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ONLINE NURSING EDUCATION DURING COVID-19 PANDEMIC: LEVELS OF STRESS AND SATISFACTION ABOUT LEARNING IN LAST-YEAR STUDENTS

COVID 19 SALGININDA ONLİNE HEMŞİRELİK EĞİTİMİ: SON SINIF ÖĞRENCİLERİNİN ÖĞRENME İLE İLGİLİ STRES VE MEMNUNİYET DÜZEYLERİ

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Abstract

Introduction: It is important to evaluate the effects of the online education system on students, especially those studying applied sciences like nursing.

Objective: The objective of this study is to determine stress and satisfaction levels in last-year nursing students during their online education.

Method: The study has a quasi-experimental design with a single group, pre-test and post-test. The study sample included last-year nursing students. Data were collected before and after the online education. Data about sociodemographic features were expressed in numbers and percentages. Mean scores for the academic subscale of Nursing Education Stress Scale and for Student Satisfaction Scale and its subscales were evaluated with dependent groups t-test.

Results: 62.5% of the students did not have difficulty in Internet access, but 57.5% experienced difficulty in following online classes and fulfilling their assignments. No significant difference was found in terms of academic stress between face-to-face and online education. However, the mean scores for Student Satisfaction Scale and its subscales significantly differed between face-to-face and online education.

Conclusion: Students' academic stress decreased during online education; however, their satisfaction levels dropped during online education. Education programs encouraging students to become more active learners should be developed and all students should be able to benefit from technological facilities equally. Randomized-controlled studies are needed to compare effectiveness of face-to-face and online education.

Key Words: Covid-19, Nursing Education, Online Education, Academic Stress, Student Satisfaction

Özet

Giriş: Online eğitim sisteminin özellikle hemşirelik gibi uygulamalı bilimlerde öğrenim gören öğrenciler üzerindeki etkilerinin değerlendirilmesi önemlidir.

Amaç: Bu çalışmanın amacı, son sınıf hemşirelik öğrencilerinin çevrimiçi eğitimleri sırasında yaşadıkları stres ve memnuniyet düzeylerini belirlemektir.

Yöntem: Araştırma tek gruplu, ön test ve son testli yarı deneysel desendedir. Araştırmanın örneklemini son sınıf hemşirelik öğrencileri oluşturmaktadır. Veriler, çevrimiçi eğitim öncesi ve sonrasında toplanmıştır. Sosyodemografik özelliklere ilişkin veriler sayı ve yüzde olarak ifade edilmiştir. Hemşirelik Eğitimi Stres Ölçeği akademik alt boyutu ile Öğrenci Memnuniyeti Ölçeği ve alt ölçek puan ortalamaları bağımlı gruplar t-testi ile değerlendirilmiştir.

Bulgular: Öğrencilerin %62.5'i internete erişimde zorluk yaşamazken, %57.5'i online dersleri takip etmede ve ödevlerini yapmada zorluk yaşamıştır. Yüz yüze ve çevrimiçi eğitim arasında akademik stres açısından anlamlı bir fark bulunmamıştır. Ancak Öğrenci Memnuniyeti Ölçeği ve alt ölçek puan ortalamaları, yüz yüze ve çevrimiçi eğitim arasında anlamlı bir farklılık göstermiştir. Yüz yüze ve çevrimiçi eğitim arasında akademik stres açısından anlamlı bir fark bulunmamıştır. Ancak Öğrenci Memnuniyeti Ölçeği ve alt ölçek puan ortalamaları, yüz yüze ve çevrimiçi eğitim arasında anlamlı bir farklılık göstermiştir.

Sonuç: Çevrimiçi eğitim sırasında öğrencilerin akademik stresi azalmış ancak çevrimiçi eğitim sırasında memnuniyet düzeyleri düşmüştür. Öğrencileri daha aktif öğrenmeye teşvik eden eğitim programları geliştirilmeli ve teknolojik olanaklardan tüm öğrenciler eşit şekilde yararlanabilmelidir. Yüz yüze ve çevrimiçi eğitimin etkililiğini karşılaştırmak için randomize kontrollü çalışmalara ihtiyaç vardır.

Anahtar Sözcükler: Covid-19, Hemşirelik Eğitimi, Online Eğitim, Akademik Stres, Öğrenci Memnuniyeti

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INTRODUCTION

The coronavirus disease (Covid-19) is an infectious disease quickly spreading throughout the World (1). Covid-19 has been reported to be severely pathogenic and contagious (2). As a result of its rapid spread, the World Health Organization declared covid-19 a pandemic in March 2020 (3). All the countries became alarmed about it and had to make quick decisions about many fields including education. Nursing education has also been affected and COVID-19 pandemic has produced barriers to nursing education (4). For this reason, an urgent change from the conventional to online education has been made.

Using technological tools and online education to teach nursing has always been debatable (5) and there is ongoing pressure for adoption of online education strategies in nursing education (6). It is reported that online education is considered as an effective learning approach to improve nursing knowledge and skills (7) and that well-structured online education can increase success in both educators and students (6). In a study, it is recommended to use web-based experiential learning to support the traditional learning method or as a general learning method for nursing students (8). It has been noted in the literature that online education has been inevitably utilized to teach nursing with the Covid-19 pandemic (5). It is stated that web-based experiential learning strategies are effective in improving evidence-based knowledge and skills significantly (8).

The pandemic severely affected all fields including the education system. Especially education for applied sciences like nursing has been considerably affected. Although universities have tried taking precautions to minimize this effect, they have had to quickly adopt an online education process. They have had no time to help students to adapt to this process. It is important to evaluate online education as a new education method rapidly incorporated into the system to improve education. It is known that undergraduate nursing education is stressful for students (9,10). Stress affects thinking and decision-making processes and reduces academic performance (11,12). In addition, although students seem to adapt to educational changes, it has been found that students experience grief, loneliness and depression due to these changes (13). Therefore, it is crucial to determine stress created by the online education process and students' satisfaction with this process. The aim of this study was to reveal stress experienced by last-year students and their satisfaction levels during online education.

MATERIAL AND METHOD

Design, Settings and Participants

This is a quasi-experimental study with a single group, pre-test and post-test. The study was conducted in the nursing department of a state university offering a four-year education program through an integrated system. The study population included the last-year nursing students registering for the course Case Presentation in the spring semester of the 2020 academic year. The reason for inclusion of the students taking this course is that they take an active role in this course by presenting the cases they provided care in the clinic for during face-to-face education. With the initiation of online education, the students' active role changed into a passive one. Therefore, effects of the change from the active to passive role on students studying the applied science nursing need to be examined. Based on the significance level of 0.05, power of 80% and moderate effect of 0.5 by using dependent groups t-test in G*Power statistics program, the sample size was determined as 27 students. Forty-three students, who registered for the course, were included into the study. However, three students were excluded since they did not fill in the posttest. As a result, the study was completed with 40 students. According to the post hoc power analysis of obtained data in G*Power statistic program, the power of the study and the effect size were found to be 99% and 0.66 respectively based on the significance level of 0.05.

The descriptive statistics of the students are presented in Table 1. The mean age of the students was 22.0±0.60 years. Of all the students, 97.5% (n:39) were not working, 70% (n:28) had a moderate income, 92.5% (n:37) were living with their nuclear family and 50% (n:20) were living in a city at the time of the study (Table 1).

Table 1. Descriptive Characteristics of the Students

Descriptive Characteristics	**Students (n:40)**	
Age (Year; mean±SD) (min-max)	22.0 ±0.60 (21.0-23.0)	
	n	**%**
Employment Status		
Unemployed	39	97.5
Employed	1	2.5
Income		
Low	6	15.0
Moderate	28	70.0
Satisfactory	6	15.0
Type of Family		
Nuclear Family	37	92.5
Extended Family	3	7.5
Place of Living		
City	20	50.0
Town	13	32.5
Village	7	17.5

Procedures

Covid-19 pandemic started in December and spread the whole world. The first case of Covid-19 in Turkey was diagnosed in March 2020 and precautions were rapidly taken in the midst of March. Due to the increased number of cases at universities, the higher education council announced that all classes must be offered online.

The spring semester in the university where this study was performed was scheduled to last 14 weeks. The students were offered face-to-face education for the first 6 weeks of the semester according to a predetermined curriculum. With the spread of Covid-19, online classes were started. Before offering the online classes, the students registering for the course Case Presentation were given pretests. After completion of the online classes, the students were given posttests (Figure 1).

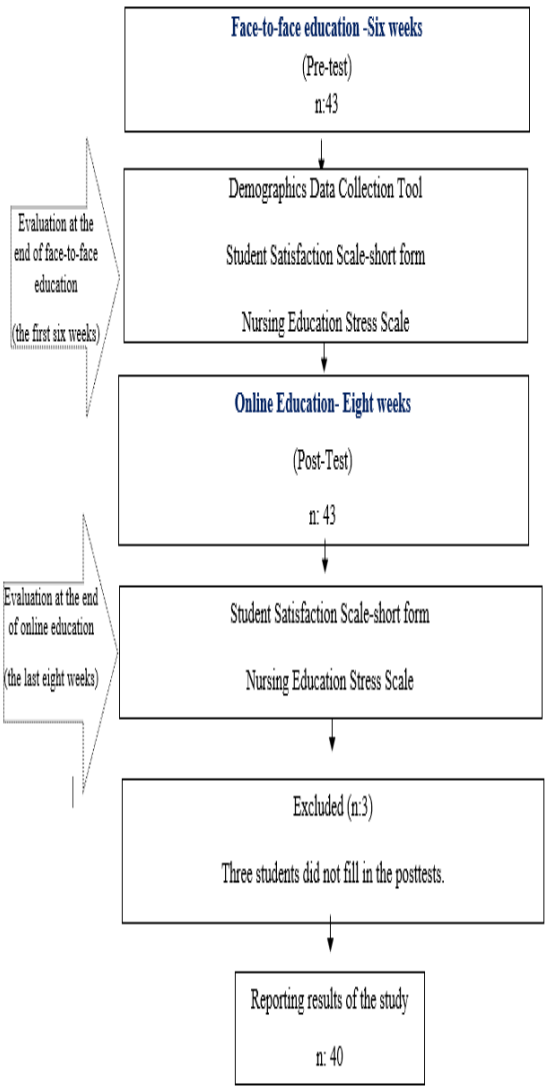

Figure 1. Research Schedule

Content of the Face-to-Face Education

Case Presentation is a course offered to fourth-year students three hours a week. During the course, the students are required to present a nursing care plan they create about a case they have provided care for in the clinic.

Presentations are given in front of all the class members and allow interactions between them.

Content of the Online Education

Since the students did not attend practicum in the hospital and face patients, they were not required to give case presentations. Case presentations were prepared by the researchers offering the course and given during live online classes. The cases presented were selected from those with diseases which students may frequently encounter in the clinic. During the online classes, the cases presented were discussed and question-answer sessions were conducted. A total of 14 cases were presented and discussed with two cases each week. During the last week of the semester, the students were assigned to analyze a case and create an appropriate nursing care plan about it.

Outcome measures

Demographics Data Collection Form

The form was prepared by the researchers and was composed of 12 questions about sociodemographic features like age, type of family, income and employment status and evaluation of online classes.

Student Satisfaction Scale

Student Satisfaction Scale (SSS) was developed by Baykal et al. (2002) (14). It was revised by the same researchers and its short version was created (2011) (15). The validity and reliability of the short version for Turkish population was tested by Baykal et al. (14,15). SSS is a six-point Likert scale and composed of 53 items and the subscales lecturers, school administration, involvement in decision-making process, scientific, social and technical facilities and teaching/learning quality. The total score for each subscale is divided by the number of its items to obtain the mean score for each subscale. The mean score for the scale and its subscales ranges from one to five. The scores close to one indicate low satisfaction and the mean scores close to five indicate high satisfaction. Items were grouped under 5 sub-dimensions considering factor structures and expert opinions, and confirmatory factor analysis was implemented. Accordingly, 11 items were excluded from scale. Analysis was implemented with 53 items and 5 sub-dimensions, and consequently, AGFI and GFI goodness of fit index were found sufficient. Cronbach's alpha was reported to be 0.97 for the scale and vary between 0.83 and 0.91 for its subscales (15). In the present study, Cronbach's alpha was found to be 0.98 for the scale and range from 0.90 to 0.96 for its subscales.

Nursing Education Stress Scale

Nursing Education Stress Scale (NESS) was developed by Rhead (1995) (16) and its validity and reliability for Turkish population was tested by Karaca et al. (2014) (16,17). It is a four-point Likert scale and composed of 32 items and two subscales; i.e. academic stress and clinical stress. In the present study, the subscale academic stress was utilized. The total score for the questionnaire ranges from zero to 96 and from zero to 48 for each subscale. Higher scores show higher stress levels. According to confirmative variance analysis, it was determined that error variances of variables got values of 0.88 and lower and that there was no high error variance. Cronbach's alpha was reported to be 0.83 for the subscale academic stress (17). It was found to 0.92 in the present study.

Data Analysis

Results of the descriptive analyses were expressed in percentages, mean values and standard deviation. Normality of obtained data was tested with Shapiro wilk test, skewness and kurtosis. Dependent groups t-test was used to determine differences in mean scores for the subscale academic stress in NESS and for SSS and its subscales between face-to-face education and online education.

Ethical Considerations

Before initiation of the study, permission was taken from the researchers who developed the data collection tools via email. The ethical approval was obtained from the non-invasive research ethics board of the university where the study was conducted and written informed consent was obtained from the students included in the study (ethics committee approval date-approval code: 27.05.2020/10-60116787-020/31822).

RESULTS

In Table 2, 62.5% (n:25), 75% (n=30) and 42.5% (n=17) did not have difficulty in accessing the Internet, accessing online sources in the library and following classes and doing their assignments respectively. Sixty-two-point five percent (n: 25) reported that the assignments contributed to their learning. Forty-seven-point five percent of the students reported that online education could be used only to offer theoretical knowledge in nursing education and 40% reported that online education could be used neither to offer theoretical knowledge nor to teach practical skills (Table 2).

The mean scores for the academic stress subscale of NESS were 1.60±0.66 during face-to-face education and 1.52±0.77 during online education without a significant difference (t: 1.035, p>0.05). However, the mean scores for SSS were 3.84±0.63 during face-to-face education and 3.36±0.80 during online education with a significant difference (t:4.832, p<0.05). Regarding the subscales of SSS, the mean scores for satisfaction with lecturers were 3.95±0.77 during face-to-face education and 3.55±0.80 during online education. The mean scores for school administration were 3.78±0.65 during face-to-face education and 3.34±0.92 during online education. The mean scores for involvement in decision making processes were 3.69±0.80 during face-to-face education and 3.33±0.89 during online education. The mean scores for scientific, social and technical facilities were 3.78±0.66 during face-to-face education and 3.30±0.83 during online education.

Table 2. Evaluations of Online Classes by Students

Experiences	**Students (n:40)**	
	n	**%**
Have you had a problem with accessing the Internet?		
Yes	15	37.5
No	25	62.5
Have you had a problem with accessing the online sources of the library?		
Yes	10	25.0
No	30	75.0
Have you had difficulty in following online classes?		
I had no difficulty.	17	42.5
Yes, because I had a problem with Internet access.	9	22.5
Yes, because I did not have a computer.	2	5.0
Yes, because I could not concentrate on classes during the pandemic.	7	17.5
Yes, because my home was very crowded.	4	10
Yes, because I had problems with the system.	1	2.5
Have you had difficulty in doing homework?		
I had no difficulty.	17	42.5
Yes, because I had a problem with Internet access.	3	7.5
Yes, because I did not have a computer.	3	7.5
Yes, because I could not concentrate on classes.	10	25.0
Yes, because my home was very crowded.	7	17.5
Has homework given during online education contributed to your learning?		
Yes	25	62.5
No	15	37.5
How do you think online education should be used to teach nursing?		
Online education could be used both to transfer theoretical knowledge and to teach practical skills.	5	12.5
Online education could be used neither to transfer theoretical knowledge nor to teach practical skills.	16	40.0
Online education could only be used to offer theoretical knowledge.	19	47.5

The mean scores for satisfaction with education and teaching were 3.91±0.62 during face-to-face education and 3.27±0.92 during online education. The mean scores for all the subscales of SSS significantly differed between face-to-face education and online education (t:3.833, p<0.5; t:3.742, p<0.05; t:2.846, p<0.05; t: 4.048, p<0.05; t:-5.375, p<0.05) (Table 3).

Table 3. The Comparison of The Mean Scores for Academic Stress Subscale of NESS and SSS-Short Form and Its Subscales Between Face-to-Face Education and Online Education

Variables	Students (n:40)		t-test	p
	Face-to-face education $\bar{x}$ ± SS	Online education $\bar{x}$ ± SS		
Academic stress subscale of NESS	1.60±0.66	1.52±0.77	1.035	.307
Satisfaction with lecturers subscale of SSS-short form	3.95±0.77	3.55±0.80	3.833	.000*
School administration subscale of SSS-short form	3.78±0.65	3.34±0.92	3.742	.000*
Involvement in the decision-making process subscale of SSS-short form	3.69±0.80	3.33±0.89	2.846	.007**
Scientific, social and technical facilities subscale of SSS-short form	3.78±0.66	3.30±0.83	4.048	.000*
Quality of education and teaching subscale of SSS-short form	3.91±0.62	3.27±0.92	-5.375	.000*
SSS-short form	3.84±0.63	3.36±0.80	4.832	.000*

DISCUSSION

It is stated in the literature that undergraduate nursing education is stressful (9,10). In the present study, the academic stress experienced by the students was not significantly different between face-to-face education and online education; however, the academic stress scores were a little higher during face-to-face education. Case presentations were performed by the students during face-to-face education and by the researchers during online education. Although online education has been reported to create stress in students (18), the students included in the present study might have experienced less stress during online education since they were given less responsibility.

The students were also found to have higher satisfaction with face-to-face education. This may have two reasons. First, face-to-face education might have allowed more interactions between the students. It has been noted in the literature that students actively involved in classroom activities learn better (19,20). Inability to achieve sufficient interactions between the students during online education might have negatively affected the students' satisfaction. However, it is known that using technology provides opportunities for interactions (21). It has been reported that integrating online discussion forums into online education could be useful (22). The second

reason for the lower satisfaction of the students with online education was that the students experienced difficulties in accessing the Internet and online sources of the library and following online classes. Living in rural areas and having problems with access to the Internet and electronic sources can cause restrictions for students (23,24). Therefore, the technical infrastructure should allow all students to access online education.

In the current study, most of the students agreed that online education could be adopted for delivery of theoretical nursing courses and should not be used to teach practical nursing skills. It has been stated in the literature that students taking courses in a classroom experience the fear of contracting infections and that learning in a clinical environment increases this fear (18). Therefore, students are in favor of online education during Covid-19 pandemics and consider postponement of practicums as live-saving (25). However, they are aware of the importance of directly working with patients in a clinical environment for their professional competence (25). It seems that the pandemics will continue for some time. For this reason, nursing education plans should be made by taking account of its dynamics. It is important that intern students should complete their clinical education after given education about the pandemics and equipped with necessary protective equipment.

CONCLUSIONS AND SUGGESTIONS

While online education creates a positive effect on academic stress, it causes a decrease in students' satisfaction. When Covid-19 pandemics will be eradicated and how long online education will continue are not clear. Therefore, online education must be carefully integrated into the education system especially in applied sciences like nursing. Programs that will encourage students to become more active should be developed and all students should be offered technical facilities equally. Students should be prevented from being passive in online nursing education and interactive methods should be added in education. In addition, randomized controlled studies are needed to evaluate effectiveness of online education and face-to-face education

Limitations

The limitation of this study is that a control group could not be included and that the sample could not be created randomly since all universities in Turkey started online education at the same time.

Ethical Considerations

Before initiation of the study, permission was taken from the researchers who developed the data collection tools via email. The ethical approval was obtained from the non-invasive research ethics board of the university where the study was conducted and written informed consent was obtained from the students included in the study (ethics committee approval date-approval code: 27.05.2020/10-60116787-020/31822).

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Conflict of Interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

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