The correlation between nursing students’ levels of fear and stress related to the COVID-19 pandemic and their compliance with standard precautions

Fatma Yilmaz Kurt, Naile Alankaya, Selma Atay, Sevda Efil

Department of Nursing, Faculty of Health Sciences, Canakkale Onsekiz Mart University, Canakkale, Turkey

ABSTRACT

Introduction and aim. University students have been demonstrated in the literature to be a group particularly vulnerable to mental health problems during the COVID-19 pandemic. The aim of this study was to examine the correlation between the fear and anxiety levels of nursing students regarding the COVID-19 pandemic and their compliance with standard precautions.

Material and methods. The sample consisted of 509 volunteer students. Data were collected using a Personal Information Form, the Fear of COVID-19 Scale (FCV-19S), the COVID-19 Anxiety Scale (CAS) and the Compliance with Standard Precautions Scale (CSPS).

Results. The FCV-19S, CAS, and CSPS mean scores of the students were respectively 17.49±5.24, 1.99±3.54 and 13.46±3.61. There was a moderate correlation (p<0.05) between the FCV-19S and CAS of the students, but no correlation was detected between CSPS and FCV-19S (p>0.05) and CAS (p>0.05).

Conclusion. It was determined that students had a moderate fear of COVID-19 and a low level of anxiety over COVID-19. However, fear of COVID-19 and COVID-19 anxiety levels were not correlated with compliance with standard precautions.

Keywords. anxiety, COVID-19, fear, nursing, pandemic, standard precautions

Introduction

The coronavirus infection (Coronavirus disease 2019, COVID-19) has affected the entire world, and has continued to have a physiological and psychological impact on health. Satıcı et al., determined that the fear of COVID-19 negatively affected life satisfaction, and this may be associated with depression, anxiety, and stress. In the literature, it is reported that the fear of COVID-19 decreased life satisfaction, had a negative effect on an individual’s well-being, and caused negative mental health conditions, such as stress, depression, and anxiety. Being physically healthy or not infected with coronavirus does not prevent a person from suffering unfavorable psychological emotions caused by COVID-19. Anxiety and fear can be caused by the severity of the disease, its contribution to mortality, and the risk of transmission. Addition of uncertainty into psychological problems may impair individual well-being and lead to maladaptive behaviors. Korukçu et al. determined that COVID-19 infection caused a high level of fear in individuals living in Turkey. Another study found that nurses were fearful of contracting an infection or unintentionally infecting others.

Psychological and emotional factors experienced during the pandemic may adversely affect fighting against it and make it more difficult to exhibit healthy
lifestyle behaviors. University students have been demonstrated in the literature to be a group which has been particularly vulnerable to mental health problems during the COVID-19 pandemic. The number of psychological disorders observed in university students during the pandemic has increased compared to previous years. Fear can be increased by concerns about the risk of being infected. It is important to determine the fear of contracting COVID-19 infection and to understand the associated risks. One study reported that there was a high level of COVID-19 anxiety and fear among nursing students. Cici and Yılmaz found that nursing students had high levels of anxiety due to the COVID-19 pandemic and their professional perspectives were adversely affected by the pandemic. Huang et al. determined that nurses and nursing students' anxiety, fear, sadness, anger, and coping strategies were affected during the COVID-19 pandemic.

Nursing students are exposed to patient contact during their clinical practices to gain professional experience. This poses a risk of infection unless infection control precautions are taken. During a pandemic, applying standard preventive measures is the most important factor in reducing cross-transmission between health workers and patients. It has been reported that during the COVID-19 pandemic, nurses' compliance to standard measures was inadequate. Therefore, it is important to comply with standard precautions in the fight against COVID-19, which persists as a global threat to health. Controlling infection is critical for patient and employee safety. It is also an indicator of the delivery of high-quality nursing care. Compliance with standard precautions is important in preventing infection from being transmitted. Standard precautions are universally recognized guidelines for infection control in healthcare practices. Topçu and Emlek found that nursing students' conformity to standard preventive measures during the pandemic was at an optimal level. It was stated in a study in China that health students' personal preventive measures and maintenance of social distancing was better during the pandemic. It has been found that there was no correlation between nurses' fear of COVID-19 and their attitudes to patient safety, and that nurses at a younger age had negative attitudes to patient safety. The fear and stress associated with COVID-19 may make it difficult for students who are future nurses to comply with standard precautions. To the best of our knowledge, there is no study in the literature that investigates the correlation between the level of fear and anxiety among nursing students during the COVID-19 pandemic and their compliance with standard precautions. For this reason, the correlation between nursing students' fear and stress levels relating to the COVID-19 pandemic and their conformity to standard preventive measures was examined in this study.

**Aim**

The aim of the study was to examine the correlation between the fear and anxiety levels of nursing students during the COVID-19 pandemic and their compliance with standard precautions.

**Research questions**

- What are the levels of fear in nursing students during the COVID-19 pandemic?
- What are the levels of anxiety in nursing students during the COVID-19 pandemic?
- What is the level of compliance of nursing students with standard precautions during the COVID-19 pandemic?
- Is there a correlation between the nursing students' levels of fear of COVID-19 and compliance with standard precautions?
- Is there a correlation between the nursing students' levels of anxiety of COVID-19 and their compliance with standard precautions?

**Material and methods**

**Ethics approval**

Ethical approval was obtained from the Scientific Research Ethics Committee of the relevant university (decision no: E-84026528-050.01.04-2100216470, dated 4 November 2021). Written approval (dated 9 November 2021) was obtained from the COVID-19 Scientific Research Assessment Commission under the Republic of Turkey Ministry of Health. In accordance with the Declaration of Helsinki, the objectives and content of the study were explained to the nursing students in the sample. Written permission was obtained by e-mail from the researchers to use the scales in the collection of data. They were informed that their participation was entirely voluntary, and their personal information and privacy would be protected. The data was created using Google Drive during the pandemic, and the survey invitation was given an online survey link via WhatsApp, making it clear that the participation was voluntary. Informed consent was obtained from all participants.

**Study design and participants**

The study was conducted as descriptive and correlation research. Data collection was performed between 10 November and 31 December 2021 using an online Google questionnaire. The population of the study was comprised of nursing students who attended a university in Turkey providing nursing education during the fall term of the academic year 2021-2022. The study was conducted at the Faculty of Health Sciences. The program Epi Info™ version 7.2.3.1, USA: American Centers for Disease Control and Prevention (CDC) 2022, was used for sample size calculation. Since there was no similar study, the expected and observed values were accepted.
as 50% respectively. The sample size was calculated using the sample formula with an unknown population. According to this formula, the number of students required to be included in the study was calculated as 384 with a Type I error (alpha=.05) and power of 95%. The study included second, third and fourth year nursing students who accessed the questionnaire sent via the internet, and who volunteered to participate in the study, fully completed the questionnaire, and were actively studying during the time of the study. Those who were not active students in classes at the time of the study and also first-year students were excluded from the study. Students perform clinical practice in Medical Nursing in the second year, Gynecology and Obstetrics Nursing in the third year, and Psychiatric Nursing in the fourth year during the fall semester. The first-year students begin their first hospital practice in the spring semester, and therefore, they were excluded from the study. The study was completed with 509 students.

Data collection tools
Four main questionnaires were used for the current study.

Personal information form
This form consisted of nine questions about the socio-demographic characteristics of students who participated in the study.22,34,35

Fear of COVID-19 scale (FCV-19S)
The Turkish language validity and reliability of the FCV-19S, which was developed by Ahorsu et al., was tested in the study by Lam, and 0.84 in the study by Samur et al. The internal consistency alpha coefficient of the scale was found to be 0.93 in this study.

Compliance with standard precautions scale (CSPS)
The CSPS is a scale intended to reveal compliance with standard preventive precautions, assessed within the scope of precautions that healthcare professionals must take for infection control. In other words, it is a self-assessment tool used by healthcare professionals to determine whether or not they exhibit protective and safe behaviors in infection control and prevention. In 2011, Simon Ching Lam developed the scale, based on international preventive precautions published by the CDC.39 Samur et al. assessed the Turkish validity and reliability study of the scale. A four-point Likert-type scale with one dimension is rated as 1: “Never”, 2: “rarely”, 3: “sometimes”, and 4: “always”. In the assessment of the scale, the “always” response to positively scored items (items 1, 3, 5, 7, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, and 20) is coded with “1” and the other responses are “0”. The “never” response to negatively scored items (items 2, 4, 6, and 15) is coded as “1,” while the remaining responses are coded as “0” on the scale. Total score ranges from 0 to 20. Higher scores signify that compliance with standard precautions increases. The internal coefficient of consistency of the scale was found to be 0.79 in the study by Lam, and 0.84 in the study by Samur et al. The internal consistency alpha coefficient of the scale was 0.76 in this study.

COVID-19 anxiety scale (CAS)
Lee developed the COVID-19 Anxiety Scale to determine the levels of anxiety associated with the crises created by the coronavirus. Evren et al. conducted the Turkish validity and reliability study of the scale. The CAS, a five-point Likert-type scale, has one dimension and five items. The items are rated as 0: “Never”, 1: “rare, less than one or two days”, 2: “a few days”, 3: “more than seven days”, and 4: “almost every day in the last two weeks”. A total CAS score of ≥ 9 indicates dysfunctional anxiety associated with coronavirus. An increase in the total CAS score indicates that individuals have a high level of anxiety, whereas a decrease in the total CAS score implies that individuals have a low level of anxiety. The internal consistency coefficient of the scale was found to be 0.93 in the study by Lee, and 0.80 in the study by Evren et al. The internal consistency alpha coefficient of the scale was 0.93 in this study.

Statistical analysis
The data in this study were analyzed using SPSS 22.0 (IBM Corp., Released 2013, IBM SPSS Statistics for Windows, Version 22.0, Armonk, NY: IBM Corp.).
The correlation between nursing students’ levels of fear and stress related to the COVID-19 pandemic and their compliance with standard precautions was examined, a moderately significant correlation was found between FCV-19S and CAS (p<0.05). No correlation was found between CPS and FCV-19S (p>0.05) and CAS (p>0.05) (Table 3).

**Table 3. Correlation between FCV-19S, CAS, and CPS**

<table>
<thead>
<tr>
<th>FCV-19S</th>
<th>CAS</th>
<th>CPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* FCV-19S – fear of COVID-19 scale; CAS – COVID-19 anxiety scale; CPS – compliance with standard precautions scale; *– Spearman’s correlation analysis

When the correlation between FCV-19S, CAS and CPS was examined, a moderately significant correlation was found between FCV-19S and CAS (p<0.05). No correlation was found between CPS and FCV-19S (p>0.05) and CAS (p>0.05) (Table 3).
Discussion
The rapid spread and pandemic nature of COVID-19 caused anxiety, depression and fear in individuals. Nurses in general experience stress in relation to COVID-19, but it is seen that younger nurses have greater difficulty in coping with the pandemic. Also, the negative psychological effect on them may constitute a risk to their care behaviors. This study was conducted to examine the correlation between the fear and anxiety levels of nursing students during the COVID-19 pandemic and their compliance with standard precautions. Based on their FCV-19S mean score (17.49±5.24), it can be asserted that the nursing students who participated in the study had a moderate fear of COVID-19. This result of the study was thought to be associated with the fact that the data was collected in the later period of the pandemic. The students may have been informed about COVID-19 and its repercussions, prevention methods, and its impacts on life during this period. In the literature, there are studies indicating that nursing students have a moderate or high level of fear of COVID-19. The results of studies conducted in Turkey, Spain and Israel have indicated that the fear of COVID-19 is high among nursing students.

While it is believed that fear and anxiety share similar features, they are essentially two concepts that exist independently of one another but have an effect on one another. Some studies have reported that the pandemic has considerably affected both the fear and anxiety levels of students. Although nursing students had a moderate fear of COVID-19 and a low level of dysfunctional anxiety in this study, a moderately significant correlation was found between FCV-19S and CAS, and as the FCV-19S mean scores of the students increased, the mean scores of CAS also increased. These results were associated with the fact that nursing students did not go to the hospital for clinical practices, they avoided transmission of hospital-acquired infection and they stayed with their families during the pandemic. In contrast to the findings of the present study, a study by Kuru Alici et al. found that the anxiety levels of students were high, and stated that this could be attributed to the high rate of COVID-19 transmission, the fear of death, and the lack of knowledge of the students in terms of preventative precautions and behaviors. Huang et al. stated that the fear of contracting COVID-19 increased anxiety during the pandemic. On the other hand, Yuan et al. asserted that active use of social media by students and sharing knowledge or experiences with one another were effective in reducing anxiety.

Nurses’ level of knowledge of and compliance with standard precautions are very important for improving health services, reducing care costs and increasing patient satisfaction. The CSPS mean score of nursing students was found to be high in the study. It is important for nursing students to avoid the risk of catching COVID-19 during clinical practice. The students get training on standard precautions and procedures such as infection prevention, hand washing, and the use of personal protective equipment beginning in their first year of nursing undergraduate school in Turkey. It can be argued that it is also effective for the students to attend applied nursing courses and some elective courses (Communicable Diseases Nursing, Hospital-Acquired Infections, etc.) to familiarize themselves with subjects related to standard precautions prior to beginning clinical practice. Studies conducted in different parts of the world have reported that nursing students have different levels of compliance with standard precautions. The level of compliance with standard precautions was reported to be relatively high in studies conducted with nursing students in China and Jordan. A large-scale study including 4439 healthcare professionals at 34 hospitals in France revealed that the compliance of nursing students with standard precautions was higher than that of other working healthcare professionals.

The FCV-19S and CAS mean scores of female students in the study were found to be higher than the scores of the male students. It can be argued that this was associated with gender traits or the fact that women are more emotionally vulnerable and sensitive than men. Cheng et al. found that male students experienced a lower level of stress compared to female students. Studies by Kuru Alici et al. and Savitsky et al. also yielded similar results. However, in a study conducted by Sun et al. (2020) in China, higher levels of fear and anxiety were found in men. Some studies conducted after other epidemics (SARS, Ebola, MERS) stated that women were more negatively affected by the epidemic than men, and that they suffered from higher levels of anxiety and depression. Sun et al. stated that women stayed at home during the pandemic and cleaned the house, met the needs of family members, cooked and fulfilled other household chores, all of which increased the burden on women, thus resulting in increasing fear and anxiety. The fact that the majority of the nursing students were female is compatible with these results.

Yasemin et al. found that the COVID-19 pandemic affected nursing students’ mental health and eating habits. It is also known that nursing students’ academic success is affected by the fear which they experience, their sleep quality is affected and they experience the intention to leave the nursing school. The fact that nurses work in a risky environment in the pandemic and experience deficiencies in professional knowledge and skill may be the reason for this. Therefore, the correlation between the stress and fear experienced by nursing students and their conformity to standard protective measures was considered, and it was found that there was no correlation between the COVID-19 fear
and stress which they experienced and their conformity to standard protective measures. Understanding these issues is necessary because nursing students are expected to play a larger role in the current crisis than lay people by volunteering, educating the public and increasing awareness of the COVID-19 pandemic.  

Study limitations
The research was conducted during the pandemic period and all responses were collected online. For this reason, the data obtained from the study is limited to students who had internet access and could answer and agree to participate in the research.

Conclusion
In conclusion, it was determined that the levels of fear of COVID-19 of the nursing students were moderate, their levels of anxiety concerning COVID-19 were low, and female students had higher levels of fear and anxiety than male students. Also, the students' levels of compliance with standard precautions were relatively high. The correlation between FCV-19S and CAS was moderately significant. No correlation was found between CSPS and FCV-19S and CAS. Given these findings, it is recommended that students attend courses on coping with fear and anxiety during epidemics, psychological awareness, and resilience during their nursing undergraduate education.

Acknowledgments
The authors thank all students who participated in the study.

Declarations
Funding
This research received no external funding.

Author contributions

Conflicts of interest
All authors declare that they have no conflicts of interest.

Data availability
The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethics approval
Ethical approval was obtained from the Scientific Research Ethics Committee of the relevant university (decision no: E-84026528-050.01.04-2100216470). Written approval (dated 09.11.2021) was obtained from the COVID-19 Scientific Research Assessment Commission under the Republic of Turkey Ministry of Health

References


The correlation between nursing students' levels of fear and stress related to the COVID-19 pandemic and their compliance...


