:141–8.

12. Kuliukas L, Hauck Y, Sweet L, Vasilevski V, Homer C, Wynter K, *et al*. A cross sectional study of midwifery students' experiences of COVID-19: Uncertainty and expendability. *Nurse Educ Pract*. 2021;51:102988.

13. Şentürk S, Bakır N. The relationship between intolerance of uncertainty and the depression, anxiety and stress levels of nursing students during the Covid-19 outbreak. *Cyprus Turk J Psychiatry Psychol*. 2021;3(2):97–105.

14. Yıldız B, Güllü A. The relationship between intolerance of uncertainty and alexithymia and investigation by some socio-demographic variables [Belirsizliğe Tahammülsüzlük ile Aleksitimi Arasındaki İlişki ve Bazı SosyoDemografik Değişkenlere Göre İncelenmesi]. *Eğitim Bilimleri Dergisi*. 2018;9:113–31. Turkish.

15. Ahorsu DK, Lin CY, Imani V, Saffari M, Griffiths MD, Pakpour AH. The fear of COVID-19 scale: Development and initial validation. *Int J Ment Health Addict*. 2022;20:1537–45.

16. Satici B, Saricali M, Satici SA, Griffiths MD. Intolerance of uncertainty and mental wellbeing: Serial mediation by

rumination and fear of COVID-19. *Int J Ment Health Addict*. 2022;20:2731–42.

17. Carleton RN, Norton MA, Asmundson GJ. Fearing the unknown: A short version of the intolerance of uncertainty scale. *J Anxiety Disord*. 2007;21:105–17.

18. Sarıçam H, Erguvan FM, Akın A, Akça MŞ. Intolerance of uncertainty scale (BST-12) Turkish version: Validity and reliability study [Belirsizliğe Tahammülsüzlük Ölçeği (BTÖ-12) Türkçe Formu: Geçerlik ve Güvenirlik Çalışması]. *Route Educ Soc Sci J*. 2014;1:148–57. Turkish.

19. Coban GI, Kasikci M. Development of the attitude scale for nursing profession. *Int J Nurs Pract*. 2011;17:518–24.

20. Zencir G, Eşer İ. Nursing students' attitudes towards the nursing profession, nursing preferred with the relationship between: Example of Turkey [Hemşirelik Öğrencilerinin Hemşirelik Mesleğine Yönelik Tutumları İle Hemşirelik Tercihi Arasındaki İlişki: Türkiye Örneği]. *Dokuz Eylül Üniversitesi Hemşirelik Fakültesi Elektronik Dergisi*. 2016;9:30–7. Turkish.

21. Çalışkan E, Kargın M, Ersöğütçü F. The Relationshıp between fear of Covid-19 and attitude towards nursing profession among nursing students [Hemşirelik Öğrencilerinde Covid-19 Korkusu İle Hemşirelik Mesleğine Yönelik Tutum Arasındaki İlişki]. *Sürekli Tıp Eğitimi Dergisi*. 2021;30:170–80. Turkish.

22. Tekir Ö. The relationship between fear of COVID-19, psychological well-being and life satisfaction in nursing students: A cross-sectional study. *PLoS One*. 2022;17:e0264970.

23. Khattak SR, Saeed I, Rehman SU, Fayaz M. Impact of fear of COVID-19 pandemic on the mental health of nurses in Pakistan. *J Loss Trauma*. 2021;26:421–35.

24. Zhuo L, Wu Q, Le H, Li H, Zheng L, Ma G, *et al*. COVID-19-related intolerance of uncertainty and mental health among back-to-school students in Wuhan: The moderation effect of social support. *Int J Environ Res Public Health*. 2021;18:981.

25. Beck E, Daniels J. Intolerance of uncertainty, fear of contamination and perceived social support as predictors of psychological distress in NHS healthcare workers during the COVID-19 pandemic. *Psychol Health Med*. 2023;28:447–59.

26. Çeçen S, Lafçı D, Yıldız E. Hemşirelik bölümü öğrencilerinin mesleki kişilik tipleri ile mesleğe yönelik tutumları arasındaki ilişkinin incelenmesi [Investigation of the relationship between nursing department students' professional personality types and attitudes towards profession]. *Sağlık Akademisyenleri Dergisi*. 2020;7:169–74. Turkish.

27. Seval M, Sönmez M. Hemşirelik Öğrencilerinin Mesleğe Yönelik Tutumları ve İmaj Algıları Arasındaki İlişki [Relationship between the attitudes and image perceptions of nursing students' profession]. *Sağlık Akademisi Kastamonu*. 2020;5:19–35. Turkish.

28. Bakioğlu F, Korkmaz O, Ercan H. Fear of COVID-19 and positivity: Mediating role of intolerance of uncertainty, depression, anxiety, and stress. *Int J Ment Health Addict*. 2021;19:2369–82.

29. Doğanülkü HA, Korkmaz O, Griffiths MD, Pakpour AH. Fear of COVID-19 lead to procrastination among Turkish university students: The mediating role of intolerance of uncertainty. *BMC Psychol*. 2021;9:178.

30. Breakwell GM, Jaspal R. Identity change, uncertainty and mistrust in relation to fear and risk of COVID-19. *J Risk Res*. 2020;44:335–51.

31. Kiraner E, Terzi B. Intensive care nursing in the covid-19 pandemic process. *J Intensiv Care Nurs*. 2020;24:83–8.

32. Chen Q, Lu L, Huang H, Fang Y. Fear of COVID-19 and the career maturity of Chinese international high school students: The mediating effect of the intolerance of uncertainty. *J Health Psychol*. 2023;28:450–61.

33. Aslan H, Pekince H. Nursing students' views on the COVID-19 pandemic and their percieved stress levels. *Perspect Psychiatr Care*. 2021;57:695–701.

34. Yüksel A, Yılmaz EB. Nursing student attitudes toward nursing profession and their state anxiety level during COVID-19 outbreak. *J Psychiatric Nurs*. 2022;13:76–82.

35. Tambağ H. Investigation of senior nursing students' thoughts towards their profession during in COVID-19 pandemic period. *Int J Acad Med Pharm*. 2022;4:47–51.