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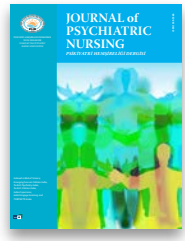

Original Article

Examination of depression, anxiety, and stress in nursing students receiving distance education during the COVID-19 pandemic

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Abstract

Objectives: This study aimed to examine depression, anxiety, and stress among nursing students (NSs) receiving distance education during the COVID-19 pandemic.

Methods: This descriptive and cross-sectional study was conducted with 583 NSs who received remote education during Covid-19 at a public university in the 2020–2021 academic year. Study data were collected online using the Personal Information Form and depression anxiety stress scale short form-21.

Results: According to the study results, the mean depression score of NSs was 9.11±5.14, the mean anxiety score was 6.21±4.18, and the mean stress score was 8.66±4.63. The study found that female students had higher levels of stress (p=0.002), anxiety (p=0.043), and depression (p=0.020) compared to male students. Third-year students exhibited significantly higher levels of stress (p=0.015) and anxiety (p<0.001) than students in other academic years. Students who experienced a decrease in income reported higher stress levels compared to those who did not (p=0.006). Students with a device exhibited higher levels of stress, anxiety, and depression than those without a device. The mean scores of depression, anxiety, and stress of students with sleep problems were higher than those of students without sleep problems.

Conclusion: During the COVID-19 pandemic, NSs receiving distance education were found to have high levels of depression, anxiety, and stress. Providing internet and technological device support for NSs in future distance education implementations in Türkiye and conducting various studies to harmonize nursing education with distance education are recommended.

Keywords: Anxiety; depression; distance education; nursing students; stress

The global community has undergone the COVID-19 pandemic, leading to significant disturbances in educational and training endeavors. To eliminate these disruptions in education, educational systems were restructured to use different teaching approaches and methods.[1–3] In this context, Türkiye started using distance education using computer and information technology; this is an approach that has already been widely used in many fields.[4] Nevertheless, the education of nursing demands instruction grounded in both theoretical knowledge and hands-on clinical experience, fostering the enhancement of students' cognitive, sensory, and psychomotor abilities. It is very important to gain basic nursing skills through laboratory work and clinical practice as well as theoretical knowledge.[5] Teaching nursing, which

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is an applied science whose focus is human health, through distance education brings with it many problems related to the quality of education for both educators and students and poses a threat to their gaining the necessary competencies since they are not working in clinical settings.[6] As a matter of fact, national and international studies show that nursing students (NSs) experience anxiety related to distance education due to their inability to perform basic skills in a laboratory environment, their lack of clinical practice, their inexperience with regard to distance education courses and exams, and other difficulties faced in distance learning.[1,4,7,8] In addition, NSs report decreased sleep quality and duration in distance education due to academic workload, prolonged exposure to blue light, or lack of access to technology.[9,10] According to a study conducted during the pandemic, students' adaptation to different learning environments, uncertainty of course curricula, and study hours also reduce their sleep quality.[11] Poor sleep quality can affect students' clinical judgment by increasing anxiety and stress.[12] This situation not only impacts the physical health of NSs (change in physical activity, fatigue due to constant exposure to electronic screens, etc.) but also negatively affects their mental health (anxiety, depression, stress, etc.) by putting them under stress.[3,13–15] Considering these results, the depression, anxiety, and stress levels of NSs due to challenges associated with remote education appear to be an important issue that needs to be addressed. When the international literature was examined, a limited number of studies examining the levels of depression, anxiety, and stress among NSs due to challenges associated with remote education.[3,16,17] Similarly, when the studies conducted in Türkiye were examined, it was determined that the effect of COVID-19 on the stress, anxiety, and depression levels of NSs was mostly studied.[18–22] Studies on distance education have predominantly been conducted among university students;[23–26] however, there is a limited number of studies focusing on the levels of anxiety, depression, and stress experienced by NSs during distance education.[4,27] This study aims to determine the levels of depression, anxiety, and stress among NSs receiving distance education during the COVID-19 pandemic.

Research Questions

- What are the depression, anxiety, and stress levels of NSs in distance education during the COVID-19 pandemic?
- Do the depression, anxiety, and stress levels of NSs who received distance education during the COVID-19 pandemic differ based on their socio-demographic characteristics, technological device usage, and internet access?
- Is there a difference between NSs' experiences of sleep problems and their depression, anxiety, and stress scores?

What is presently known on this subject?

- COVID-19 pandemic has caused major disruptions in education and training activities.
- Distance education is stressful for university students.
- Distance education in nursing undergraduate education negatively affected the mental health of students during the COVID-19 pandemic.

What does this article add to the existing knowledge?

- Nursing students' depression, anxiety, and stress levels were identified to be higher than the normal range.
- Female students exhibited higher scores in depression, anxiety, and stress compared to their male counterparts.
- Problems with technological devices and internet access negatively contribute to nursing students' depression, anxiety, and stress levels.

What are the implications for practice?

- Universities should strengthen their technological infrastructure so that students can continue their education without interruption.
- For students with limited access to technological devices and internet access, appropriate devices and internet access should be provided.
- Individual counseling and group therapy interventions should be provided to students with depression, anxiety, and stress.
- Nurse educators should integrate innovative educational methods into distance education to reduce students' stress and anxiety related to laboratory and clinical education in distance education.

Materials and Method

Design

This study, characterized as descriptive, cross-sectional, and correlational, took place between December 2020 and January 2021 within the Department of Nursing at the Faculty of Health Sciences in a university situated in the Western Black Sea region of Türkiye.

Study Sample

The research encompassed the entire population of nursing department students (n=850) who were learning remotely during the COVID-19 pandemic and were enrolled in the nursing undergraduate program at the specified educational institution during the 2020–2021 academic year, a period when education was conducted remotely due to the COVID-19 pandemic. The objective was to include the entire population without employing a sampling approach. Ultimately, the sample for the study comprised 583 students who willingly participated and completed the online questionnaire and scale.

Data Collection

The study utilized a Personal Information Form and the depression anxiety stress scale short form (DASS-21) as data collection tools. Given the shift to distance education in higher education institutions amid the COVID-19 pandemic, the research data were acquired through an online data collection link created using the Google Forms infrastructure. The data collection forms required an average of 10–15 min to complete.

Data Collection Tools

Personal Information Form

The researchers developed this form in line with the relevant literature.[7,28,29] The form contained a total of 27 inquiries related to the socio-demographic attributes of the participants and their internet and device use, sleep patterns, problems related to distance education, and concerns about these problems.

DASS-21

The scale, initially comprising 42 items and devised by Lovibond and Lovibond (1995), underwent subsequent refinement into a shorter 21-item form.[30] Sarıçam conducted the Turkish adaptation of the scale.[31] The 4-point Likert-type scale has seven questions in each dimension. The lowest possible score is 7 and the highest score is 35. Scoring 5 points or higher in the depression sub-dimension, 4 points or more in the anxiety sub-dimension, and 8 points or more in the stress sub-dimension suggests that the individual may have challenges in that particular area. In the present study, the Cronbach's alpha coefficients for the scale were found to be α=0.88 for anxiety, α=0.90 for depression, α=0.84 for stress, and α=0.94 for the whole scale. Before starting the research, authorization to use the scale was secured through email correspondence with the authors responsible for the Turkish validity and reliability study of the scale employed in the research.

Ethical Considerations

The research was undertaken after obtaining approval from the Human Research Ethics Committee of the University (dated November 27, 2020, number 930), and written consent was acquired from the educational institution where the study took place. Informed consent was incorporated on the initial page of the online data collection form, and it was ensured that students could only continue to the data collection form after they had indicated that they were willing to participate in the research. The study procedure adhered to the principles outlined in the Declaration of Helsinki.

Data Analysis

Data were analyzed with IBM Statistical Package for the Social Sciences v23 (Chicago, USA). The descriptive data were examined by calculating the number and percentage values. The Skewness-Kurtosis and Kolmogorov–Smirnov tests were used to determine the distribution of the data. Multivariate analysis of variance (MANOVA) test and the independent samples t-test were used in the study. Comparison of the main effects was evaluated with the Bonferroni test. Since the homogeneity assumption of the variance-covariance matrix was not provided according to the variance homogeneity test result, Pillai's Trace Test was used for the MANOVA test result. Results of the analysis were presented as arithmetic mean±standard deviation, with the significance level set at $p<0.05$.

Results

Out of the students involved, 412 (70.7%) were aged 20 and over, 467 (80.1%) were female, 164 (28.1%) were in the 1st year-of-study, 125 (21.4%) were in the 2nd year-of-study, 114 (19.6%) were in the 3rd year-of-study, and 180 (30.9%) were in the 4th year-of-study. In terms of family type, 462 (79.2%) were living in nuclear families and 94 (16.1%) lived in extended families. 107 (18.4) of the students stated that they lived in rural areas, including villages, and 324 (55.6%) stated that there had been a decrease in family income during the pandemic. 312 (53.5%) students reported that the number of siblings studying in the family was two or more. Considering the internet and device usage characteristics of the students, 506 (86.8%) students had an internet connection at home, and 379 (65%) of the students had a monthly internet usage of 20 GB or more, and 245 (42%) stated that they had problems with their devices when trying to use the distance education system (Table 1). In terms of their nursing education, 500 (85.8%) of the students thought that they would lack laboratory and implementation skills, 160 (27.4%) of them stated they would postpone their registration due to anxiety about distance education (taking a break from school until face-to-face education begins), and 494 (84.7%) stated that they thought that nursing knowledge and skills could not be gained through the visual and listening activities offered in distance education (Table 2).

In the study, the mean depression score of NSs was 9.11±5.14, the mean anxiety score was 6.21±4.18 and the mean stress score was 8.66±4.63. According to the According to the results of the MANOVA, NSs' levels of depression, anxiety, and stress significantly differed based on gender, class level, place of residence, income reduction, and device ownership. Female students had higher levels of stress ($p=0.002$), anxiety ($p=0.043$), and depression ($p=0.020$) compared to male students. Regarding class level, 3rd-year students exhibited higher levels of stress ($p=0.015$) and anxiety ($p<0.001$) than students in other years. Place of residence had a significant association with depression levels ($p=0.003$); students living in city centers had higher depression scores than those living in rural areas. Students who experienced a reduction in income had higher stress levels compared to those who did not ($p=0.006$). In addition, students who owned a personal device had higher anxiety levels than those without a device ($p=0.006$) (Table 3).

According to the results of the MANOVA, students' levels of depression, anxiety, and stress varied based on internet access and device usage. A comparison between students with and without home internet access revealed a significant dif-

Table 1. Characteristics of students

	n	%		n	%
Age			Place of residence		
18–19	171	29.3	Province	266	45.6
20–21	274	47.0	District	210	36.0
22–23	122	20.9	Village	107	18.4
24 and older	16	2.7	Change in family income during the pandemic		
Gender			Yes	324	55.6
Female	467	80.1	No	259	44.4
Male	116	19.9	Family history of psychiatric illness		
Year of study			Yes	82	14.1
1	164	28.1	No	501	85.9
2	125	21.4	Previously consulting a doctor due to stress		
3	114	19.6	Yes	108	18.5
4	180	30.9	No	475	81.5
Family type			Referral to a psychiatry clinic during the pandemic		
Extended	94	16.1	Yes	26	4.5
Nuclear	462	79.2	No	557	95.5
Single parent	22	3.8	Is there internet at home?		
Other	5	0.9	Yes	506	86.8
Number of siblings in the family studying			No	77	13.2
1	271	46.5	Monthly internet usage		
2	203	34.8	5 GB	24	4.1
3	71	12.2	6–10 GB	53	9.1
4 and more	38	6.5	11–20 GB	127	21.8
Is there anyone else in the family studying distance education?			20 GB and over	379	65.0
Yes	374	64,2			
No	209	35.8			

ference in stress and depression levels (F=6.168, p=0.013, η^2=0.011; F=5.489, p=0.019, η^2=0.009, respectively). In addition, a significant difference in students' stress levels was observed concerning their monthly internet usage (measured in GB) (F=2.869, p=0.036, η^2=0.015). A significant difference was found between the stress, anxiety and depression levels of students with and without device deficiency (p=0.009, p=0.003; p=0.021, respectively) (Table 4).

The mean values for depression, anxiety, and stress were significantly higher among students facing challenges such as difficulties in falling asleep, staying asleep, waking up in the morning, waking up frequently at night, or not feeling rested upon waking, compared to those who did not encounter such sleep-related issues (p<0.001) (Table 5).

Discussion

We think that knowing the psychological problems caused by distance education is important in terms of developing more effective distance education strategies. In this study, female students were found to have higher depression, anxiety and stress scores than male students. Similarly, in a study involving 2031 university students in the USA, a significant association was identified between being female and heightened levels of anxiety and depression during the COVID-19 pandemic.[8] In studies conducted with NSs, the perceived stress level of female students was found to be higher during the COVID-19 pandemic.[3,22] These results may be explained by the fact that men generally have more difficulty expressing their feelings and concerns openly than women.

The nursing program typically integrates theoretical courses with practical ones necessitating specific cognitive, affective, and psychomotor skills. The absence of laboratory and clinical settings can induce anxiety and stress among students, as they grapple with concerns about acquiring essential skills. This, in turn, heightens doubts and uncertainties regarding their preparedness for future careers and education.[32,33] In the present study, 85.8% of the students expressed the belief that distance education could potentially result in a deficit in their nursing knowledge and skills, and that nursing knowledge and skills could not be gained through visual and listening activities alone (84.7%). These results were consistent with

Table 2. Nursing students' thoughts on distance education

	n	%
Do you experience device shortages while following distance education?		
Yes	245	42.0
No	338	58.0
Do you think all courses in the nursing program should be taught remotely?		
Yes	85	14.6
No	498	85.4
Do you think nursing knowledge and skills can be gained through distance education with visual activities?		
Yes	89	15.3
No	494	84.7
Do you think nursing knowledge and skills can be gained through listening-based activities in distance education?		
Yes	97	16.6
No	486	83.4
Do you think distance education causes deficiencies in laboratory and clinical practices?		
Yes	500	85.8
No	83	14.2
Will there be limitations in communication due to the high number of students?		
Yes	459	78.7
No	124	21.3
Do you think distance education eliminates face-to-face communication environments and opportunities?		
Yes	483	82.8
No	100	17.2
Do you find it difficult to manage distance education with the pandemic process?		
Yes	441	75.6
No	142	24.4
Are you concerned about the loss of academic years due to the pandemic?		
Yes	406	69.9
No	177	30.4
Have you considered freezing school due to distance education concerns during the pandemic?		
Yes	160	27.4
No	423	72.6
How does having some subjects tested as assignments instead of exams affect your anxiety?		
Increases my anxiety	244	41.9
Reduces my anxiety	339	58.1
How do you feel about the distance learning exams compared to face-to-face exams?		
I feel more anxious	397	68.1
I feel less anxious	186	31.9
If there is an increase in your anxiety, what is the cause?		
Internet outages, power outages	397	68.1
Disconnection from the system due to system error	380	65.2
Easy to cheat	120	20.6
Limited opportunities (no internet, computer, etc.)	166	28.5
Taking the exam elsewhere (relatives, neighbors, internet cafe...)	114	19.6
The psychological impact of the pandemic	198	34.0
Failure to provide a school environment	231	39.6
Confronting the distance education system for the first time	215	36.9
My anxiety did not increase	115	19.7

most of the pre- and post-pandemic studies in the literature.[16,22,32,34] These findings show that clinical and laboratory environments are indispensable for students.

It was determined that 1st-year students experienced less anxiety and stress in this study. Similar to the present study, in the study of Amerson et al.[17] with NSs, 1st-year students'

Table 3. MANOVA analysis results and descriptive statistics of the depression, anxiety, and stress scores of nursing students by descriptive characteristics

Variables	Depression Mean±SD	Anxiety Mean±SD	Stress Mean±SD	Variables	Dependent variables	F	p	η^2
Gender	9.11±5.14	6.21±4.18	8.66±4.63	Gender	Stress[a]	9.272	0.002*	0.016
Female	9.36±5.18	6.38±4.22	8.95±4.67		Anxiety[b]	4.531	0.034*	0.008
Male	8.1±4.86	5.53±3.95	7.52±4.31		Depression[c]	5.426	0.02*	0.009
Year of study				Year of study	Stress	3.519	0.015*	0.018
1st	8.27±5.12	5.00±3.38[b]	7.68±3.91[b]		Anxiety	6.54	<0.001*	0.033
2nd	9.1±4.73	6.43±3.78[a]	8.73±4.31[a]		Depression	2.263	0.08	0.012
3rd	9.88±5.23	7.06±4.68[a]	9.36±4.75[a]					
4th	9.11±5.14	6.21±4.18[a]	8.66±4.63[a]					
Number of siblings studying				Number of siblings studying	Stress	1.018	0.384	0.005
1	9.18±5.1	6.23±4.35	8.81±4.6		Anxiety	0.426	0.734	0.002
2	9.59±5.0	6.43±4.08	8.92±4.65		Depression	1.79	0.148	0.009
3	7.73±5.36	5.62±4.18	7.76±4.48					
4 or more	8.61±5.36	6.05±3.40	7.92±4.97					
Place of residence				Place of residence	Stress	1.523	0.219	0.005
Province	9.88±5.41[b]	6.29±4.34	9.01±4.92		Anxiety	0.188	0.828	0.001
District	8.67±4.82[a]	6.1±3.85	8.30±4.28		Depression	5.869	0.003*	0.02
Village	8.04±4.78[a]	6.25±4.42	8.51±4.52					
Decrease in income				Decrease in income	Stress	7.682	0.006*	0.013
Yes	9.49±5.12	6.68±4.18	9.15±4.57		Anxiety	7.725	0.006*	0.013
No	8.63±5.12	5.63±4.11	8.05±4.65		Depression	2.952	0.086	0.005

*: p<0.05. [a]: R squared =0.058 (Adjusted R squared =0.042); [b]: R squared =0.059 (Adjusted R squared =0.042); [c]: R squared =0.058 (Adjusted R squared =0.041). MANOVA: Multivariate analysis of variance; SD: Standard deviation, F: Two-Way ANOVA; η^2: Partial eta squared.

Table 4. MANOVA analysis results and descriptive statistics of students' depression, anxiety, and stress scores by internet and device usage characteristics

Variables	Depression Mean±SD	Anxiety Mean±SD	Stress Mean±SD	Variables	Dependent variables	F	p	η^2
Internet at home				Internet at home	Stress[a]	6.168	0.013*	0.011
Yes	9.30±5.09	6.24±4.17	8.84±4.58		Anxiety[b]	0.692	0.406	0.001
No	7.82±5.28	6.03±4.25	7.49±4.83		Depression[c]	5.489	0.019*	0.009
Monthly GB usage								
5 GB	8.12±5.38	6.80±4.04	7.44±4.81	Monthly GB usage	Stress	2.869	0.036*	0.015
6–10 GB	7.60±4.86	5.60±3.89	7.77±4.98		Anxiety	0.482	0.695	0.002
11–20 GB	8.35±4.68	6.00±3.99	7.94±3.71		Depression	3.357	0.019*	0.017
20 GB or more	9.63±5.24	6.33±4.29	9.11±4.80					
Lack of device				Lack of device	Stress	6.816	0.009*	0.012
Yes	9.58±5.39	6.81±4.43	9.15±4.83		Anxiety	8.814	0.003*	0.015
No	8.76±4.92	5.78±3.94	8.31±4.46		Depression	5.336	0.021*	0.009

*: p<0.05. [a]: R squared = 0.036 (Adjusted R squared = 0.028); [b]: R squared = 0.019 (Adjusted R squared = 0.011) [c]: R squared = 0.036 (Adjusted R squared= 0.028).

anxiety and stress scores were found to be lower. The stress and anxiety scores of the 1st-year students may have been low because they had not yet taken any applied courses and spent less time in online courses. As a matter of fact, studies conducted before the pandemic[32] found that senior NSs had higher levels of stress compared to 1st-year students, which was related to an increase in course-load as academic progress increases.

Studies in the literature have stated that living in a rural area will cause problems in connecting to the internet, and an in-

Table 5. Descriptive statistics of depression, anxiety, and stress scores according to the sleep problems experienced by the students

Features	Depression Mean±SD	t	p	Anxiety Mean±SD	t	p	Stress Mean±SD	t	p
I had trouble falling asleep									
Yes	10.19±5.14	4.672	<0.001*	7.11±4.32	4.794	<0.001*	9.62±4.7	4.581	<0.001*
No	8.22±4.97			5.48±3.92			7.88±4.43		
I had trouble staying asleep									
Yes	11.1±5.06	6.256	<0.001*	8.04±4.49	7.116	<0.001*	10.56±4.81	6.648	<0.001*
No	8.27±4.94			5.45±3.8			7.87±4.32		
I often woke up often at night									
Yes	10.57±5.04	4.283	<0.001*	7.33±4.62	4.015	<0.001*	10.14±4.67	4.802	<0.001*
No	8.56±5.07			5.79±3.93			8.11±4.5		
I had trouble waking up in the morning									
Yes	10.41±5.08	5.448	<0.001*	6.80±4.3	2.979	0.003*	9.60±4.65	4.281	<0.001*
No	8.13±4.96			5.77±4.04			7.96±4.5		
I didn't feel rested when I woke up in the morning									
Yes	10.27±5.07	4.835	<0.001*	6.95±4.27	3.756	<0.001*	9.69±4.57	4.722	<0.001*
No	8.23±5.01			5.65±4.03			7.89±4.53		
I didn't have any sleep problems									
Yes	7.15±5.02	-5.444	<0.001*	5.18±3.94	-3.487	0.001*	6.99±4.45	-5.138	<0.001*
No	9.76±5.01			6.56±4.2			9.22±4.56		

*: p<0.05. SD: Standard deviation; t: Independent samples t-test; mean±standard deviation.

crease in students' anxiety and stress due to the imbalance of economic, cultural and educational resources.[1,35,36] On the other hand, students living in urban areas have higher levels of fear and anxiety in some studies.[37,38] In the present study, those students residing in urban areas exhibited higher levels of depression and stress compared to their counterparts in rural areas. We think that this result is related to the fear of COVID-19 infection and the more stringent quarantine conditions for those living in urban areas.

It has been reported that many people lost their jobs or that their incomes decreased during the pandemic, while the cost of living increased.[39] For this reason, numerous families face challenges in furnishing essential resources for distance education, such as internet access and electronic devices, for their children.[8,40] This elucidates the elevated levels of anxiety and stress observed among those students with lower family incomes in the study. Consistent with other research, our findings align with studies indicating that students undergo heightened stress and anxiety linked to a decline in family income.[8,41]

Distance education requires a stable, efficient, and quality internet connection. Students not having access to the internet may lose contact with their teachers and classmates, and this may create feelings of anxiety, stress, and dissatisfaction with the distance education experience.[16,36] However, the depression and stress scores of students with internet access and data use of 20 GB or more were found to be higher in this study. Recent studies have stated that students receive a lot of emails every day, many assignments and presentations are given to them, and there is no time for social and family life; this can make daily life very stressful.[32,34] Other research has revealed that students engaged in distance education often experience anxiety related to the fear of internet disconnection, encounter stress, and insomnia due to prolonged exposure to digital technologies, and exhibit heightened anxiety levels during online exams compared to traditional face-to-face exams.[42] These results support the finding of higher depression and stress in students with internet access and usage of 20 GB or more.

The stress, anxiety, and depression scores of the students who lacked devices for distance education were found to be significantly higher than those who did not. The study of Ramos-Morcillo et al.[1] stated that five electronic devices are needed at the same time for a family with three children to be able to work and follow the lessons during the pandemic. As a result of difficulties in accessing technological resources, students can feel down and their mental health is affected.[28]

Studies have reported that students have had problems with the quality and duration of sleep due to excessive exposure to digital technologies and screens during the

pandemic.[9,14] Irregular and/or late course hours in distance education affect students' sleep habits due to homework and other activities.[43] One study emphasized that the sleep hours, duration and quality of students changed negatively compared to before the COVID-19 pandemic.[14] The study revealed that those students experiencing a decline in sleep quality also exhibited elevated levels of depression, anxiety, and stress. This shows that the prevalence of mental disorders, such as depression, anxiety, stress, and sleep disorders has increased during the worldwide spread of COVID-19.[9,16,34,35,44]

Limitation

This study is subject to certain limitations. The scope of the research is confined to a specific sociocultural region and NSs from a single public university in the western Black Sea region, thus limiting the generalizability of the results to all NSs. In addition, ethical considerations mandated voluntary participation, leading to the exclusion of some students who chose not to participate, potentially impacting the robustness of the study. Moreover, reliance on self-reported data from students introduces another limitation.

Conclusion and Recommendations

The results of this study revealed that distance education provided during the COVID-19 epidemic (technology and internet access problems, long-term screen exposure, etc.) had negative contributions to NSs' depression, anxiety, and stress levels. To eliminate uncertainties and concerns about distance education, we believe that it is important to create more accessible education opportunities and that more effective distance education strategies be developed by clinicians and academic nurses with different experiences. Furthermore, virtual simulations and augmented reality applications can be used by nursing educators in distance education for students to develop their practical skills in a safe environment.

In Türkiye, a disaster country, online learning methods such as distance education are likely to be widely used in the future. In addition, considering that hybrid education has been adopted in universities after the pandemic and there are additional works on this, higher education policymakers' support for students in accessing the internet and technological devices may help to reduce the levels of depression, anxiety, and stress experienced by students. As a result, ensuring equality of opportunity in education may contribute to a better quality of nursing education. Therefore, it is considered that the study findings will be valuable for universities and educators in the future.

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References

1. Ramos-Morcillo AJ, Leal-Costa C, Moral-García JE, Ruzafa-Martínez M. Experiences of nursing students during the abrupt change from face-to-face to e-learning education during the first month of confinement due to COVID-19 in Spain. Int J Environ Res Public Health 2020;17:5519.
2. Bergdahl N, Nouri J. COVID-19 and crisis-prompted distance education in Sweden. Tech Know Learn 2021;26:443–59.
3. García-González J, Ruqiong W, Alarcon-Rodriguez R, Requena-Mullor M, Ding C, Ventura-Miranda MI. Analysis of anxiety levels of nursing students because of e-learning during the COVID-19 pandemic. Healthcare (Basel) 2021;9:252.
4. Durgun H, Can T, Avcı AB, Kalyoncuoğlu B. COVID-19 sürecinde hemşirelik öğrencilerinin uzaktan eğitime yönelik görüşleri ve kaygı düzeyleri. Dokuz Eylül Univ Hemşirelik Fakültesi Elektron Derg [Article in Turkish] 2021;14:141–7.
5. Abu Salah A, Aljerjawy M, Salama A. Gap between theory and practice in nursing education: The role of clinical setting. JOJ Nurse Health Care 7:555707.
6. Lazenby M, Chambers S, Chyun D, Davidson P, Dithole K, Norman I, et al. Clinical nursing and midwifery education in the pandemic age. Int Nurs Rev 2020;67:323–5.
7. Kürtüncü M, Kurt A. COVID-19 pandemisi döneminde hemşirelik öğrencilerinin uzaktan eğitim konusunda yaşadıkları sorunlar. Avrasya Sosyal Ekonomi Araştırmaları Derg [Article in Turkish] 2020;7:66–77.
8. Wang X, Hegde S, Son C, Keller B, Smith A, Sasangohar F. Investigating mental health of US college students during the COVID-19 pandemic: Cross-sectional survey study. J Med Internet Res 2020;22:e22817.
9. Gusman MS, Grimm KJ, Cohen AB, Doane LD. Stress and sleep across the onset of the novel coronavirus disease 2019 pandemic: Impact of distance learning on US college students' health trajectories. Sleep 2021;44:zsab193.

10. Fitzgerald A, Konrad S. Transition in learning during COVID-19: Student nurse anxiety, stress, and resource support. Nurs Forum 2021;56:298–304.
11. Armstrong-Mensah E, Ramsey-White K, Yankey B, Self-Brown S. COVID-19 and distance learning: Effects on Georgia State University School of Public Health students. Front Public Health 2020;8:576227.
12. Ngo TP, Antisdel JL, Xing K, Reising DL. Relationships between remote learning modalities and nursing students' perceptions of their sleep quality during the COVID-19 pandemic. Nurse Educ 2023;48:E41–6.
13. Aristovnik A, Keržič D, Ravšelj D, Tomaževič N, Umek L. Impacts of the COVID-19 pandemic on life of higher education students: A global perspective. Sustainability 2020;12:8438.
14. Haider AS, Al-Salman S. Dataset of Jordanian university students' psychological health impacted by using e-learning tools during COVID-19. Data Brief 2020;32:106104.
15. Lovrić R, Farčić N, Mikšić Š, Včev A. Studying during the COVID-19 pandemic: A qualitative inductive content analysis of nursing students' perceptions and experiences. Educ Sci 2020;10:188.
16. Masha'al D, Rababa M, Shahrour G. Distance learning–related stress among undergraduate nursing students during the COVID-19 pandemic. J Nurs Educ 2020;59:666–74.
17. Amerson R, Fisher B, Bible J, Burgess L, Ravan L, Ward L. Nursing education amid a pandemic: Mental health in a time of virtual learning. Nurse Educ 2021;46:255–60.
18. Gökdere Çinar H, Yılmaz D, Yılmaz H. Perceptions of intern nurses regarding the coronavirus (COVID-19) pandemic: A qualitative study. J Contemp Med 2022;12:281–8.
19. Köktürk Dalcalı B, Durgun H, Taş AS. Anxiety levels and sleep quality in nursing students during the COVID-19 pandemic. Perspect Psychiatr Care 2021;57:1999–2005.
20. Şentürk S, Bakır N. The relationship between intolerance of uncertainty and the depression, anxiety, and stress levels of nursing students during the COVID-19 outbreak. Kıbrıs Türk Psikiyatri ve Psikoloji Derg 2021;3:97–105.
21. Temiz Z. Nursing students' anxiety levels and coping strategies during the COVID-19 pandemic. Int Arch Nurs Health Care 2020;6:150.
22. Aslan H, Pekince H. Nursing students' views on the COVID-19 pandemic and their perceived stress levels. Perspect Psychiatr Care 2021;57:695–701.
23. Başağaoğlu Demirekin Z, Buyukcavus MH. Effect of distance learning on the quality of life, anxiety, and stress levels of dental students during the COVID-19 pandemic. BMC Med Educ 2022;22:309.
24. Acar K. COVID-19 sürecinde spor bilimleri fakültesi öğrencilerinin uzaktan eğitime yönelik algıları: Bir metafor analizi. Ahi Evran Univ Kırşehir Eğit Fakültesi Derg [Article in Turkish] 2022;23:1764–96.
25. Şahin CU, Baz ANS. Views and anxiety levels of university students regarding distance education during the COVID-19 pandemic. Yükseköğretim Derg 2021;11:617–24.
26. Eskiyurt R, Alaca E. Determination of social anxiety levels of distance education university students. Curr Approaches Psychiatry 2021;13:257–69.
27. Uslusoy EÇ, Gürdoğan EP, Aksoy B, Dirik EK. The effect of distance learning in the pandemic on the depression, anxiety, stress, and occupational commitment of senior nursing students: A cross-sectional study. Mediterr Nurs Midwifery 2024;4:65–72.
28. Hasan N, Bao Y. Impact of "e-learning crack-up" perception on psychological distress among college students during COVID-19 pandemic: A mediating role of "fear of academic year loss." Child Youth Serv Rev 2020;118:105355.
29. Kahyaoğlu Süt H, Küçükkaya B. Hemşirelik bölümü öğrencilerinin uzaktan eğitime ilişkin görüşleri. Hemşirelikte Eğit Araştırma Derg [Article in Turkish] 2016;13:235–43.
30. Lovibond PF, Lovibond SH. The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. Behav Res Ther 1995;33:335–43.
31. Sarıçam H. The psychometric properties of Turkish version of Depression Anxiety Stress Scale-21 (DASS-21) in health control and clinical samples. J Cogn Behav Psychother Res 2018;7:19–30.
32. Ribeiro FMSES, Mussi FC, Pires CGDS, Silva RMD, Macedo TTS, Santos CAST. Stress level among undergraduate nursing students related to the training phase and sociodemographic factors. Rev Lat Am Enfermagem 2020;28:e3209.
33. Aslan H, Akturk U. Nursing education stress levels of nursing students and the associated factors. Ann Med Res 2018;25:660–6.
34. Fawaz M, Samaha A. E-learning: Depression, anxiety, and stress symptomatology among Lebanese university students during COVID-19 quarantine. Nurs Forum 2021;56:52–7.
35. Shigemura J, Ursano RJ, Morganstein JC, Kurosawa M, Benedek DM. Public responses to the novel 2019 coronavirus (2019-nCoV) in Japan: Mental health consequences and target populations. Psychiatry Clin Neurosci 2020;74:281.
36. Irawan AW, Dwisona D, Lestari M. Psychological impacts of students on online learning during the pandemic COVID-19. KONSELI J Bimbingan dan Konseling 2020;7:53–60.
37. Oducado RM, Tuppal C, Estoque H, Sadang J, Superio D, Real DV, et al. Internet use, eHealth literacy, and fear of COVID-19 among nursing students in the Philippines. Int J Educ Res Innov 2021;15:487–502.
38. Huang L, Lei W, Xu F, Liu H, Yu L. Emotional responses and coping strategies in nurses and nursing students during COVID-19 outbreak: A comparative study. PLoS One 2020;15:e0237303.
39. Arabacı H, Yücel D. Effects of the pandemic on Turkey's economy and Turkey's Central Bank by the financial stability measures taken to ensure. SSRJ Soc Sci Res J 2020;9:91–8.
40. Kabapınar Y, Kanyılmaz BM, Koçhan NÖ. Öğretmen ve velilerin gözünden öğrencilerin uzaktan eğitime katılımlarının öyküleri: "Uzaktan eğitim mi, uzakta kalan eğitim mi?". Temel Eğit Araştırmaları Derg [Article in Turkish] 2021;1:79–98.

41. Cao W, Fang Z, Hou G, Han M, Xu X, Dong J, et al. The psychological impact of the COVID-19 epidemic on college students in China. Psychiatry Res 2020;287:112934.
42. Chakraborty P, Mittal P, Gupta MS, Yadav S, Arora A. Opinion of students on online education during the COVID-19 pandemic. Hum Behav Emerg Technol 2021;3:357–65.
43. Rotas E, Cahapay M. Difficulties in remote learning: Voices of Philippine university students in the wake of COVID-19 crisis. Asian J Distance Educ 2020;15:147–58.
44. Bolatov AK, Seisembekov TZ, Askarova AZ, Baikanova RK, Smailova DS, Fabbro E. Online learning due to COVID-19 improved mental health among medical students. Med Sci Educ 2021;31:183–92.