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The effect of fear of COVID-19 on perceived clinical stress levels in senior nursing students: A cross-sectional study

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ABSTRACT

Aim: This study aimed to examine the effect of fear of COVID-19 on the perceived stress levels in senior nursing students performing their clinical practice. **Methods:** A cross-sectional study was conducted with senior nursing students in a nursing facility in March 2021. The data were collected using an APP Application sent to the smartphones of students (n = 148) receiving clinical education. **Results:** With a mean score of 17.2 ± 7.0 on the Fear of COVID-19 Scale, it was determined that the senior nursing students' COVID-19 fears were at a moderate level. Students' mean score from the Perceived Stress Scale was 71.0 ± 25.7 , which indicated a moderate level. A positive, weak, and significant correlation was found between the total scores of fear of COVID-19 and perceived stress level ($r = 0.291, p < 0.001$). **Conclusions:** In this study, the perceived stress of students in their clinical practice was at a moderate level, as it was before the pandemic. It appears that a moderate level of fear of COVID-19 during the pandemic does not affect perceived stress levels in the clinical education setting. Accordingly, we recommend that clinical education should be maintained by taking necessary measures and implementing good management during the pandemic.

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Introduction

Clinical education is an important part of nursing education, as the clinical competencies of nursing students improve through clinical education (Admi et al., 2018; Aydın et al., 2017). Clinical education provides professional socialization and puts theoretical knowledge into practice (Ahmed & Mohammed, 2019). Clinical practice is a critical but complex and challenging component of nursing students' professional development (Spence et al., 2019). Studies in the literature have reported that nursing students experience moderate to high levels of stress during their clinical education (Admi et al., 2018; Asturias et al., 2021; Labrague et al., 2017; Labrague et al., 2018). In addition, some studies have found that nursing students have considerably higher stress levels than other undergraduate students (Admi et al., 2018; Bartlett et al., 2016; Jun & Lee, 2017). A tolerable, low level of stress can motivate students to achieve more (D'emeh & Yacoub, 2021). Besides, it is thought that low and moderate level of stress causes students to persevere more while studying and achieving their future goals (Onieva-Zafra et al., 2020). However, it is well-known that high levels of stress negatively affect students. Prolonged and high levels of stress can potentially cause depression and hopelessness, resulting in negative effects on students' learning, physio-

psycho-social health, and clinical and academic success (D'emeh & Yacoub, 2021; Gurková & Zeleníková, 2018; Riley et al., 2019). In addition, the low and moderate stress experienced during clinical training is unavoidable and difficult to overcome in most cases, but it can help students to improve their academic outcomes by using a good coping strategy (Wang et al., 2019). Factors that may cause students stress during clinical education include: uncertainty, lack of professional knowledge and skills, fear of making mistakes, fear of harming the patient, facing death, exposure to social problems, dealing with emergencies, performance stress related to the expectations of academic and clinical staff, heavy workload, communication problems with patients and clinical staff, the gap between theory and practice, and unfamiliarity with the hospital environment (Admi et al., 2018; Bhurtun et al., 2021; Gurková & Zeleníková, 2018; Ching et al., 2020; Kaldal et al., 2018; Lopez et al., 2018; Yasmin et al., 2018).

Another factor that causes stress is coronavirus disease 2019 (COVID-19). The World Health Organization (WHO) declared the spread of the disease as a pandemic in March 2020, which has developed due to the SARS-CoV-2 virus (WHO, 2020). COVID-19 has been a global experience and has affected multiple different areas of life at the individual and societal levels (Aslan et al., 2020). According to the measures taken since the first reporting of COVID-19 cases, the education process at higher education institutions has also been affected. Face-to-face formal education has been replaced by distance

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education, and students of applied sciences have been affected by this situation the most (Aslan & Pekince, 2020). Nursing is one of the applied sciences that has been negatively affected by this process: since the last year of nursing education is conducted through internship training in many facilities, much of the difficulty has been faced in the planning of applied education. In most places, the clinical education of nursing students has been conducted through distance education; in very few facilities have internship students continued to practice in non-COVID clinics as an important part of their education.

Many studies in the literature have evaluated the stress and anxiety levels of students during the pandemic, regardless of clinical education (Admi et al., 2018; Ahmed & Mohammed, 2019; Aslan & Pekince, 2020; Ersin & Kartal, 2020; Sögüt et al., 2020; Yüksel & Bahadır-Yılmaz, 2020). The majority of studies revealed that students experienced a moderate level of stress during the pandemic (Admi et al., 2018; Ahmed & Mohammed, 2019; Aslan & Pekince, 2020). The fear of getting sick, uncertainty, the risk of transmitting the disease to the family and similar factors are sources of intense anxiety for students (Aslan & Pekince, 2020). Stress has reduced students' academic studies, and online education has not been able to fully meet the needs of students (Babu et al., 2021). In the literature, it is reported that it will be useful to plan regular distance education programs that highlight the importance of developing and maintaining protective behaviors against COVID-19 to reduce students' stress levels during the pandemic. Besides, it is recommended to offer online psychological counseling services (Aslan & Pekince, 2020; Aslan et al., 2020; Ersin & Kartal, 2020). However, no studies have evaluated the stress experienced by senior nursing students who continue their clinical practice during the pandemic. It is important to know whether the impact of the COVID-19 pandemic on nursing students affects their stress during clinical education. It is theorized that the results of this study will help educators plan and manage clinical education during the pandemic. This study aimed to examine the effect of fear of COVID-19 on the perceived stress levels of senior nursing students performing their clinical education practice during the pandemic.

Method

Design, participants, and setting

The design of this research is a cross-sectional study. This study was conducted in a nursing facility in Turkey, March 2021. In this facility, senior nursing students attend clinical practice 4 days a week. Unlike the normal process, during the pandemic half the students attend in the mornings and the other half in the afternoons for 4 days, so that there will be no crowds in clinics and that compliance with personal protective measures can be maintained. Students have the chance to be involved in different clinics through rotations that take 17–18 working days. In total, they attend 6 different rotations throughout the year. The morning and afternoon shifts switch on the median day of each rotation.

At the beginning of the clinical practice, students were asked to fill out a form regarding whether they wanted to attend clinical practice in non-COVID clinics during the pandemic; those who did not want to do so were offered the option to complete their clinical practices after the pandemic, before they graduated. Convenience sampling was used, all students who participated in their senior clinical practice in the 2020–2021 academic year were eligible to be included in the study ($n = 177$). A total of 148 students (84%) agreed to participate in the study.

Study instruments

Study data were collected using – a Student Information Form, which included questions on students' descriptive characteristics;

the Fear of COVID-19 Scale, which evaluated the students' COVID-19-related fears; and the Perceived Stress Scale for Nursing Students, which assessed the perceived stress levels experienced in the clinical education setting.

Student Information Form: This form was created by the researchers following a literature review (Aydın et al., 2017; Aslan & Pekince, 2020; Ersin & Kartal, 2020; Karaca et al., 2017) and consisted of a total of 11 questions. This form includes students' sociodemographic characteristics and questions about situations that can affect their fear of COVID-19 and perceived stress (age, gender, chronic disease status, perceived academic success, motivation for choosing nursing, place of residence during the pandemic, status of having had a COVID-19 test, status of having had COVID-19, whether family members/relatives/close friends were infected with COVID-19, loss of a relative due to COVID-19, and the reasons for deciding to participate as an intern in the clinical practice during the pandemic).

Fear of COVID-19 Scale: This scale was developed by Ahorsu et al. (2020), and its Turkish validity and reliability was established by Satici et al. (2021). The target age range of the scale is wide, and it can be used on university students and adults. The scale has a total of 7 items, with all of the items scored positively. The items are scored on a 5-point Likert-type scale, from 1-strongly disagree to 5-strongly agree. Scores on the scale range from 7 to 35, with higher scores indicating higher levels of fear of the COVID-19 pandemic. The Cronbach's alpha was 0.82 in the Turkish validity and reliability study of the scale, and 0.92 in this study.

Perceived Stress Scale for Nursing Students: This scale, consisting of 29 items, was developed by Sheu et al. (2002) in Chinese. Chan et al. (2009) used the English form of the scale. The internal consistency reliability coefficient of the English form was 0.89, varying between 0.87 and 0.89 for the subdimensions. The Turkish adaptation of the scale was developed by Karaca et al. (2015), who also established its validity and reliability. The internal consistency reliability coefficient (Cronbach's alpha) of the Turkish adaptation was 0.67–0.93. The scale has 6 subdimensions: stress from lack of professional knowledge and skills (3 items); stress from taking care of patients (8 items); stress from assignments and workload (5 items); stress from teachers and nursing staff (6 items); stress from the environment (3 items); and stress from peers and daily life (4 items). Items are scored on a 5-point Likert-type scale, with values ranging from 4: very stressful for me and 0: not stressful for me at all. Possible scores for the scale range between 0 and 116 (maximum scores of subdimensions are 12, 32, 20, 24, 12, and 16, respectively), with higher scores indicating higher stress levels (Karaca et al., 2015). The Cronbach's alpha value of the scale in this study was 0.96.

Data collection

Data were collected in March 2021 while students were receiving clinical training after completing their third rotation. Senior nursing students were informed about the study by the researchers in the clinics where they attended clinical practice training, and the verbal and written consent were obtained from those who volunteered to participate in the study. The data forms were created on Google Forms. The link to the data collection forms was sent via the WhatsApp application to the smartphones of the students who agreed to participate in the study. An online data collection form was chosen in order to minimize physical contact and to protect both students and academic staff. After the data were collected, they were entered into a computer database.

Data analysis

The data were analyzed through the Statistical Package of Social Sciences (SPSS, Inc., Chicago, IL) 22.0 software package. Numbers, percentages, and mean \pm standard deviation values were used to present the data. The fit of measurement values to normal distribution was analyzed with the Kolmogorov-Smirnov test. Numbers, percentage calculations, Kruskal–Wallis test, and Mann–Whitney U test were used for statistical comparisons and evaluation of the data. Spearman correlation analysis was used to evaluate the relationship between fear of COVID-19 and perceived stress level during clinical training and the subscales. The level of statistical significance was set at $p < 0.05$.

Ethical considerations

Before the study was initiated, the necessary permissions were obtained from the university where the study was conducted, the ethics committee of the same university (decision number: 2021/54), and the Ministry of Health.

Results

Of the students participating in the study, 50.0% were ages 21–22 years, with the mean age being 22.8 ± 1.4 years; additionally, 75.0% of the students were female, and 89.2% did not have a chronic disease. The leading reason for choosing the nursing profession was own desires (43.9%); approximately half of the students (50.7%) evaluated their academic achievement as moderate. In addition, 42.6% of the students were living alone/with their friends in a house during the pandemic. The majority (59.5%) of the students had taken a COVID test, and 13.5% had been infected with COVID-19; 76.4% had a family member who had been infected with COVID-19, and 15.5% had lost a relative due to COVID-19. Furthermore, 62.2% of the students stated that they preferred attending clinical practice despite the pandemic because they thought the internship process was important for their professional development (Table 1).

The findings showed that the senior nursing students had a moderate level of COVID-19 fear, as indicated by the mean score of 17.2 ± 7.0 for the Fear of COVID-19 Scale. Additionally, the mean score for the Perceived Stress Scale was 71.0 ± 25.7 , which indicated a moderate level of perceived stress. The analysis of the factors affecting students' fear of COVID-19 and their perceived stress (Table 2) showed that female students' total score on the Fear of COVID-19 Scale (17.2 ± 6.9) was statistically significantly higher than that of male students (15.1 ± 7.1 ; $p = 0.03$). Additionally, female students had higher perceived stress scores (76.5 ± 23.3) than male students (54.5 ± 25.8 ; $p < 0.001$). Students' scores on the Fear of COVID-19 Scale and Perceived Stress Scales were not affected by age, presence of chronic disease, reason for choosing nursing, perceived academic achievement, living with family during the pandemic, having had a COVID-19 test, having been infected with COVID-19, having a family member who had been infected with COVID-19, and loss of a family member due to COVID-19 ($p > 0.05$).

Table 3 shows the relationship between senior nursing students' fear of COVID-19 and the stress levels they perceived in the clinical education setting. As seen in the table, a positive relationship was found between the total scores for fear of COVID-19 and perceived stress level ($r = 0.291$, $p < 0.001$). Fear of COVID-19 was found to have a significant, positive, and weak relationship with the subscales ($p < 0.05$).

Table 1
Descriptive characteristics of the students (n = 148).

Characteristics	n	%
Age (year)		
21–22	74	50.0
23–32	74	50.0
Mean \pm SD	22.8 \pm 1.4	
Gender		
Female	111	75.0
Male	37	25.0
Chronic diseases		
Yes	16	10.8
No	132	89.2
Motivation for choosing nursing		
Own desire	65	43.9
Job opportunity	61	41.2
Family recommendation	22	14.9
Perceived academic success		
Low	2	1.4
Moderate	75	50.7
High	71	48.0
Place of residence during the pandemic		
With family	32	21.6
Alone/ with homemate	63	42.6
In the student residence	53	35.8
The status of having had COVID-19 test		
Yes	88	59.5
No	60	40.5
The status of having had COVID-19		
Yes	20	13.5
No	128	86.5
An individual who tested positive for COVID-19 in family/ relatives/close friends		
Yes	113	76.4
No	35	23.6
Loss of a relative due to COVID-19		
Yes	23	15.5
No	125	84.5
The reasons for deciding to participate as an intern in the clinical practice during the pandemic		
Because, I think the internship process is important for my professional development.	92	62.2
To be able to graduate on time: Internship could also be done by distance education.	56	37.8
Total	148	100.0

Discussion

The COVID-19 pandemic has affected many areas of life, including the education of nursing students (Ulenaers et al., 2021). This study was conducted to determine whether the fear of COVID-19 felt by senior nursing students in clinical practice during the pandemic affected their perceived stress levels in the clinical education environment. It is generally thought that COVID-19 has a particular effect on nursing students, as a result of organizational changes that may occur during clinical training, uncertainty about their competencies, and even concerns about whether to continue their education (Ulenaers et al., 2021). According to the results of this study, the stress score of nursing students who were participating in clinical education during the pandemic process was at a moderate level (71.0 ± 25.7). When the studies conducted before the pandemic were reviewed, it was found that the clinical stress levels of nursing students were high in some studies (D'emeh & Yacoub, 2021; Gurková & Zeleníková, 2018; Labrague et al., 2018; Labrague et al., 2017) and moderate in others (Admi et al., 2018; Ahmed & Mohammed, 2019; Asturias et al., 2021; Labrague et al., 2017; Onieva-Zafra et al., 2020). Similar to these earlier studies (Admi et al., 2018; Ahmed & Mohammed, 2019; Asturias et al., 2021; Onieva-Zafra et al., 2020), students in the current study were found to experience a moderate level of stress, which shows that the pandemic did not increase students' stress levels during clinical education. This may indicate that the stress experienced

Table 2
Comparison of some descriptive characteristics of the students with their total scores from the "fear of COVID-19 scale" and the "perceived stress scale" (n = 148).

	Fear of COVID-19 scale Mean ± SD	p-value	Perceived stress scale Mean ± SD	p-value
Total scores	17.2 ± 7.0		71.0 ± 25.7	
Age (year)				
21-22	17.9 ± 7.1		74.5 ± 21.8	
23-32	16.5 ± 6.8	0.17	67.5 ± 28.7	0.18
Gender				
Female	17.2 ± 6.9		76.5 ± 23.3	
Male	15.1 ± 7.1	0.03	54.5 ± 25.8	<0.001
Chronic diseases				
Yes	18.1 ± 7.8		65.0 ± 26.4	
No	17.1 ± 6.9	0.72	71.7 ± 25.6	0.36
Motivation for choosing nursing				
Job opportunity	16.9 ± 6.1		71.4 ± 24.8	
Own desire	17.2 ± 7.2		69.4 ± 26.1	
Family recommendation	17.9 ± 8.5	0.97	74.7 ± 27.4	0.57
Perceived academic success				
Low	21.0 ± 19.7		69.0 ± 32.5	
Moderate	17.1 ± 6.9	0.98	72.1 ± 25.2	0.98
High	17.2 ± 6.7		69.9 ± 26.3	
Place of residence during the pandemic				
With family	16.7 ± 7.6		73.1 ± 24.9	
Alone/ with homemate	18.2 ± 6.8	0.23	66.3 ± 25.1	0.15
In the student residence	16.3 ± 6.6		75.3 ± 26.4	
The status of having had COVID-19 test				
Yes	17.2 ± 6.9		71.9 ± 24.6	
No	17.1 ± 7.1	0.97	69.7 ± 27.4	0.65
The status of having had COVID-19				
Yes	17.6 ± 8.6		77.1 ± 20.9	
No	17.1 ± 6.7	0.99	70.1 ± 26.3	0.33
An individual who tested positive for COVID-19 in family/ relatives/close friends				
Yes	16.7 ± 6.7		71.6 ± 25.1	
No	18.8 ± 7.5	0.11	69.1 ± 27.7	0.46
Loss of a relative due to COVID-19				
Yes	18.3 ± 7.8		75.5 ± 25.2	
No	17.0 ± 6.8	0.52	70.2 ± 25.8	0.33
The reasons for deciding to participate as an intern in the clinical practice during the pandemic				
Because, I think the internship process is important for my professional development.	16.6 ± 5.9		70.8 ± 22.8	
To be able to graduate on time: Internship could also be done by distance education.	18.2 ± 8.4	0.37	72.0 ± 29.1	0.32

by students during clinical education does not differ from the stress experienced before the pandemic stemming from uncertainty, lack of professional knowledge and skills, fear of making mistakes, fear of harming patients, etc. Even during the pandemic, it is thought that this moderate desired level of stress can motivate students and positively affect their learning and academic success because it is reported that low and moderate level of stress experienced during clinical education is inevitable, and a good coping strategy can help students to improve their academic results (D'emeh & Yacoub, 2021; Onieva-Zafra et al., 2020; Wang et al., 2019).

According to some studies in the literature, female students' scores for perceived stress during clinical education are significantly higher than those of male students (Anbumalar et al., 2017; D'emeh & Yacoub, 2021). Moreover, studies examining the stress levels of students during the pandemic, independent of clinical education, have shown that female students' stress levels are higher than those of male students (Aslan et al., 2020; Aslan & Pekince, 2020; Ersin & Kartal, 2020). In their study with adults during the pandemic, Bakioğlu et al. (2020) found that women's fear of COVID-19 was significantly higher than that of men ($p < 0.01$). Similarly, the results of

Table 3
The relationship between the fear of COVID-19 scale and the perceived stress level for nursing students Scale (n = 148).

	Fear of COVID-19 scale		
	Number of items	r	p
Perceived stress scale total score	29	0.291	<0.001
Stress from lack of professional knowledge and skills*	3	0.228	0.005
Stress from taking care of patients*	8	0.287	0.000
Stress from assignments and workload*	5	0.257	0.002
Stress from teachers and nursing staff*	6	0.201	0.014
Stress from the environment*	3	0.295	<0.001
Stress from peers and daily life*	4	0.250	0.002

* The subscales of perceived stress scale.

the current study indicate that the fear scores and stress levels of female students were statistically significantly higher than those of male students ($p < 0.05$). This result supports previous studies and may show that women are more responsive and sensitive to the pandemic process. Furthermore, the higher stress level of female students during clinical education in studies conducted before the pandemic suggests that these students need more support during clinical training.

The current study found a weak, significant, and positive relationship between the total scores of fear of COVID-19 and perceived stress level in senior nursing students ($p < 0.001$). This shows that students' moderate fears of COVID-19 do not affect their clinical stress levels more than expected. A different finding in this study revealed that the level of stress experienced while providing care to patients increased more with greater fear of COVID-19 ($p < 0.001$). In their pre-pandemic systematic review of studies investigating students' clinical stress, Labrague et al. (2018) found that students experienced the highest level of stress while providing care to patients. This is considered a natural stressor for nursing students while they are putting theory into practice. Furthermore, considering how COVID-19 spreads, it is to be expected that the stress experienced while providing care to patients is associated with the fear of COVID-19.

While some of the students (13.5%) in this study had experienced COVID-19 and the majority (76.4%) had a family member who had COVID-19—with some (15.5%) losing a relative due to COVID-19—none of these factors appears to have affected students' fears of COVID-19 and their clinical stress levels. Similar to this study, Bakioglu et al. (2020) stated that the fear of COVID-19 did not differ as a result of having a family member who experienced the disease. In a study with nursing students, Duman (2020) found, similar to this study, that COVID-19 infection of a family member did not significantly affect students' level of fear. However, contrary to this study, Duman revealed that the loss of a relative due to COVID-19 significantly increased the fear of COVID-19 (Duman, 2020).

Finally, the fact that most of the students in the current study (62.2%) preferred attending clinical practice despite the pandemic because they thought that the internship process was important for their professional development had a great effect on keeping stress within the expected stress levels.

Limitations

The limitations of this study is that it was conducted in nursing students of only one faculty of nursing, which could limit the generalizability of the research. Another was the use of a self-administered questionnaire, which had several drawbacks.

Conclusions

The results obtained from this study show that the fear of COVID-19 and the perceived stress level of senior nursing students who were carrying out their clinical practice during the pandemic were at moderate levels and desirable. This study also found that the stress experienced by students during their clinical education was no different from the stress experienced by students before the pandemic; additionally, fear of COVID-19 did not affect perceived stress level in the clinical education setting. Moderate levels of clinical stress experienced during the COVID-19 process will motivate students and positively affect their learning and academic success. Accordingly, we recommend that clinical education—which is indispensable to nursing education—should continue, with necessary measures taken and a well-managed approach implemented in view of fighting against pandemics such as COVID-19. In future studies, we recommend investigating the effects of clinical stress perceived by nursing

students during the pandemic period on their academic success and their coping strategies.

Author contributions

Study conception and design E.A.P., H.A. Data collection, statistical expertise, analysis and interpretation of data E.A.P., H.A. Manuscript preparation, supervision and critical revision of the paper E.A.P., H.A., E.I.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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References

- Admi, H., Moshe-Eilon, Y., Sharon, D., & Mann, M. (2018). Nursing students' stress and satisfaction in clinical practice along different stages: A cross-sectional study. *Nurse Education Today*, 68, 86–92. doi:10.1016/j.nedt.2018.05.027.
- Ahmed, W. A., & Mohammed, B. M. (2019). Nursing students' stress and coping strategies during clinical training in KSA. *Journal of Taibah University Medical Sciences*, 14 (2), 116–122. doi:10.1016/j.jtumed.2019.02.002.
- Ahorsu, D. K., Lin, C. Y., Imani, V., Saffari, M., Griffiths, M. D., & Pakpour, A. H. (2020). The fear of COVID-19 scale: Development and initial validation. *International Journal of Mental Health and Addiction*, 1–9. doi:10.1007/s11469-020-00270-8.
- Anbumalar, C., Dorathy, A. P., Jaswanti, V. P., Priya, D., & Reniangelin, D. (2017). Gender differences in perceived stress levels and coping strategies among college students. *The International Journal of Indian Psychology*, 4(4), 22–33. doi:10.25215/0404.103.
- Aslan, H., & Pekince, H. (2020). Nursing students' views on the COVID-19 pandemic and their perceived stress levels. *Perspectives in Psychiatric Care*, 1–7. doi:10.1111/ppc.12597.
- Aslan, I., Ochnik, D., & Çınar, O. (2020). Exploring perceived stress among students in Turkey during the COVID-19 pandemic. *International Journal of Environmental Research and Public Health*, 17(23), 8961. doi:10.3390/ijerph17238961.
- Asturias, N., Andrew, S., Boardman, G., & Kerr, D. (2021). The influence of socio-demographic factors on stress and coping strategies among undergraduate nursing students. *Nurse Education Today*, 99. doi:10.1016/j.nedt.2021.104780 104780.
- Aydin, Y. D., Orak, N.Ş., Gürkan, A., Aslan, G., & Demir, F. (2017). Evaluation of nursing students' support from nurses during their clinical education. *Journal of Academic Research in Nursing*, 3(3), 109–115.
- Babu, B., Muttath, G., & Rayaroth, P. (2021). Impact of COVID-19 on academic stress among nursing students. *Journal of Nursing and Health Science (IOSR-JNHS)*, 10(5), 38–42 Ser. III (Sep. – Oct. 2021)10.9790/1959-1005033842.
- Bakioglu, F., Korkmaz, O., & Ercan, H. (2020). Fear of COVID-19 and positivity: Mediating role of intolerance of uncertainty, depression, anxiety, and stress. *International Journal of Mental Health and Addiction*, 1–14. doi:10.1007/s11469-020-00331-y.
- Bartlett, M. L., Taylor, H., & Nelson, J. D. (2016). Comparison of mental health characteristics and stress between baccalaureate nursing students and non-nursing students. *Journal of Nursing Education*, 55(2), 87–90. doi:10.3928/01484834-20160114-05.
- Bhurtun, H. D., Turunen, H., Estola, M., & Saaranen, T. (2021). Changes in stress levels and coping strategies among Finnish nursing students. *Nurse Education in Practice*, 50, 102958. doi:10.1016/j.nepr.2020.102958.
- Chan, C. K., So, W. K., & Fong, D. Y. (2009). Hong Kong baccalaureate nursing students' stress and their coping strategies in clinical practice. *Journal of Professional Nursing*, 25(5), 307–313. doi:10.1016/j.profnurs.2009.01.018.
- Ching, S. S. Y., Cheung, K., Hegney, D., & Rees, C. S. (2020). Stressors and coping of nursing students in clinical placement: A qualitative study contextualizing their resilience and burnout. *Nurse Education in Practice*, 42, 102690. doi:10.1016/j.nepr.2019.102690.
- D'emeh, W. M., & Yacoub, M. I. (2021). The visualization of stress in clinical training: A study of nursing students' perceptions. *Nursing Open*, 8(1), 290–298. doi:10.1002/nop.2629.
- Duman, N. (2020). Covid-19 fear and intolerance to uncertainty in university students. *The Journal of Social Science*, 4(8), 426–437. doi:10.30520/tjsosci.748404.
- Ersin, F., & Kartal, M. (2020). The determination of the perceived stress levels and health-protective behaviors of nursing students during the COVID-19 pandemic. *Perspectives in Psychiatric Care*, 1–7. doi:10.1111/ppc.12636.

- Gurková, E., & Zeleníková, R. (2018). Nursing students' perceived stress, coping strategies, health and supervisory approaches in clinical practice: A Slovak and Czech perspective. *Nurse Education Today*, 65, 4–10. doi:10.1016/j.nedt.2018.02.023.
- Jun, W. H., & Lee, G. (2017). Comparing anger, anger expression, life stress and social support between Korean female nursing and general university students. *Journal of Advanced Nursing*, 73(12), 2914–2922. <http://dx.doi.org/10.1111/jan.13354>.
- Kaldal, M. H., Kristiansen, J., & Uhrenfeldt, L. (2018). Nursing students experienced personal inadequacy, vulnerability and transformation during their patient care encounter: A qualitative meta-synthesis. *Nurse Education Today*, 64, 99–107. doi:10.1016/j.nedt.2018.02.008.
- Karaca, A., Yıldırım, N., Ankaralı, H., Açıköz, F., & Akkuş, D. (2015). The Turkish adaptation of perceived stress scale, bio-psycho-social response and coping behaviours of stress scales for nursing students. *Journal of Psychiatric Nursing*, 6(1), 15–25. doi:10.5505/phd.2015.40316.
- Karaca, A., Yıldırım, N., Ankaralı, H., Açıköz, F., & Akkuş, D. (2017). Nursing Students' Perceived Levels of Clinical Stress, Stress Responses and Coping Behaviors. *Journal of Psychiatric Nursing*, 8(1), 32–39.
- Labrague, L. J., McEnroe-Petitte, D. M., De Los Santos, J. A. A., & Edet, O. B. (2018). Examining stress perceptions and coping strategies among Saudi nursing students: A systematic review. *Nurse Education Today*, 65, 192–200. doi:10.1016/j.nedt.2018.03.012.
- Labrague, L. J., McEnroe-Petitte, D. M., Gloe, D., Thomas, L., Papathanasiou, I. V., & Tsaras, K. (2017). A literature review on stress and coping strategies in nursing students. *Journal of Mental Health*, 26(5), 471–480. doi:10.1080/09638237.2016.1244721.
- Lopez, V., Yobas, P., Chow, Y. L., & Shorey, S. (2018). Does building resilience in undergraduate nursing students happen through clinical placements? A qualitative study. *Nurse Education Today*, 67, 1–5. doi:10.1016/j.nedt.2018.04.020.
- Onieva-Zafra, M. D., Fernández-Muñoz, J. J., Fernández-Martínez, E., García-Sánchez, F. J., Abreu-Sánchez, A., & Parra-Fernández, M. L. (2020). Anxiety, perceived stress and coping strategies in nursing students: A cross-sectional, correlational, descriptive study. *BMC Medical Education*, 20(1), 1–9. doi:10.1186/s12909-020-02294-z.
- Riley, J. M., Collins, D., & Collins, J. (2019). Nursing students' commitment and the mediating effect of stress. *Nurse Education Today*, 76, 172–177. doi:10.1016/j.nedt.2019.01.018.
- Satici, B., Gocet-Tekin, E., Deniz, M., & Satici, S. A. (2021). Adaptation of the Fear of COVID-19 Scale: Its association with psychological distress and life satisfaction in Turkey. *International Journal of Mental Health and Addiction*, 19(6), 1980–1988. doi:10.1007/s11469-020-00294-0.
- Sheu, S., Lin, H. S., & Hwang, S. L. (2002). Perceived stress and physio-psycho-social status of nursing students during their initial period of clinical practice: The effect of coping behaviors. *International Journal of Nursing Studies*, 39(2), 165–175. doi:10.1016/S0020-7489(01)00016-5.
- Söğüt, S., Dolu, İ., & Cangöl, E. (2020). The relationship between COVID-19 knowledge levels and anxiety states of midwifery students during the outbreak: A cross-sectional web-based survey. *Perspectives in Psychiatric Care*, 1–7. doi:10.1111/ppc.12555.
- Spence, D., Zambas, S., Mannix, J., Jackson, D., & Neville, S. (2019). Challenges to the provision of clinical education in nursing. *Contemporary Nurse*, 55(4-5), 458–467. doi:10.1080/10376178.2019.1606722.
- Ulenaers, D., Grosemans, J., Schrooten, W., & Bergs, J. (2021). Clinical placement experience of nursing students during the COVID-19 pandemic: A cross-sectional study. *Nurse Education Today*, 99, 104746. doi:10.1016/j.nedt.2021.104746.
- Wang, W., Xu, H., Wang, B., & Zhu, E. (2019). The mediating effects of learning motivation on the association between perceived stress and positive-deactivating academic emotions in nursing students undergoing skills training. *Journal of Korean Academy of Nursing*, 49(4), 495–504. doi:10.4040/jkan.2019.49.4.495.
- World Health Organization (WHO). Novel Coronavirus (2019- nCoV): Situation report, 12. World Health Organization. (2020). <https://apps.who.int/iris/handle/10665/330777>.
- Yasmin, S., Hussain, M., Parveen, K., & Gilani, S. A. (2018). Coping strategies of nursing student against academic and clinical stress at public sector Lahore. *International Journal of Social Sciences and Management*, 5(3), 209–218. doi:10.3126/ijssm.v5i3.20613.
- Yüksel, A., & Yılmaz, E. B. (2020). The effects of group mindfulness-based cognitive therapy in nursing students: A quasi-experimental study. *Nurse Education Today*, 85, 104268. doi:10.1016/j.nedt.2019.104268.