

Effects of Distance Education Models on Senior Nursing Students' Readiness for E-learning, Self-Directed Learning, and Clinical Practice

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Abstract

Aim: The present study aimed to examine the effects of distance education models on the readiness of senior nursing students for e-learning, self-directed learning, and clinical practice.

Material and methods: This study was conducted with 58 senior nursing students in the 2020-2021 fall semester. Descriptive Characteristics Form, University Students' E-learning Readiness Scale, Self-Directed Learning Readiness Scale, Clinical Practice Readiness Assessment Form, and focus group interviews were used as data collection tools.

Results: The mean age of the students was 21.50 ± 0.71 . The majority (77.2%) were female students, 22.8% of which were male students. The findings showed that students' readiness for e-learning increased statistically significantly over time. The e-learning mean score, 156.77 at the beginning of the term, increased to 187.72 in the 11th week ($F = 6779.370$, $p < 0.05$). The mean clinical readiness score of the students was 2.63 ± 0.40 . It was seen that the clinical readiness of the students was higher than the average. In the analysis performed to evaluate the relationship between clinical readiness and e-learning and self-directed learning, the findings showed that the clinical readiness of the students whose e-learning readiness and self-directed learning increased in the last week of the term increased statistically ($p < 0.05$).

Conclusions: In distance education, as well as in face-to-face nursing education, the importance of using interactive education methods in extraordinary situations such as the COVID-19 pandemic and earthquakes has emerged.

Keywords: COVID-19; distance education; nursing students; e-learning.

Introduction

The COVID-19 pandemic has had a detrimental impact on every facet of daily life, necessitating measures such as social isolation [1]. Education, a crucial component of daily life and a societal necessity, is among the affected domains. In our country, the distance education process has continued with digital opportunities in all universities with distance education capacity since March 23, 2020 [2]. Students considered the transition to distance education as a positive change because it offers the opportunity to use technology,

access to information whenever they want, easy access to course materials and homework, the opportunity to watch the recording of the lessons again, and the absence of transportation to the campus [3,4].

Nevertheless, applied departments like nursing education faced challenges in providing essential practical training, a pivotal component of the curriculum, and were unable to leverage the benefits of distance education in this regard [5]. Nursing profession education requires a meaningful combination and synthesis of theoretical knowledge and practical skills [6]. However, with the

introduction of theoretical courses through distance education, some students did not have technological opportunities or were not inclined to use technology, causing challenges in the education process [7]. In the literature, students' negative views on distance education include a low level of computer skills, anxiety about accessing technological platforms, low motivation, not being able to work independently, and feeling lonely because they have to look at the computer screen [7,8]. At the same time, they are faced with the risk of decreasing teacher-student interaction and not being able to meet their socialization needs with their peers [7]. Therefore, due to the isolation specific to the COVID-19 pandemic process, the students who received training in applied fields and who are in their final year have had concerns about their competencies in the field and their readiness for clinical practice due to the distance education and the inability to deliver one-to-one hands-on training [9].

Despite the loosening of the pandemic rules and the start of face-to-face training in many countries worldwide, this seemingly disadvantageous process has been transformed into a kind of advantage by integrating technology into education and developing in this sense. Therefore, this study aimed to examine the effects of distance education models on the readiness for e-learning, self-directed learning, and clinical practice of senior nursing students educated in obstetrics and gynecology nursing.

Materials and methods

Design

The effectiveness of distance education can provide better evidence for nursing students, who are educated with the distance education model and practice for self-improvement, with questionnaires and also with scales and focus group interviews. Therefore, a mixed-method method was used. The study was conducted in a nursing faculty through an online distance education platform.

Participants

In the present study, 58 senior nursing students who participated within the scope of obstetrics and gynecology nursing courses agreed to participate in this study. Being a last-year student and taking online education related to obstetric and gynecologic cases were studied, including criteria. However, students who did not attend three or more of the online courses were excluded from this study.

Procedures

In this study, case discussions, concept maps, debate discussions, skill video demonstrations, and Patient–Intervention–Comparison–Outcome" (PICO) games were used as distance education methods/models.

The PICO game was played in online courses conducted over the online distance education platform. For all these activities, students were divided into groups of five or six over the online distance education platform, and group work was performed. This program, which lasted for four weeks, is explained with an example in Figure 1 below.

The students participated in the case discussion sessions for five hours every week. The trainers selected the cases that were most frequently seen in the clinic.

Data Collection Method

Data were collected both quantitatively and qualitatively.

Quantitative process

Theoretical courses were carried out using the distance education method in the fall semester of the 2020-2021 academic year. "Descriptive Characteristics Form," "University Students' Readiness for E-learning Scale," and "Self-Directed

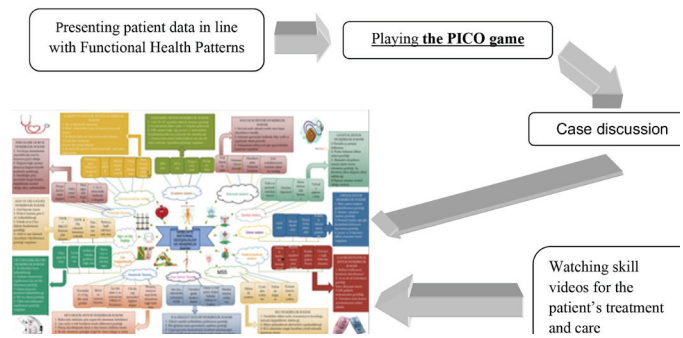


Figure 1 - Session Program Process

Learning Readiness Scale" were applied just before starting the education. During the semester, both scales, "University Students' Readiness for E-learning Scale" and "Self-Directed Learning Readiness Scale," were applied five times in total (2nd, 5th, 8th, 11th, and 14th weeks of the education period). At the end of the semester, the Clinical Practice Readiness Assessment Form" was applied to the students. All forms were applied online using Google Forms.

Data Collection Tools

Descriptive Characteristics Form: This is an eight-question diagnostic form prepared by researchers based on the literature on the subject [3,4,10]. The form included questions about gender, age, easy learning path, preferred education system, duration of distance education courses, and experience with active teaching methods.

University Students' Readiness for E-learning Scale: It was developed by Yurdagül and Demir (2017) to measure students' e-learning readiness structure for the effective implementation of e-learning. The options for the items on the scale were designed in a 7-point Likert type, ranging from Not suitable for me at all (1)" to Completely suitable for me (7)." The scale consisted of 33 items and six factors (Computer Self-efficacy, Internet Self-efficacy, Online Communication Self-efficacy, Self-learning, Learner Control, Motivation for e-learning). A maximum of 231 and a minimum of 33 points can be obtained from the scale. A high score on the scale means that one is more ready for e-learning. The total Cronbach's alpha coefficient of the scale is 0.93 [11]. In this study, the Cronbach's alpha coefficient of the scale was calculated as 0.96.

Self-Directed Learning Readiness Scale: The Self-Directed Learning Readiness Scale (SDLRS), developed by Fisher et al. (2001) [12] and adapted to Turkish culture by Sahin and Erden (2009), was used in this study to determine the students' readiness for self-directed learning. The options for the items of the scale were designed in a five-point Likert type, ranging from "strongly disagree (1)" to "strongly agree (5)." The scale consists of three sub-dimensions: "Self-Management", "Willingness to Learn" and "Self-control Skills" and 40 items. A maximum of 200 and a minimum of 40 points can be obtained from the scale. High scores obtained from the scale indicate that readiness for self-directed learning is high. The total Cronbach's alpha coefficient of the scale is 0.93 [13]. In this study, the Cronbach's alpha coefficient of the scale was calculated as 0.97.

Clinical Practice Readiness Assessment Form: It was a nine-question form prepared by researchers based on the literature on the subject, assessing students' readiness for clinical practice [3,4,6,9-11]. In this form, closed-ended questions were created to consider the clinical practice skills that nursing students should have (e.g., preparation of treatment, caregiving, patient registration, communicating with the patient, and

exhibiting teamwork). In creating the questionnaire, the opinions of eleven specialists who were teaching staff in nursing and who had clinical training experience were taken.

Qualitative Process

At the end of the semester, the effectiveness of distance education methods was evaluated by conducting focus group interviews with the students. The focus group interviews were held over the online distance education platform by forming two separate meeting groups. Thirty students who agreed to participate in the qualitative part of this study were divided into two groups of 15 regarding the interview quality. Both focus group interviews were conducted by the same researcher. The average duration of the interviews was 45.09 minutes.

Evaluation of data

Quantitative data evaluation process: Students' changes in e-learning and self-directed learning over time were tested using analysis of variance (ANOVA) with repeated measures. Readiness for clinical practice was expressed with mean and standard deviation values. Pearson correlation analysis was applied to examine whether there was a significant difference between clinical practice readiness and e-learning and self-directed learning. The statistical significance level was accepted as 0.05.

Qualitative data evaluation process: The data obtained using the interview form were evaluated using the thematic analysis developed by Braun and Clarke (2006) [14]: (1) The researcher's familiarity with the data, (2) The creation of the initial codes, (3) The collection of the codes under potential themes, (4) The revision of the themes, (5) Identification and naming of themes, (6) Preparation of the report. In this study, the texts were read several times by three researchers during the thematic analysis to ensure a detailed understanding of the data. Researchers read each one separately. While reading the texts, a code was added to each section that was thought to be related to the subject investigated by the researchers. Researchers then discussed these independently developed codes together and tried to create common codes. This process continued until a consensus was reached. Themes were created by combining the sub-themes from the codes. While evaluating the data, the researchers paid attention that their beliefs and values did not affect the interpretations taken from the data. To ensure the reliability of the data, we focused on the strategies of validity, transferability, reliability, and acceptability [15].

Ethics

Institutional permission from the nursing faculty and approval from the Research Ethics Board were obtained for the study (with the decision dated 18.01.2021 and numbered 2021/02-14). The students were informed verbally and in writing about the research purpose. Data collection was continued after the students' written consent was obtained. Verbal consent was obtained from the students who attended the online meeting, which was recorded before the qualitative data of the present study were collected. Each student was given a number when mentioning their comments to ensure their privacy.

Results

The mean age of the students was 21.50 ± 0.71 . The majority (77.2%) were female students, 22.8% of which were male students. They stated that the average duration of the courses they attended through distance education was 149.10 ± 51.29 minutes. The experiences and preferences of the students regarding the learning methods are given in Table 1.

Table 1

Students' experiences and preferences regarding learning methods

	n	%
Best way to learn		
Visual	13	22.8
Visual, kinesthetic	11	17.5
Visual, auditory, kinesthetic	10	19.3
Kinesthetic	23	40.4
Preferred education system		
Distance education	8	13.79
Face to face education	50	86.21
Active participation in the course		
Participating	49	84.49
Non-participating	9	15.51
Education method that facilitates learning the most		
Drawing a concept map	10	17.24
Case discussion	12	20.68
Video display	15	25.86
PICO game	21	36.22

Quantitative research findings

Readiness of students for e-learning

The findings showed that students' readiness for e-learning increased statistically significantly over time. The e-learning mean score, 156.77 at the beginning of the term, increased to 187.72 in the 11th week ($F = 6779.370, p = 0.00$). The difference was mainly due to the e-learning readiness measurement between the 11th week and the 15th week (Table 2).

Readiness for Self-directed Learning

When the mean scores of readiness for self-directed learning were examined, a statistically significant increase was found over time. Although the self-directed learning score, which was 4.09 in the second week, increased to 4.49 in the last week, this difference was not statistically significant. There was a significant increase in students' readiness only from the 11th week to the 15th week of the term ($F = 5624.968, p = 0.00$) (Table 3).

Clinical readiness

Students evaluated how ready they felt to go to the clinic in the next semester. At the end of the semester, they took theoretical courses. Scoring was no (1), sometimes (2), yes (3). The mean clinical readiness score of the students was 2.63 ± 0.40 . It was seen that the clinical readiness of the students was higher than the average.

The relationship between clinical readiness and e-learning and self-directed learning

In the analysis performed to evaluate the relationship between clinical readiness and e-learning and self-directed learning, the findings showed that the clinical readiness of the students whose e-learning readiness and self-directed learning increased in the last week of the term increased statistically ($p = 0.00$) (Table 4).

Qualitative research findings

Three themes and three sub-themes emerged in the reporting made as a result of the researchers' evaluations of the interviews. Three themes emerged as outlined below: (1) high readiness, (2) ambivalence, and (3) low readiness (Table 5).

Theme 1. High readiness

Sub-theme 1. Orientation

Some of the students stated that the interactive methods of distance education models applied regarding readiness for clinical practice are a positive support for clinical orientation.

Table 2 Readiness of students for e-learning

Readiness of students for e-learning	X ± SS**	5th week***		8th week***		11th week***		15th week***	
2nd week	156.77 ± 35.29	0.144	0.70						
5th week	160.06 ± 29.29			1.702	0.20				
8th week	174.75 ± 30.66					1.611	0.21		
11th week	187.72 ± 23.78							8.594	0.00*
15th week	182.96 ± 28.20								

*Statistically significant, **X: Mean, SS: Standard deviation, ***Analysis of variance in repeated measurements and p-value were given, respectively.

Table 3 Readiness for Self-directed Learning

Readiness of students for e-learning	X ± SS	5th week***		8th week***		11th week***		15th week***	
2nd week	4.09 ± 0.76	0.051	0.82						
5th week	4.05 ± 0.63			0.028	0.86				
8th week	4.08 ± 0.59					1.847	0.18		
11th week	4.30 ± 0.52							10.933	0.00*
15th week	4.49 ± 0.43								

**Analysis of variance in repeated measurements and p-value were given, respectively.

Table 4 The relationship between students' clinical readiness and their readiness for e-learning and self-directed learning

		Clinical readiness**	
2nd week	e-learning	-0.166	0.40
	Self-directed learning	-0.082	0.67
5th week	e-learning	-0.114	0.56
	Self-directed learning	0.011	0.95
8th week	e-learning	-0.007	0.97
	Self-directed learning	0.009	0.96
11th week	e-learning	-0.097	0.62
	Self-directed learning	-0.242	0.21
15th week	e-learning	0.789	0.00*
	Self-directed learning	0.709	0.00*

*Statistically significant **Pearson correlation test and p-value are given, respectively.

Table 5 Distance Education Models and Themes and Sub-themes

Themes	Sub-themes	Codes		
High Readiness	Orientation support	Research for clinical practice		
		Facilitate practical thinking		
		Gaining self-confidence		
		Saving time		
		Creating a learning environment		
		Professor support		
		Active method use		
Ambivalence	Pros and Cons	Thinking that they will have difficulties in medication and care practices		
		Thinking that face-to-face education will be encouraging in clinical practice.		
		Thinking that it will facilitate patient care		
		Thinking that they will have difficulty communicating with the patient		
		Feeling unable to fit in with the team at the clinic		
		Low Readiness	Insufficiency	Inability to practice invasive procedures
				Fear of harming the patient
Fear of contagious COVID-19				
Feeling uncertainty				
Having difficulty learning				
Perspective of the immediate surroundings/society on the distance education process				
Failure to provide a hospital atmosphere				
Not memorable				
Internet access restriction				

Theme 2. Ambivalence

Sub-theme 1. Pros and Cons

Most of the students evaluated the distance education models and the readiness for clinical practice as both pros and cons.

Theme 3. Low readiness

Sub-theme 1. Insufficiency

Some of the students evaluated the readiness for clinical practice with distance education models as insufficient.

Discussion

In this study, the findings obtained in the present study showed that distance education models (case discussions, concept maps, debate discussions, professional skills video demonstrations, and PICO) increased the readiness for e-learning and self-directed learning of senior nursing students studying obstetrics and gynecology nursing. In the e-learning feasibility study conducted by Alhassan (2020) in Ghana with 233 nursing and midwifery students, students have reported that they are ready to receive education in e-learning circumstances [16]. In a systematic review evaluating the results of 22 different systematic reviews conducted in Canada, positive attitudes and behaviors toward e-learning were reported at a rate of 79.41% in the results of 11 different comparison studies on e-learning with nurses and nursing students [17]. Most of the studies conducted with nurses and nursing students report that the participants have positive opinions about e-learning. In their study with 312 nursing students, Sener et al. (2022) reported that students with high online learning attitudes had positive views on online learning in nursing education [18]. In this study, consistent with other studies, students' e-learning readiness levels were 156.77 at the beginning of the term, at a medium-high level, but increased to 187.72 at the 11th week. As a result of the study we conducted, the e-learning readiness levels of nursing students increased statistically significantly. The findings suggest that this significant increase in students' e-learning and self-directed learning readiness levels is due to the educational methods that facilitate learning in the distance education process. Students found it useful to draw the PICO game with a rate of 36.22% at the most and draw a concept map at a rate of at least 17.24% among the education methods applied in the distance education process and facilitating learning. This result can be interpreted as the significance of gamification, which is the today's reality, combined with technology and its use in education.

In our study, students stated that distance education methods increased their clinical readiness. The opinions of the students are that nursing education is supported by distance education methods that facilitate learning by influencing clinical and academic success. Thus, distance education methods should become a part of nursing education. The students expressed that the education models utilized in distance learning, which facilitate learning, positively contribute to their readiness for clinical practice, particularly during clinical orientation. At the same time, in the results of the present study, the clinical readiness of the students whose e-learning readiness and self-directed learning increased in the last week of the term increased statistically. In this direction, the readiness for clinical practice of students whose e-learning readiness level increases will also increase. On the other hand, in the interviews, most of the students evaluated the distance education models and the readiness for clinical practice as both pros and cons.

Nursing education is primarily practice-based [6]. While distance education aids students in becoming familiar with the clinical environment, it might not have the same impact on their readiness for actual clinical applications. McDonald et al. (2018) have reported that e-learning programs provide a flexible teaching method, according to the results of their integrative review, in which they present the available evidence for the effectiveness of e-based learning in improving clinical knowledge and skills in nursing students. However, the review results show existing evidence that e-learning alone does not provide the learning that face-to-face patient care provides [19]. In a study by Thapa et al. (2021) involving 470 nursing students, 58.9% of participants had a favorable attitude toward e-learning. However, only 34% perceived e-learning to be as effective as traditional face-to-face learning [20]. On the other hand, in the results of the study conducted by Kabir et al. (2022), nursing students' e-learning readiness was low due to various factors, such as less technology availability and less self-confidence in technology use. The prevalence of preferring e-learning in nursing education among students was reported as 43.46% [21]. This result may be because nursing education also includes clinical education. Students may think that e-learning environments are useful but insufficient to provide clinical learning opportunities.

In our study, the mean clinical readiness score of the students was 2.63 ± 0.40 . Some of the students evaluated the readiness for clinical practice with distance education models as insufficient. The students reported the best learning path as kinesthetic learning" with 40.4%, and they defined harms, such as "thinking that it will have difficulties in medicine and care applications" "thinking that it will be difficult in communication with the patient" and "feeling they you cannot adapt to the team in the clinic" in preparing for clinical practice with distance education. In the study's findings, as kinesthetic learning, which is best for hands-on experience, is not attainable during distance education, students might perceive their readiness levels as inadequate in clinical skills necessitating experiential learning. These skills include patient communication, personalized

nursing care, administering drug therapy, and collaborating with clinical teams. These challenges experienced by students in their readiness for clinical practice may also affect their stress levels. For example, in a study by Oducado and Estoque (2021) with 108 nursing students, nursing students who received online education during the COVID-19 pandemic period evaluated online education as stressful by 44.4% and very stressful by 47.2% [22]. The COVID-19 pandemic process has already caused negative (academic stress, etc.) effects on students' own psychology [23]. Therefore, it can be thought that the stress levels of students whose e-learning, self-directed learning, and clinical readiness levels increase with web-based education supported by distance education methods will also decrease. Thus, along with the decrease in the stress levels of students supported by distance education methods, their academic success may also be affected.

Distance education methods have been included in today's nursing education, together with the COVID-19 pandemic conditions. Today, with the widespread use of technology, distance education methods have become a part of nursing education [24]. It is seen that e-learning, self-directed learning, and clinical readiness of nursing students are positively affected by an education supported by distance education methods. Thus, it is seen that nursing education has been enriched with techniques that facilitate learning and create positive views and attitudes in students.

Conclusion

The study results indicate that despite the integration of interactive methods, students perceive face-to-face education as more effective than distance education. This is due to the inability of nursing students to practice their nursing skills in the clinic/field. Hence, both in distance education and traditional face-to-face nursing education, the significance of employing interactive teaching methods during extraordinary circumstances such as the COVID-19 pandemic and earthquakes has become evident.

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