

Original article**The Effect on Clinical Stress Levels of the Readiness and Acceptance Nursing Students Regarding the Online Learning Method Used in Professional Skills Practice**Fethiye Yelkin ALP¹, Gülşah G. ARSLAN², Dilek ÖZDEN³, İlkin YILMAZ⁴, Büşra ERTUĞRUL⁵, SEDA DUZTEPELİLER⁶**Abstract:**

Objective: The study was conducted with the aim of determining the readiness and acceptance levels and the clinical stress levels of students of a faculty of nursing for online learning in before, during and after clinical practice. **Material and method:** The descriptive research was executed with 233 students enrolled in the Faculty of Nursing in Izmir, in the western part of Turkey. The data was collected by means of Student Descriptive Characteristics Form, the Online Learning Readiness Scale (OLRS), the Online Learning Acceptance Scale (OLAS) and the Clinical Stress Questionnaire (CSQ). Number-percentage distribution, test/Mann Whitney-U/Kruskal Wallis analysis, Friedman variance analysis were used in the evaluation of the relevant data. **Results:** The difference between the three different measurements of the OLRs and OLAS were examined, and a statistically significant difference was found between them ($X^2=14.52$, $p<0.05$; $X^2=35.02$; $p<0.05$). The difference between the three different CSQ measurements was examined, and a statistically significant difference was found between them ($X^2=37.68$; $p<0.05$). **Conclusion:** In conclusion, it was determined and identified that the readiness of the students for online learning and their acceptance levels show increase in the recurrent measurements and their stress levels with clinical practice reduces.

Keywords: nursing skills; clinical practice stress; acceptance and readiness for online learning

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DOI: <https://doi.org/10.3329/bjms.v23i1.70693>**Introduction:**

Distance learning has taken the place of face-to-face education in a government-supported attempt to prevent the spread of the outbreak in educational institutions^{1,2}. In recent years, many faculties have supported their theoretical classes with online lessons to provide an individualized education environment with the idea of “every time, every place”^{3,4}. The urgent need for online education and distance learning under crisis conditions and its importance

in education have increased because of the Covid-19 pandemic^{1,5,8}.

The shifting from teacher-centered to student-centered teaching began years back in the developed world via innovative online education programs. According to this learning paradigm, all kind of medical skill educators' new role being a coach who give chance to students learn, understand and demonstrate by themselves⁹. Regarding the ability to cope with clinical stress, increasing clinical skills

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competency by the use of different teaching methods can support coping with stress.

Our management of this transition to distance learning under the emergency conditions of the Covid-19 pandemic in the whole world in 2020 is made easier by our previous experience of the distance learning process with research conducted before pandemic. In nursing skills education, professional skills laboratories have an important place in developing students' psychomotor skills. Many educational institutions support formal education with various electronic teaching applications, even though they may not use distance learning entirely⁶. The use of video to supplement learning has been a topic of discussion since the 1950s^{2,5,7,8}. One factor which has a great effect on the success of online learning is the level of readiness of students towards online learning¹¹. An individual with a high readiness level can more quickly conceptualize topics and interpret them. Since education is a process of behavior change, determining the level of readiness is as important as the ability to measure the quantitative and qualitative differences between the beginning and end of the process.

From the first moment of their educational lives, nursing students face stress factors which affect their academic performance. Shared sources of stress in the clinical field can be taking care of a patient in the early stages of training, low self-confidence during practical training, fear of making a mistake, and having trouble using medical equipment¹². Studies have shown that stress in the first stages of clinical practice is greater than at other times, and that some students experience greater anxiety during their clinical learning experiences than in class or in the laboratory^{13,14,15,16}. For this reason, it is important to determine students' stress levels at every stage of their clinical training, and to examine the factors which affect it.

Skills laboratory work aimed at providing knowledge and skills by joining learning and teaching can be enriched by providing the use of interactive teaching methods. It is expected that by this method, learning will be permanent for students, and that their stress will be reduced in their first clinical practice. This method will also influence easing the process of clinical training for teaching staff, which is caused by the increasing number of students. This study aims to provide data to be used in planning studies on increasing the effectiveness of skills training.

Material and Methods:

2.1. Study Design

This study had a cross sectional-descriptive study design. We used number-percentage distribution, Mann Whitney-U/Kruskal Wallis analysis, Friedman variance analysis in the evaluation of the relevant data, to examine the effects of online basic skills training to the difference between three different measurements of the OLRS (Online Learning Readiness Scale), OLAS (Online Learning Acceptance Scale) and CSQ (Clinical Stress Questionnaire).

2.2. Participants

The research was planned with a population of 282 students and a sample of 233 students who were studying in their second year at a university Nursing Faculty during 2017-2018 academic year, and who agreed to participate in the research.

2.3. Data collection procedure

In the nursing faculty where the research was performed, theoretical, laboratory and practical lessons are conducted. Before the students enter the professional skills laboratory, they are given a presentation on the skills they will be taught, after which they are taken into the professional skills laboratory in groups of 15-20. In the professional skills application laboratory, skills training staff demonstrate each skill, and then the students practice it. Data collection instruments were applied to the students three times: at the beginning of training, and before and after clinical practice. The first measurement was made on the first day when the students began their class on the basics of nursing. The second measurement was made after 70 hours of theory and 84 hours of laboratory work, before clinical practice was begun. The third measurement was made after the students had had 84 hours of clinical practice.

2.3.1. Distance Learning Application

With this study, students were given the possibility in addition to their classes of accessing professional skills videos through a distance Education Center. The website was developed by Dokuz Eylul University Distance Education Center. The content of the teaching portal was updated by the teaching staff who were conducting the research. Access was given to the videos after a theoretical explanation of the skill, and access was given to all videos before clinical practice. Videos can be uploaded through the resource module. Announcements are made to

students over the announcement system. The system displays how many times each student has entered the system; when they have entered; and which videos they have reviewed. The educator can check whether the students have watched the videos. The students can quickly access the system's contents on a desktop or mobile device by Dokuz Eylul University Distance Education Center.

2.4. Data Collection

The data was collected by means of a Student Descriptive Characteristics Form, the Online Learning Readiness Scale, the Online Learning Acceptance Scale, and the Clinical Stress Questionnaire.

2.4.1. Student Descriptive Characteristics Form:

Age, gender etc. It consists of 10 questions to determine the sociodemographic characteristics.

2.4.2. Online Learning Readiness Scale: There are 18 items in OLR. In the scale, a 5-point Likert-type rating was used as "Strongly Agree (5) Strongly Disagree (1)". The higher scores obtained from the OLR sub-dimensions, and the overall scale indicate a high level of readiness for online learning. Internal consistency reliability coefficient in the study was calculated as Cronbach's alpha =.95 for the whole scale.

2.4.3. Online Learning Acceptance Scale

There are 6 items in OLAS. In the scale, a 7-point Likert-type rating was used as "Strongly Agree (7) Strongly Disagree (1)". The higher scores obtained from the OLAS sub-dimensions, and the overall scale indicate a high level of readiness for online learning. Internal consistency reliability coefficient in the study was calculated as Cronbach's alpha =.89 for the whole scale.

2.4.4. Clinical Stress Questionnaire

The Clinical Stress Questionnaire (CSQ) is a Likert-type self-assessment scale developed by Pagana in 1989 to determine the initial value of stress that threatened student nurses or required them to fight in their first clinical practice experience. Based on the score given for each item, a minimum of "0" and a maximum of "80" points can be obtained from the questionnaire. (CSQ, Cronbach's α :0.70) Low score means low stress level; high score means high stress level.

2.5. Data analysis

Evaluation of the data obtained in the research was performed by computer using the program

Statistical Package for the Social Sciences (SPSS 22.0). In the data evaluation, percentage distribution, arithmetic means and standard deviation values were determined. Variance analysis was used for repeated measurements of online learning readiness and acceptance and clinical stress before, during and after the online learning process. The level of statistical error was taken as $p < 0.05$. In the evaluation of stress according to variables showing normal distribution, t-test and variance analysis were used, while Mann-Whitney-U and Kruskal Wallis tests and Friedman variance analysis were used in the evaluation of stress according to variables which did not show normal distribution.

Ethical clearance:

Before commencing the research, institutional permission was obtained from the nursing faculty where the study was conducted. After obtaining permission to conduct the research from the Non-Interventional Ethics Committee of Dokuz Eylul University (approval number: 3631-GOA), written approval was obtained from the students participating in the study.

Results:

The mean age of the nursing students was 19.60 ± 1.12 years and 75.5% were female. According to their statements, 64.8% had chosen nursing willingly, and 79.4% loved the profession. Regarding the distribution of the participants' internet access, it was found that 60.9% accessed the internet regularly, and that 36.9% had used a computer for 8-12 years. Examining the participants' feelings about their clinical experiences, it was seen that 42.1% felt excitement. The reason for participants' feelings concerning their first clinical experiences was found to be previous health experience for 30.9% (Table 1).

Table 1. Students' Socio-demographic Information:

Sociodemographic characteristics	n	Percentage %	
Gender	Female	176	75.5
	Male	57	24.5
Age	17-20 years	204	87.6
	21 or older	29	12.4
Willing choice of department	Yes	151	64.8
	No	82	35.2
Love for nursing profession	Yes	185	79.4
	No	48	20.6

Sociodemographic characteristics		n	Percentage %
Access to internet	Regular	142	60.9
	Fairly regular	79	33.9
	Irregular	12	5.2
Duration of computer use	Less than 3 years	52	22.3
	3-7 years	82	35.2
	8-12 years	86	36.9
	More than 12 years	13	5.6
Feelings about clinical experience	Excitement	98	42.1
	Apprehension	85	36.5
	Fear	13	5.6
	Stress	26	11.2
Reason for feelings about first clinical experience	Agitation	11	4.7
	Health experiences	72	30.9
	Affected by peers	35	15.0
	Fear of evaluation by teaching staff	62	26.6
	Teamwork	34	14.6
Other	30	12.9	
Total		233	100

The difference between the three different measurements of the OLRS were examined, and a statistically significant difference was found between them ($X^2=14.52$; $p<0.05$). In order to find out which group the difference originated from, the results of two-way analysis were examined by performing advanced level analysis. As a result of this, a statistically significant difference was found between the rank means of the first and second measurements and the first and third measurements of the scale ($p<0.05$). The difference between the three different measurements of the OLAS were found to be statistically significant ($X^2=35.02$; $p<0.05$). In order to find out which group the difference originated from, the results of two-way analysis were examined by performing advanced level analysis. As a result of this, it was found that there was a statistically significant difference between the first and second measurements and between the first and third measurements of the OLAS ($p<0.05$). The difference between the three different CSQ measurements was examined, and a statistically significant difference was found between them ($X^2=37.68$; $p<0.05$). In order to find out which group the difference originated from, the results of two-way analysis

were examined by performing advanced level analysis. As a result of this, it was found that there was a statistically significant difference between the first and second measurements and between the second and third measurements of the CSQ ($p<0.05$) (Table 2). It was found that there was difference at a statistically significant level in the nursing students' between CSQ and OLRS scores according to 2nd and 3rd measurements ($p<0.05$)(Table 3).

Discussion:

The Covid pandemic is not the time to contribute to developing plans for innovations and changes in the interactive curriculum, but at the same time it may be a moment which opens new horizons for many health disciplines¹⁷. 21 st century is a time of urgent development in education and technology which leads people continuously progress upon themselves and to become more skillful^{5,8,9}. For students, online education encourages the transformation of learning models. Students see a chance to take education forward with a more autonomous and individualized learning experience and to choose a learning environment in accordance with their knowledge and skill levels¹⁸.

Clinical practice is an important part of professional nursing education in that here, nursing students convert their theoretical knowledge into practice¹⁹. Developing clinical skill is necessary for safe patient care practices²⁰. Students' experiences of stress relating to clinical practice can affect their academic success and their health and can have adverse results in their later working lives such as leaving their work or emotional burnout, with a consequent negative effect on patient care²¹. It has been stated in the literature that nursing students experience higher levels of stress than other students^{22,23}.

It was found in a study by Shaban et al. that, students' stress levels were at a medium level in their first clinical experiences²⁴. In our study also, it was found that students' stress levels were close to a medium level in the three measurements, and that the mean score obtained in the second measurement was significantly lower than in the first and third measurements. This result shows that the online learning which the students took in the basics of nursing between the first and second evaluation measurements may have had the effect of reducing their stress levels. Button et al. stated in a systematic review that online learning enabled students to work more comfortably, that learning motivation

Table 2. Students' online scale scores before (1st measurement), during (2nd measurement) and after (3rd measurement) clinical practice:

	1 st measurement	2 nd measurement	3 rd measurement	Freidman Test		Two-way comparison
<i>X</i> ± SD				<i>X</i> ²	P	
OLRS	68.06±7.63	69.48±6.95	69.22±8.46	14.52	0.01	1<2; 1<3
OLAS	29.12±8.59	32.94±7.11	32.11±7.25	35.02	0.01	1<2; 1<3
CSQ	37.18±10.92	35.30±10.08	38.58±10.57	37.68	0.01	2<1; 2<3

Table 3. Results of analysis between scales

		1 st Measurement (Initial assessment)		2 nd measurement (Clinic assessment)		3 rd Measurement (Post-clinic assessment)	
n=233		OLRS	OLAS	OLRS	OLAS	OLRS	OLAS
1 st Measurement CSQ	p	p=0.87	p=0.50				
2 nd measurement CSQ	p			p=0.04	p=0.10		
3 rd Measurement CSQ	p					p=0.01	p=0.23

(OLRS Online Learning Readiness Scale, OLAS Online Learning Acceptance Scale, CSQ Clinical Stress Questionnaire).

consequently increased their successful grades, while the positive results for both students and teachers concerning online learning made them prefer the use of traditional and online learning methods together²⁵. Bloomfield & Jones stated that the online learning method reduced the factor of establishing a connection between theory and clinical practice, which could cause clinical stress in students, and encouraged the students in clinical practice, and that the online learning method in which the most information was retained was video²⁶. McConville & Lane stated that video increased students' effective coping and self-efficacy and supported their clinical practice²⁷. In our study, a weakly significant correlation was found between the stress level measured after the clinic and

readiness for online learning. According to this result, it was seen that as students' stress levels increase, their readiness for online learning also increases. An increase in the level of stress may serve to increase the use of technology and access to knowledge by triggering students' internal motivation²⁸. Our study showed similarity to this research, in that it was found that students who had access to the internet and who used the internet for a longer time had a higher level of readiness. It is known that in the field of nursing, students particularly experience stress in professional skills and clinical practice^{14,29}. Regarding the ability to cope with clinical stress, increasing clinical skills competency by the use of different teaching methods can support coping

with stress. Competency at a high level can prevent errors caused by stress³⁰. Educational planners and administrators need to make a concerted effort to develop their skills in effective teaching delivery and lesson preparation by encouraging faculty to develop strategies that encourage students' reflection. It takes a lot of effort to train nurses who know their own competencies, professional skills and emotion management⁵. Education and health are intrinsically linked. Quality education can improve health at individual and societal levels¹⁰.

Conclusion:

In conclusion, it was found that students' levels of readiness and acceptance concerning online learning increased with repeated measurements, and that their stress levels regarding clinical practice during online learning were lower than those before online learning. In place of traditional face to face education with many students and restricted resources, and because

the changeover to digital has become obligatory with the unexpected situation of the Covid-19 pandemic, online education is recommended in the field of nursing. It will be of benefit to integrate interactive education in different ways. The use of the online learning method is recommended for its positive effect on the clinic learning process.

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Authors' Contribution:

FYA, GGA are the idea owner of this study. All authors collected and garnered data, FYA and GGA performed data analysis. FYA, GGA completed the final draft of this manuscript.

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