



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

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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.¹ Satıcı et al., determined that the fear of COVID-19 negatively affected life satisfaction, and this may be associated with depression, anxiety, and stress.² In the literature, it is reported that the fear of COVID-19 decreased life satisfaction³, had a negative effect on an individual's well-being, and caused negative mental health conditions, such as stress, depression, and anxiety.⁴⁻⁶ Being physically healthy or not infected with coronavirus does not prevent a person from suf-

fering unfavorable psychological emotions caused by COVID-19.⁷ Anxiety and fear can be caused by the severity of the disease, its contribution to mortality, and the risk of transmission.⁸⁻¹⁰ Addition of uncertainty into psychological problems may impair individual well-being and lead to maladaptive behaviors.^{11,12} Korukçu et al. determined that COVID-19 infection caused a high level of fear in individuals living in Turkey.¹³ Another study found that nurses were fearful of contracting an infection or unintentionally infecting others.¹⁴

Psychological and emotional factors experienced during the pandemic may adversely affect fighting against it and make it more difficult to exhibit healthy

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lifestyle behaviors.^{15,16} 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.¹⁷⁻²⁰ 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.²¹ One study reported that there was a high level of COVID-19 anxiety and fear among nursing students.²² Cici and Yilmazel 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.²³ Huang et al. determined that nurses and nursing students' anxiety, fear, sadness, anger, and coping strategies were affected during the COVID-19 pandemic.²⁴

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.²⁵ During a pandemic, applying standard preventive measures is the most important factor in reducing cross-transmission between health workers and patients.²⁶ It has been reported that during the COVID-19 pandemic, nurses' conformity to standard measures was inadequate.^{27,28} Therefore, it is important to comply with standard precautions in the fight against COVID-19, which persists as a global threat to health.⁷ 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 health care practices.²⁹ Topçu and Emlek found that nursing students' conformity to standard preventive measures during the pandemic was at an optimal level.³⁰ It was stated in a study in China that health students' personal preventive measures and maintenance of social distancing was better during the pandemic.³¹ 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.³² 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 correlational 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 be included in the study was calculated as 384 with a Type I error ($\alpha=.05$) and power of 95%.³³ 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 in 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 by Ladikli et al.^{8,36} FCV-19S has a single dimension and seven items. The scale is scored as a five-point Likert type scale ranging between 5= “strongly agree” and 1= “strongly disagree”. The total score of the scale ranges from 7 to 35. Scores at or above the cut-off point of the scale signify that individuals have a fear of COVID-19. The internal consistency coefficient of the scale was found to be 0.82 in the study by Ahorsu and 0.86 in the study by Ladikli et al. The internal consistency alpha coefficient of the scale was found to be 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.³⁷ Evren et al. conducted the Turkish validity and reliability study of the scale.³⁸ 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.

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.⁴⁰ 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, 8, 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.

Data collection

The data were collected between 10 November 2021 and 31 December 2021 from students who met the inclusion criteria. The students were reached through a closed online communications program that they used to communicate with each other, and a survey link to the study was shared. The first page of the online survey includes an informed consent form that explains the objective of the study, that participation in the study voluntary, and that all personal data will be kept confidential. The data collection form was resumed after acquiring the consent of the students who volunteered to participate in this study. It took roughly 8-10 minutes to complete the survey electronically. Each student was only allowed to fill out the survey once.

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

data were presented as mean ± SD deviation, median, and minimum and maximum values for variables determined by measuring, and as numbers and percentages for variables determined by counting. The Kolmogorov Smirnov Test was used to analyze whether or not the sample had normal distribution in comparative statistics. The Mann Whitney U Test was used to compare continuous data with independent variables with two groups, while the Kruskal Wallis Analysis of Variance was used to compare continuous data with more than two groups. The Kruskal Wallis Analysis Multiple Comparison Test was used to analyze which group or groups caused the difference. The correlation between the scores of scales was determined using Spearman's Correlation Analysis. The statistical significance level was accepted as $p < 0.05$.

Results

It was determined that 78.4% of the students were female and 49.8% were second-year students. 82.2% of the students reported that they had not been diagnosed with COVID-19 and 98% stated that they had the COVID-19 vaccine. Also, 58.5% of the students stated that there was an infection prevention procedure in the clinic where they completed their internship, and 56.8% stated that they had previously attended a seminar/training for infection control and prevention. Furthermore, 80.1% of the students stated that they had been trained for standard precautions before starting to work in the clinic.

The students who participated in the study had a moderate fear of COVID-19 according to their FCV-19S mean scores (17.49±5.24), they had a low level of dysfunctional anxiety according to their CAS mean score (1.99±3.54), and their compliance with standard precautions was high according to their CSPS mean scores (13.46±3.61) (Table 1).

Table 1. Mean scores of the students on FCV-19S, CAS, and CSPS*

	Number of items	Mean± SD	Min-Max
FCV-19S	7	17.49±5.24	8–33
CAS	5	1.99±3.54	0–20
CSPS	20	13.46±3.61	0–20

* FCV-19S – fear of COVID-19 scale; CAS – COVID-19 anxiety scale; CSPS – compliance with standard precautions scale

When characteristics of the students were compared with their FCV-19S, CAS and CSPS mean scores, it was observed that the mean scores of female students for all three scales (18.03±5.26; 2.20±3.78; 13.57±3.44) were higher than the mean scores of male students (15.57±4.70; 1.23±2.42; 13.03±4.18 respectively). However, while there was a statistically significant difference in FCV-19S and CAS mean scores between female and male students, there was no statistically significant dif-

ference between their CSPS mean scores. Among the other variables, there was no difference between the students' grades, statuses of having COVID-19, statuses of being vaccinated with COVID-19 vaccine, previous training on infection control and prevention, or mean scores of FCV-19S, CAS, and CSPS (Table 2).

Table 2. Comparison of students' characteristics with their FCV-19S, CAS and CSPS mean scores^a

	FCV-19S Mean ± SD	CAS Mean ± SD	CSPS Mean ± SD
Gender			
Female	18.03±5.26	2.20±3.78	13.57±3.44
Male	15.57±4.70	1.23±2.42	13.03±4.18
Test & p	15549.0 ^b 0.000 [*]	17973.0 ^b 0.003 [*]	20693.0 ^b 0.517
Year			
2 nd Year	17.37±5.23	1.88±3.39	13.64±3.63
3 rd Year	18.16±5.58	2.36±4.15	13.34±3.54
4 th Year	16.84±4.66	1.74±2.94	13.19±3.68
Test & p	3.216 ^c 0.200	0.255 ^c 0.880	2.440 ^c 0.295
Diagnosis of COVID 19			
Yes	16.86±5.08	2.14±3.26	14.04±3.44
No	17.62±5.27	1.96±9.61	13.33±3.65
Test & p	16708.5 ^b 0.188	17258.0 ^b 0.340	16095.5 ^b 0.069
Yes	17.54±5.27	2.02±3.57	13.50±3.58
No	14.70±3.49	0.60±1.26	11.20±4.63
Test & p	1680.5 ^b 0.085	1934.0 ^b 0.204	1625.5 ^b 0.065
Seminar/training for infection control and prevention			
Yes	17.09±4.74	1.70±3.09	13.47±3.67
No	18.00±5.79	2.36±4.05	13.43±3.55
Test & p	28619.0 ^b 0.152	28719.5 ^b 0.133	30538.0 ^b 0.810

^a FCV-19S – fear of COVID-19 scale; CAS – COVID-19 anxiety scale; CSPS – compliance with standard precautions scale; c – Kruskal Wallis; b – Mann Whitney U; * – $p < 0.05$

When the correlation between FCV-19S, CAS and CSPS was examined, a moderately significant correlation was found between FCV-19S and CAS ($p < 0.05$). No correlation was found between CSPS and FCV-19S ($p > 0.05$) and CAS ($p > 0.05$) (Table 3).

Table 3. Correlation between FCV-19S, CAS, and CSPS^a

		FCV-19 S	CAS	CSPS
FCV-19S	R	1.000	0.487*	0.075
	p	0.000	0.09
CAS	R	0.487*	1.000	-0.073
	p	0.000	0.100
CSPS	R	0.075	-0.073	1.000
	p	0.092	0.100

^a FCV-19S – fear of COVID-19 scale; CAS – COVID-19 anxiety scale; CSPS – compliance with standard precautions scale; * – Spearman's correlation analysis

Discussion

The rapid spread and pandemic nature of COVID-19 caused anxiety, depression and fear in individuals.⁸ 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.^{22,41,42} Also, the negative psychological effect on them may constitute a risk to their care behaviors.⁴¹ 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.^{14,43} The results of studies conducted in Turkey, Spain and Israel have indicated that the fear of COVID-19 is high among nursing students.^{19,22,43}

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.^{17,22} 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.²² Huang et al. stated that the fear of contracting COVID-19 increased anxiety during the pandemic.²⁴ 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.⁴⁴

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 import-

ant for nursing students to avoid the risk of catching COVID-19 during clinical practice.²⁵ 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.^{25,45} 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.⁴⁶

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.³¹ Studies by Kuru Alici et al. and Savitsky et al. also yielded similar results.^{22,43} However, in a study conducted by Sun et al. (2020) in China, higher levels of fear and anxiety were found in men.⁴⁷ 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.^{15,48} 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.⁴⁷ 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.⁴⁹ 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.^{50,51} 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.⁵²

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.

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Declarations

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Author contributions

Conceptualization, F.Y.K., N.A., S.A. and S.E.; Methodology, F.Y.K., N.A., S.A. and S.E.; Software, F.Y.K., N.A., S.A. and S.E.; Validation, F.Y.K., N.A., S.A. and S.E.; Formal Analysis, F.Y.K., N.A., S.A. and S.E.; Investigation, F.Y.K., N.A., S.A. and S.E.; Resources, F.Y.K., N.A., S.A. and S.E.; Data Curation, F.Y.K., N.A., S.A. and S.E.; Writing Original Draft Preparation, F.Y.K., N.A., S.A. and S.E.; Writing – Review & Editing, F.Y.K., N.A., S.A. and S.E. Visualization, F.Y.K., N.A., S.A. and S.E.; Supervision, F.Y.K., and S.E.; Project Administration, F.Y.K., N.A., S.A. and S.E.

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

1. Saladino V, Algeri D, Auriemma V. The Psychological and social impact of Covid-19: New perspectives of well-being. *Front Psychol.* 2020;11:577684. doi: 10.3389/fpsyg.2020.577684
2. Satici B, Gocet-Tekin E, Deniz ME, et al. 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(6):1980-1988. doi: 10.1007/s11469-020-00294-0
3. Krok D, Zarzycka B, Telka E. Risk of contracting covid-19, personal resources and subjective well-being among healthcare workers: The mediating role of stress and meaning-making. *J Clin Med.* 2021;10(1):132. doi: 10.3390/jcm10010132
4. Harper CA, Satchell L, Fido D, et al. Functional fear predicts public health compliance in the COVID-19 pandemic. *Int J Ment Health Addict.* 2021;19(5):1875-1888. doi: 10.1007/s11469-020-00281-5
5. Catton H. Global challenges in health and health care for nurses and midwives everywhere. *Int Nurs Re.* 2020;67(1):4-6. doi: 10.1111/inr.12578
6. Mo Y, Deng L, Zhang L, et al. Work stress among Chinese nurses to support Wuhan in fighting against COVID-19 epidemic. *J Nurs Manag.* 2020;28(5):1002-1009. doi: 10.1111/jonm.13014
7. Dymecka J, Gerymski R, Machnik-Czerwik A, et al. Fear of COVID-19 and life satisfaction: The role of the health-related hardiness and sense of coherence. *Front Psychiatry.* 2021;12:712103. doi: 10.3389/fpsyg.2021.712103
8. Ahorsu DK, Lin CY, Imani V, et al. The fear of COVID-19 scale: Development and initial validation. *Int J Ment Health Addict.* 2020;27:1-9. doi:10.1007/s11469-020-00270-8
9. Arpacı I, Karataş K, Baloğlu M. The development and initial tests for the psychometric properties of the COVID-19 Phobia Scale (C19P-S). *Pers Individ Dif.* 2020;164:110108. doi: 10.1016/j.paid.2020.110108
10. Erdoğan Y, Koçoğlu F, Sevim C. An investigation of the psychosocial and demographic determinants of anxiety and hopelessness during COVID-19 pandemic. *J Clin Psy.* 2020;23(1): 24-37. doi:10.5505/kpd.2020.35403
11. Holmes EA, O'Connor RC, Perry VH, et al. Mental illness during COVID-19. *Lancet Psychiatry.* 2020;7(6):547-560. doi: 10.1016/S2215-0366(20)30168-1
12. Li Y, Wang Y, Jiang J, et al. Psychological distress among health professional students during the COVID-19 outbreak. *Psychol Med.* 2021;51(11):1952-1954. doi: 10.1017/S0033291720001555

13. Korukcu O, Ozkaya M, Faruk Boran O, et al. The effect of the COVID-19 pandemic on community mental health: A psychometric and prevalence study in Turkey. *Health Soc Care Community*. 2021;29(5):e204-e213. doi: 10.1111/hsc.13270
14. Labrague LJ, de los Santos JAA. Fear of COVID-19, psychological distress, work satisfaction and turnover intention among frontline nurses. *J Nurs Manag*. 2021;29(3):395-403. doi: 10.1111/jonm.13168
15. Martínez-Lorca M, Martínez-Lorca A, Criado-Álvarez JJ, et al. The fear of COVID-19 scale: Validation in Spanish university students. *Psychiatry Res*. 2020;293:113350. doi: 10.1016/j.psychres.2020.113350
16. Kuśnierz C, Rogowska AM, Kwaśnicka A, et al. The mediating role of orthorexia in the relationship between physical activity and fear of COVID-19 among university students in Poland. *J Clin Med*. 2021;10(21):5061. doi: 10.3390/jcm10215061
17. Aslan I, Ochnik D, Çınar O. Exploring perceived stress among students in Turkey during the COVID-19 pandemic. *Int J Environ Res Public Health*. 2020;17(23):8961. doi: 10.3390/ijerph17238961
18. Campos R, Pinto V, Alves D, et al. Impact of COVID-19 on the mental health of medical students in Portugal. *J Pers Med*. 2021;11(10):986. doi: 10.3390/jpm11100986
19. Muyor-Rodríguez J, Caravaca-Sánchez F, Fernández-Prados JS. COVID-19 fear, resilience, social support, anxiety, and suicide among college students in Spain. *Int J Environ Res Public Health*. 2021;18(15):8156. doi: 10.3390/ijerph18158156
20. Ochnik D, Rogowska AM, Kuśnierz C, et al. A comparison of depression and anxiety among university students in nine countries during the COVID-19 pandemic. *J Clin Med*. 2021;10(13):2882. doi: 10.3390/jcm10132882
21. Deng J, Zhou F, Hou W, et al. The prevalence of depressive symptoms, anxiety symptoms and sleep disturbance in higher education students during the COVID-19 pandemic: A systematic review and meta-analysis. *Psychiatry Res*. 2021;301:113863. doi: 10.1016/j.psychres.2021.113863
22. 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(1):141-148. doi: 10.1111/ppc.12851
23. Cici R, Yilmazel G. Determination of anxiety levels and perspectives on the nursing profession among candidate nurses with relation to the COVID-19 pandemic. *Perspect Psychiatr Care*. 2021;57(1):358-362. doi: 10.1111/ppc.12601
24. Huang L, Lei W, Xu F, et al. Emotional responses and coping strategies in nurses and nursing students during COVID-19 outbreak: A comparative study. *PLoS One*. 2020;15(8):e0237303. doi: 10.1371/journal.pone.0237303
25. Swift A, Banks L, Baleswaran A, et al. COVID-19 and student nurses: A view from England. *J Clin Nurs*. 2020;29(17-18):3111-3114. doi: 10.1111/jocn.15298
26. Wong EL, Ho KF, Dong D, et al. Compliance with Standard Precautions and Its Relationship with Views on Infection Control and Prevention Policy among Healthcare Workers during COVID-19 Pandemic. *Int J Environ Res Public Health*. 2021;25;18(7):3420. doi: 10.3390/ijerph18073420
27. Berdida DJE. Nursing staff compliance and adherence to standard precautions during the COVID-19 pandemic: A cross-sectional study. *Nurs Health Sci*. 2023;25(1):108-119. doi: 10.1111/nhs.12998
28. Dobrina R, Donati D, Giangreco M, et al. Nurses' compliance to standard precautions prior to and during COVID-19. *Int Nurs Rev*. 2023;25. doi: 10.1111/inr.12830
29. Cheung K, Chan CK, Chang MY, et al. Predictors for compliance of standard precautions among nursing students. *Am J Infect Control*. 2015;43(7):729-734. doi: 10.1016/j.ajic.2015.03.007
30. Topçu S, Emlek Sert Z. Turkish nursing students' compliance to standard precautions during the COVID-19 pandemic. *Peer J*. 2023;16;11:e15056. doi: 10.7717/peerj.15056
31. Cheng WLS, Kwong EWY, Lee RLT, et al. Compliance with Standard Precaution and Its Relationship with Views on Infection Control and Prevention Policy among Chinese University Students during the COVID-19 Pandemic. *Int J Environ Res Public Health*. 2022;27;19(9):5327. doi: 10.3390/ijerph19095327
32. Efil S, Türen S, Demir S. Nurses' COVID-19 fears and patient safety attitudes in the pandemic. *Eur J Clin Exp Med*. 2023;21(1):19-26. doi: 10.15584/ejcem.2023.1.3
33. Erdogan S, Nahcivan N, Esin MN. *Research in Nursing: Process, Practice, Critical*. Istanbul: Nobel Tıp Kitabevleri; 2014:186
34. Alsolais A, Alquwez N, Alotaibi KA, et al. Risk perceptions, fear, depression, anxiety, stress and coping among Saudi nursing students during the COVID-19 pandemic. *J Ment Health*. 2021;30(2):194-201. doi: 10.1080/09638237.2021.1922636
35. van Gulik N, Bouchoucha S, Apivanich S, et al. Factors influencing self-reported adherence to standard precautions among Thai nursing students: A cross sectional study. *Nurse Educ Pract*. 2021;57:103232. doi: 10.1016/j.nepr.2021.103232
36. Ladikli N, Bahadır E, Yumuşak FN, et al. The reliability and validity of Turkish version of coronavirus anxiety scale. *International Journal of Social Sciences*. 2020;3(2):71-80.
37. Lee SA. Coronavirus Anxiety Scale: A brief mental health screener for COVID-19 related anxiety. *Death Stud*. 2020;44(7):393-401. doi: 10.1080/07481187.2020.1748481
38. Evren C, Evren B, Dalbudak E, et al. Measuring anxiety related to COVID-19: A Turkish validation study of the Coronavirus Anxiety Scale. *Death Stud*. 2020;46(5):1052-1058. doi: 10.1080/07481187.2020.1774969
39. Lam SC. Universal to standard precautions in disease prevention: Preliminary development of compliance scale for clinical nursing. *Int J Nurs Stud*. 2011;48(12):1533-1539. doi: 10.1016/j.ijnurstu.2011.06.009

40. Samur M, Seren Intepeler S, Lam SC. Adaptation and validation of the Compliance with Standard Precautions Scale amongst nurses in Turkey. *Int J Nurs Pract.* 2020;26(3):e12839. doi: 10.1111/ijn.12839
41. Efil S, Turen S, Yıldız Ayvaz M, et al. Burnout levels and care behaviours in intensive care nurses: A cross-sectional, multicentre study. *Intensive Crit Care Nurs.* 2022;71:103246. doi: 10.1016/j.iccn.2022.103246
42. Wang C, Pan R, Wan X, et al. A longitudinal study on the mental health of general population during the COVID-19 epidemic in China. *Brain Behav Immun.* 2020;87:40-48. doi: 10.1016/j.bbi.2020.04.028
43. Savitsky B, Findling Y, Ereli A, et al. Anxiety and coping strategies among nursing students during the covid-19 pandemic. *Nurse Educ Pract.* 2020;46:102809. doi: 10.1016/j.nepr.2020.102809
44. Yuan T, Liu H, Li XD, et al. Factors affecting infection control behaviors to prevent COVID-19: An online survey of nursing students in Anhui, China in March and April 2020. *Med Sci Monit.* 2020;26:e925877. doi: 10.12659/MSM.925877
45. AL-Rawajfah OM, Tubaishat A. Nursing students' knowledge and practices of standard precautions: A Jordanian web-based survey. *Nurse Educ Today.* 2015;35(12):1175-1180. doi: 10.1016/j.nedt.2015.05.011
46. Atif ML, Brenet A, Hageaux S, et al. Awareness of standard precautions for 4439 healthcare professionals in 34 institutions in France. *Med Mal Infect.* 2013;43(1):10-16. doi: 10.1016/j.medmal.2012.11.004
47. Sun Y, Wang D, Han Z, et al. Disease prevention knowledge, anxiety, and professional identity during COVID-19 pandemic in nursing students in Zhengzhou, China. *J Korean Acad Nurs.* 2020;50(4):533-540. doi: 10.4040/jkan.20125
48. Lehmann M, Bruenahl CA, Löwe B, et al. Ebola and psychological stress of health care professionals. *Emerg Infect Dis.* 2015;21(5):913-914. doi: 10.3201/eid2105.141988
49. Kalkan Uğurlu Y, Mataracı Degirmenci D, Durgun H, et al. The examination of the relationship between nursing students' depression, anxiety and stress levels and restrictive, emotional, and external eating behaviors in COVID-19 social isolation process. *Perspect Psychiatr Care.* 2021;57(2):507-516. doi: 10.1111/ppc.12703
50. Okwuikpo M, Abazie O, Adetunji A, et al. Coronavirus: nursing students' knowledge and risk perception of clinical practice during the pandemic. *Nurs Midwifery Stud.* 2021;10(2):107-113. doi: 10.4103/nms.nms_76_20
51. De Los Santos JAA, Labrague LJ, Falguera CC. Fear of COVID-19, poor quality of sleep, irritability and intention to quit school among nursing students: a cross-sectional study. *Perspect Psychiatr Care.* 2022;58(1):71-78. doi: 10.1111/ppc.12781
52. Mustafa RM, Alrabadi NN, Alshali RZ, et al. Knowledge, attitude, behavior and stress related to COVID-19 among undergraduate health care students in Jordan. *Eur J Dent.* 2020;14:S50-S55. doi: 10.1055/s-0040-1719212