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Araştırma Makalesi


Evaluation of the Effect of Patient Management for Covid-19 on Learning Satisfaction of Nursing Students by Using Different Simulation Methods


Covid-19' a Yönelik Hasta Yönetiminin Farklı Simülasyon Yöntemleri kullanılarak Hemşirelik Öğrencilerinin Öğrenme Memnuniyetleri Üzerindeki Etkisinin Değerlendirilmesi

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Abstract

Aim: Study was conducted to determine the satisfaction and self-confidence of nursing students in learning by using different simulation methods.

Methods: The research is a single group quasi-experimental study conducted with 20 volunteer students from the nursing department of a university. In the study, students were given training on the management of patients with suspected Covid-19 for about 30 minutes, using virtual patient, clinical simulation and mannequin simulation method. Data were collected with the “Socio-demographic Data Form, Student Satisfaction and Self-Confidence in Learning Scale”.

Results: In the study, it was determined that the average age of the students was 20.95 ± 0.88 and 75.0% received Covid-19 education. At the end of the training, the average score of the clinical simulation method for Covid-19 was found to be 49.45 ± 8.56 for the manikin simulation method as 51.60 ± 4.07 . When the scale scores were compared, it was determined that there was a significant relationship between simulation methods ($p < 0.05$).

Conclusion: It was determined that nursing students were more satisfied with the mannequin simulation method. It is thought that simulation-based nursing education can provide students with more effective learning and satisfaction in learning.

Key Words: Covid-19; nursing student; simulation training.

Özet

Amaç: Araştırma farklı simülasyon yöntemlerini kullanarak hemşirelik öğrencilerinin öğrenme memnuniyetini ve özgüvenlerini belirlemek amacıyla yapılmıştır.

Yöntem: Araştırma, bir üniversitenin hemşirelik bölümü 2. sınıf öğrencilerinden gönüllü 20 öğrenci ile yapılan tek grup yarı deneysel çalışmadır. Çalışmada öğrencilere sanal hasta kullanılarak klinik simülasyon ve manken simülasyon yöntemi ile yaklaşık 30 dakika Covid-19 şüphesi olan hasta yönetimine yönelik eğitim verilmiştir. Veriler “Sosyo-demografik Veri Formu, Öğrenci Memnuniyeti ve Öğrenmede Kendine Güven Ölçeği” ile toplanmıştır.

Bulgular: Çalışmada, öğrencilerinin yaş ortalaması 20.95 ± 0.88 ve %75.0’inin Covid-19 eğitimi aldığı belirlenmiştir. Eğitim sonunda Covid-19’a yönelik klinik simülasyon yönteminin puan ortalaması 49.45 ± 8.56 manken simülasyon yönteminin puan ortalaması 51.60 ± 4.07 olarak bulunmuştur. Ölçek puanları karşılaştırıldığında simülasyon yöntemleri arasında anlamlı bir ilişki olduğu belirlenmiştir ($p < 0.05$).

Sonuç: Hemşirelik öğrencilerinin manken simülasyon yönteminden daha memnun kaldıkları belirlenmiştir. Simülasyona dayalı hemşirelik eğitimi, öğrencilerin daha etkili bir şekilde öğrenmelerini ve öğrenmede doyum sağlayabileceği düşünülmektedir.

Anahtar Sözcükler: Covid-19; hemşirelik öğrencisi; simülasyon eğitimi.

Introduction

Covid-19 known as a severe acute respiratory syndrome, first appeared the last month of 2019 in China, has become an outbreak in the short time in the entire World.⁽¹⁾ During pandemic term, in order to prevent outbreak and for the aim of decrease transmission of the disease,

universities and educational institutions have been temporarily closed in many countries. After the first Covid-19 case appeared in our country, upon the statement of the Ministry of Health, schools and educational institutions were temporarily closed on 25 March 2020.⁽²⁾ To be able to manage this process, Higher Education Council has taken an action immediately and has decided to transform the normal education process into distance learning.^(3,4) Especially, in this term, students who get nursing training have faced difficulties such as interruption in-hospital clinical activities. This situation also has caused using another learning methods in the nursing education.⁽⁵⁾

Technology which has shown significant developments in recent years, has been used in education and training. Also, in the nursing education many educational methods are tried in order to gain and develop cognitive, psychomotor and attitudinal behaviors. These education include such as methods patient models that reflect a high level of reality, computer aided simulation, virtual reality, standardized patients, simulation based on patient scenarios. Using simulation based on patient scenarios, is being one of the important education methods which could be used as nursing students developing and gaining competence in patient care management.⁽⁶⁻⁷⁾ Simulation provides to critical thinking, correct to mistakes in the learning process and protect to patients. All students have the opportunity to benefit from this simulation, which provides an opportunity for active learning. Thus, simulation provides experience for nursing students which is consistent and comparable.⁽⁸⁻⁹⁾ Thanks to high-accuracy simulation, real visualization of the clinical environment support nursing students' critical thinking, decision, and development of problem-solving skills.⁽¹⁰⁾ However, the current increasing cost of simulators, the low number of clinical scenarios available have been providing to emerging different simulation methods.

This study was conducted to determine students satisfaction and self-confidence in learning by using low-level simulation with mannequin and clinical simulation with virtual patient in order to contribute to the practice skills of nursing students in the Covid-19 process.

Research Hypotheses

H_{0-a}= The training is given by the Clinical Simulation with Virtual Patient method does not affect students learning satisfaction and self-confidence in learning.

H_{0-b}= The training is given by the Clinical Simulation with Virtual Patient method affects the learning satisfaction of the students and self-confidence in learning.

H_{1-a}= The training is given Low-Level Simulation Models with Mannequin method does not affect students learning satisfaction and self-confidence in learning.

H_{1-b}= The training is given with Low-Level Simulation Models with Mannequin method affects students learning satisfaction and self-confidence in learning.

Methods

Research Type and Place

This post-test, single-group quasi-experimental research was conducted in September 2020 in the laboratory of the nursing department.

Study Population and Sample

This research is post test single-group quasi-experimental study. The universe of the study consists of Kilis 7 Aralık University, Nursing Department students (n= 357). The 2nd-grade nursing students were only participated in this research (n=80). Research sample Power-3.1. Using the program, the sample size was determined as 19 at the 95% confidence level. The 2nd-

grade nursing students were randomly selected from those living in Kilis province for the study. Because 2nd-grade nursing students didn't attend practice intership during Covid-19 outbreak. For this reason, especially 2nd-grade nursing students are chosen in this study.

Inclusion criteria for research

- Being 2nd- grade nursing students at the university where the study was conducted,
- Be over 18 years of age,
- To not have dissability,
- To not have Covid-19 positive,
- Volunteer to participate in study,
- To live in Kilis

Clinical Simulation with Virtual Patient

Clinical Simulation with Virtual Patient is the recreation of reality shown on a computer screen. It involves real people operating simulated systems. It is a kind of simulation that places people' in a central role through the exercising of their motor control, decision-making and communication skills.⁽¹¹⁾ Clinical virtual simulation uses virtual patients. Also, the method is based on the virtual patient being accessed through screen-based, interactive dynamic patient scenarios and a variety of multimedia.⁽¹²⁾ It increases interaction and feedback.⁽¹³⁾ Therefore, students raises both learning satisfaction levels and the perception of self-efficacy. Using clinical virtual simulation helps develop clinical thinking and clinical ability, decision making, psychomotor skills.⁽¹⁴⁻¹⁵⁾

Low-Level Simulation Models with Mannequin

They are static models with low technological features. They represents selected anatomical parts of the human body or low reality mannequins that cover the whole body. It is used to learn basic psychomotor skill steps. Examples are the arm model used to teach venipuncture or the

simple dummy used to teach cardiopulmonary resuscitation(CPR). The cost of these simulations compared to others is low. It is widely used in teaching psychomotor skill steps (such as establishing vascular access, applying intramuscular injection) in many health schools in our country.⁽⁷⁾

The Covid-19 epidemic, which affected the world, interrupted nursing education. Different methods are tried in this process to reduce the difficulties experienced by nursing students, especially those who stay away from the clinical field. One of these methods is the clinical simulation with virtual patient. Another method used is low-level simulation models with mannequin. Clinical simulation with virtual patient is one of the different methods that can be used in nursing education not only during the epidemic process but also in the future, and it is thought that it can increase the learning satisfaction of nursing students.

Data Collection Tools

The Sociodemographic Data Form prepared by the researchers and the Student Satisfaction and Self-Confidence Scale were used as data collection tools.

Sociodemographic Data Form: The sociodemographic data form consists of questions prepared by the researchers to determine sociodemographic characteristics such as gender, age, the situation of taking Covid-19 training, the situation of being worrydue to the Covid-19, the situation of positivity or positivity in family members Covid-19,information situations on nursing initiatives related to Covid-19, the situation of giving distance nursing learning education finding sufficient, the situation of giving Covid-19 training to people around you, willing to take an active role in epidemic diseases upon graduation.

Student Satisfaction and Self-Confidence in Learning Scale (SSCL): The scale commonly used to measure students attitudes and beliefs about simulation was published by the National League for Nurses = NLN. It consists of two sub-dimensions "satisfaction with learning" and

"self-confidence" and a total of 13 items. In the learning satisfaction sub-dimension; Five items measuring satisfaction with the teaching method, motivation, materials, facilitation, diversity of learning and suitability of the simulation in general, in the self-confidence sub-dimension; confidence in scope adequacy, content requirement, skill development, available resources and there are eight sub-items, including information on how to get help to solve clinical problems in the simulation. The answer choices are 5 = Strongly agree, 4 = Agree, 3 = Undecided: Neither agree nor disagree, 2 = Disagree, 1 = Strongly disagree. The highest score that can be obtained from the scale is 65 and the lowest score is 13. The high score that can be obtained from the total of the scale indicates high satisfaction and self-confidence. The Turkish validity and reliability study of the scale was conducted by Karaçay and Kara in 2017. Cronbach's Alpha reliability coefficient was evaluated as 0.888.⁽¹⁶⁾

Study Design

Mannequin Simulation and Clinical Simulation with Virtual Patient Training

Before starting the training, the students were informed about the study. Due to the Covid-19 outbreak, special attention was paid to personal social distance, hand hygiene, and masks for the students who came to the practice laboratory. The windows of the laboratory were kept open throughout the training. The Covid-19 case provided free of charge by the Body interact program (<https://bodyinteract.com/>) was used for training. Nursing interventions applied to the case were shown to the students in both Mannequin Simulation and Clinical Simulation with Virtual Patient.

Case history: A 57-year-old male patient was admitted to the hospital with a cough that did not go away for the last 1 week and fever and respiratory distress in the last two days. The patient's chronic disease, allergies, and medications were questioned. Then, it was determined that

patient didn't have a chronic disease, allergies and did not use medications. Since the patient may be positive for Covid-19, necessary personal safety precautions (washing hands, mask, visor, glasses, and apron) were taken before starting the intervention. The patient was monitored. The patient's vital signs (blood pressure, oxygen saturation, pulse, fever, respiratory rate) were evaluated. The patient's vital signs were evaluated as (Fever: 37.4 degrees, blood pressure: 110/60 mmHg, pulse: 110 min, saturation 83%). The covid-19 swab was taken from and an IV catheter was applied to the patient. Blood was drawn from the patient and appropriate laboratory tests were performed. The patient was positioned appropriately. Oxygen was given to the patient at 5 min/liter. Due to the patient's heart rate was above 100, the antiarrhythmic drug available at the doctor's req. The patient's CRP value was found to be high in the laboratory result, and as a result, the available antibiotics were administered at the doctor's request was administered. Antipyretic medication was administered to reduce the patient's fever. As a result of the Covid-19 swab, the patient was found to be Covid-19 positive. The patient's condition gradually worsened. The patient was intubated due to cardiac arrest. Cardiac massage was applied. In this process, 1 mg of adrenaline was administered to the patient.

The training took about 45 minutes. The training was conducted on the specified day and time. Nursing students have not taken clinical simulation with virtual patient training before. They experienced thanks to this training first time. 15 days after the training the students were asked to fill in the Student Satisfaction and Self-Confidence in Learning Scale for the training described in both ways (Mannequin Simulation and Clinical Simulation with Virtual Patient).

Evaluation of Data

Research data were evaluated with SPSS 22.0 statistical package program. Descriptive statistics such as frequency, mean, standard deviation and percentage were used to analyze the data. In

evaluating data, Kruskal-Wallis test and Mann-Whitney U test were used. In the comparison of scale scores obtained from both training were also used Wilcoxon test. The data were analyzed at 95% confidence level and $p < 0.05$ was considered significant.

Ethical considerations

Ethics Committee's Approval was received prior to initiating this study(2020/29). All participants received an information sheet outlining the purpose of the study and a statement that responses were anonymous. Written informed consent was obtained from each participant. Contact details of the researchers were also given to allow participants to gain further details about the study. The study was administered in accordance with the Principles of Helsinki Declaration.

Results

In the study, it was determined that 55% of the nursing students were 21 years old, 80% were female. It was found that 75% of nursing students received Covid-19 training, 85% were worried about Covid-19, 10% got Covid-19 disease, and 25% of family members got Covid-19 disease. In addition, it has been determined that 70% of nursing students had information about nursing practices for Covid-19, 90% found distance nursing education insufficient, 5% gavetraining other people about Covid-19, and 85% of them wanted to take an active role in epidemics after graduation. When the students graduated, a statistically significant relationship was found between the willingness to take an active role in epidemic diseases and the mannequin simulation ($p < 0.05$)(Table-1).

Table 1. Comparison of Demographic and Covid-19 Data in Terms of SSCL Scores (n=20)

	SSCL				
	n (%)	Mannequin Simulation		Clinical Simulation with Virtual Patient	
		$\bar{X}\pm SS$	Importance	$\bar{X}\pm SS$	Importance
Age					
19	2(10.0)	56.00±1.41		49.50±4.94	
20	2(10.0)	55.50±7.78	*p= 0.549	45.50±2.12	*p= 0.151
21	11(55.0)	52.90±3.98		51.00±4.17	
22	5(25.0)	51.40±4.27		42.80±9.49	
Gender					
Female	16(80.0)	53.25±4.41	**p= 0.962	47.56±6.93	**p= 0.275
Male	4(20.0)	52.50±3.78		51.00±4.24	
The situation of taking Covid-19 training					
Yes	15(75.0)	52.66±4.48	**p= 0.599	48.26±7.42	**p= 0.979
No	5(25.0)	54.40±3.36		48.20±3.27	
The situation of being worry due to Covid-19					
Yes	17(85.0)	53.17±4.50	**p= 0.989	49.23±4.40	**p= 0.695
No	3(15.0)	52.66±2.51		42.66±4.01	
The situation of positivity Covid-19					
Yes	2(10.0)	48.50±0.70	**p= 0.056	53.00±5.65	**p= 0.255
No	18(90.0)	53.61±4.13		47.72±6.56	
Covid-19 positivity in family members					
Yes	5 (25.0)	51.80±3.96	**p= 0.332	50.60±4.72	**p= 0.469
No	15 (75.0)	53.53±4.34		47.46±7.00	
Information situations on nursing initiatives related to Covid-19					
Yes	14(70.0)	53.07±4.56	**p= 0.868	49.64±4.70	**p= 0.300
No	6(30.0)	53.16±3.65		45.00±9.33	
The situation of giving distance nursing learning education finding sufficient					
Sufficient	2(10.0)	52.50±3.53	**p= 0.949	51.50±2.12	**p= 0.311
Insufficient	18(90.0)	53.16±4.36		47.88±6.79	
The situation of giving Covid-19 training to people around you					
Yes	1(5.0)	49.00±0.00	**p= 0.255	57.00±0.00	**p= 0.177
No	19(95.0)	53.31±4.21		47.78±6.38	
Willing to take an active role in epidemic diseases upon graduation					
Yes	17(85.0)	53.82±4.06	**p= 0.048	48.00±7.09	**p= 0.595
No	3(15.0)	49.00±2.64		49.66±0.57	

SSCL=Student Satisfaction and Self Confidence in Learning Scale

*Kruskal-Wallis test, **Mann-Whitney U test. p<0.05

It was determined that the students' mean score clinical simulation with virtual patient method and SSCL scale students' through Covid-19 were 49.45±8.56, and the average score mannequin simulation method was 51.60±4.07. In the comparison of the scale scores, a significant

difference was found between the mannequin simulation and the clinical simulation with virtual patient through Covid-19 ($p < 0.05$) (Table 2).

Table 2. Distribution of Students' SSCL Scores Among Clinical Simulation with Virtual Patient and Mannequin Simulation Method

	N	$\bar{X} \pm SS$	Importance	Min.	Max.
Method Type					
Clinical Simulation with Virtual Patient	20	49.45±8.56	p=0.004	23.00	61.00
Mannequin Simulation	20	51.60±4.07		44.00	59.00

*Wilcoxon test. $p < 0.05$, SSCL: Student Satisfaction and Self-Confidence in Learning Scale

Discussion

The study was conducted to investigate the effect of different simulation methods for Covid-19 on the learning satisfaction of nursing students. When the study findings were examined, it was determined that the average age of nursing students was 20.95 ± 0.88 , most of the nursing students (75.0%) got Covid-19 training, almost all (85.0%) were affected by the pandemic process, two students themselves and one of five students' families were infected with the Covid-19 virus. In addition, in the study, the majority of nursing students had sufficient knowledge about nursing practices for Covid-19, almost all (90.0%) found distance education nursing education inadequate, only one student gave training to other people on Covid-19, It has been determined that vast majority of them wants to take an active role in epidemic diseases upon graduation. In a study conducted by Kürtüncü and Kurt (2020) for nursing students, it was stated that during the Covid-19 pandemic period, the majority of students found insufficient the distance education given for nursing education.⁽¹⁷⁾ This shows us that although there is a tendency to distance education to decrease virus spread, education in applied departments such

as nursing is stayed insufficient. When the scores of SSCL were examined in the study, it was determined that the mean score of the clinical simulation method for Covid-19 was 49.45 ± 8.56 , and the mean score of the mannequin simulation method was 51.60 ± 4.07 (Table 2). In the study conducted by Karahan et al.(2019), it was determined that the total score of nursing students from the SSCL was 50.32 ± 8.65 .⁽¹⁸⁾ In another study, it was found that the satisfaction scores of nursing students in the clinical simulation were higher.⁽¹⁹⁾ In another study, the total score the nursing students got from the satisfaction and confidence in learning scale in the traditional method was 54.56, while the score they got from the simulation method was 58.07.⁽²⁰⁾ When the scale scores were compared in the study, it was found that there was a statistically significant difference between the mannequin simulation method for Covid-19 and the clinical simulation method, and the students got higher scores than the mannequin simulation(Table 2). A statistically significant difference was found between willing to take an active role in epidemic diseases upon graduation and mannequin simulation. Corbridge et al.(2010) found that nursing students were more satisfied with the simulation method.⁽²¹⁾ In another study in the literature, it was stated that simulation-based experiences give students the opportunity of experiencing situations they may experience in the actual practice beforehand.⁽²²⁾ In the study conducted by Başak et al.(2016), it was found that the students' scores on the satisfaction and self-confidence scale using high-reality simulation were statistically higher.⁽²³⁾ In the study conducted by Demiray et al.(2020), it was stated that the practical applications of nursing students before clinical practice were insufficient and students felt inadequate during clinical practice.⁽²⁴⁾ At the same time, it is thought that simulation-based medical education enables students to learn the way they want by using multiple educational methods together, and that students gain experience in real life. Our study results revealed that nursing students were more satisfied with mannequin simulation than clinical simulation. It is thought that the reason for this situation is the perception of the nursing students' experiences and their

technology levels, and that they are bored with distance education in the home environment during the Covid-19 process, so their desire to come to university may be a factor in their choice of model simulation application. As results of; “The training is given with low-level simulation models with mannequin method affects students' learning satisfaction and self-confidence in learning” It supports the H_{1-b} hypothesis.

Conclusion

Clinical simulation with virtual patient and mannequin simulation method for Covid-19 were used in the study and it was observed that the students were more satisfied with the mannequin simulation method as a result of the answers they gave from the Student Satisfaction and Self-Confidence in Learning Scale. Due to the Covid-19 pandemic, in the applied departments such as nursing departments, students' practical experience has lacked and this situation has caused anxiety. Due to the limitations of the Covid-19 pandemic, it is recommended that the study be conducted with a larger sample group. At the same time, it should be taken into consideration that the use of simulation in nursing education should be increased due to the continuation of the epidemic period and the developing technology and the need to integrate with real clinical environments and plan training programs in this direction.

Limitations of the Study

One of the limitations of the study is that the participants are limited in number due to the Covid-19 pandemic, and only to nursing students at a certain university.

Conflict of Interest: None

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