ORIGINAL RESEARCH ORİJİNAL ARAŞTIRMA

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The Effect of High Fidelity Simulation Training Applied to Nursing Students for Improving Endotracheal Suctioning Skills on Clinical Decision Making and Practices: An Experimental Study

Endotrakeal Aspirasyon Becerisini Geliştirmede Hemşirelik Öğrencilerine Uygulanan Yüksek Gerçekli Simülasyon Eğitiminin Klinik Karar Verme ve Klinik Uygulamaya Etkisi: Deneysel Bir Çalışma

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ABSTRACT Objective: This study aimed to determine the effect of high fidelity simulation (HFS) training applied to nursing students on clinical decision making and clinical practice in improving endotracheal suctioning skills. **Material and Methods:** This is an experimental study with pre- and post-test design. The study was conducted to determine the effect of HFS applied to senior nursing students for developing endotracheal suctioning skills and diagnosing patients' needs for endotracheal suctioning on clinical decision making and practices. After those in the experimental group were given HFS training, they were involved in clinical practices, while those in the control group performed clinical practices without this simulation training. **Results:** Although there was no statistically significant difference between the mean scores in our study ($p>0.05$), the correct clinical decision-making level of the nursing students in the experimental group increased in clinical practice after the simulation training, and although the level of correct clinical decision-making of the nursing students in the control group was higher than the students in the experimental group when they started clinical practice, it was found that it decreased after endotracheal aspiration. In this study, it was found that simulation training had a statistically significant high effect on diagnosing the need for endotracheal aspiration in the patient and performing this skill with the correct steps ($p<0.05$). **Conclusion:** In this study, HFS application is considered to prepare nursing students for clinical practices and strengthen their clinical decision-making skills.

Keywords: Students, nursing;
high fidelity simulation training;
education, nursing; suction; clinical decision-making

ÖZET Amaç: Bu çalışmanın amacı, endotrakeal aspirasyon becerisini geliştirmede hemşirelik öğrencilerine uygulanan YGS eğitiminin klinik karar verme ve klinik uygulamaya etkisini incelemektir. **Gereç ve Yöntemler:** Deneysel tipte ön-test ve son-test desenli ve randomize kontrol gruplu planlanan bu araştırma endotrakeal aspirasyon becerisi geliştirme ve hastanın aspirasyon ihtiyacını tanılamada son sınıf hemşirelik öğrencilerine uygulanan YGS yönteminin klinik karar verme ve klinik uygulama üzerine etkisinin belirlenmesi amacıyla yapılmıştır. Deney grubuna YGS eğitimi verildikten sonra klinik uygulama yaptırılmış, kontrol grubuna ise simülasyon eğitimi verilmeden klinik uygulama yaptırılmıştır. **Bulgular:** Araştırmamızda puan ortalamaları arasında istatistiksel olarak anlamlı bir fark bulunmamakla birlikte ($p>0,05$), deney grubundaki hemşirelik öğrencilerinin doğru klinik karar verme düzeyinin simülasyon eğitiminden sonra klinik uygulamada arttığı, kontrol grubundaki hemşirelik öğrencilerinin ise klinik uygulamaya başladığında deney grubundaki öğrencilerden daha yüksek olmasına rağmen hastaya endotrakeal aspirasyon uygulamasından sonra düştüğü saptanmıştır. Bu çalışmada hastada endotrakeal aspirasyon ihtiyacını tanılama ve bu beceriyi doğru adımlarla gerçekleştirmede simülasyon eğitiminin istatistiksel olarak anlamlı düzeyde yüksek etkiye sahip olduğu bulunmuştur ($p<0,05$). **Sonuç:** Çalışmamızdan elde edilen tüm bu bulgular doğrultusunda, senaryoya dayalı YGS uygulamasının hemşirelik öğrencilerini klinik uygulamaya hazırladığı ve klinik karar verme becerilerini güçlendirdiği söylenebilir.

Anahtar Kelimeler: Öğrenciler, hemşirelik;
yüksek gerçekli simülasyon uygulamaları;
eğitim, hemşirelik; emme; klinik karar verme

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Nursing skills are primarily leaned in nursing education. In this process, nursing students gain several complex knowledge and skills through both vocational courses and practices. One of these skills is endotracheal suctioning.[1-3] Both theoretical and clinical trainings for this skill aim that nursing students are primarily aware of a patient's need for endotracheal suctioning, take responsibility in assessing and performing endotracheal suctioning, and perform this medical intervention correctly and effectively in clinical practices during their education and in institutions where they will work after graduation.[4] However, nursing students may be adversely affected by clinical practices due to various reasons such as inexperience, fear of making mistakes, stress, and negative attitudes of other health workers.[5] Some medical applications of nursing education are performed for the first time on a real patient in clinical environment, which may cause nursing students to have fear of making mistakes and harming the patient. Nursing students may not learn clinical practices and consider themselves insufficient in performing these practices due to several reasons such as lack of opportunity to repeat professional practices in clinical settings and insufficient supervision.[6] Recently, nursing students have many difficulties in clinical practices, including a shortage of teaching staff, increased number of students, and clinical practice barriers due to coronavirus disease-2019 (COVID-19) pandemic.[6-11] In addition to these difficulties and technological developments, patient safety, patient rights and efforts to increase competence in healthcare services require to use innovative training methods in education of health professionals.[7,9,11] In simulation-based training, learning takes place in a risk-free environment where students are allowed to make mistakes. Thanks to this education and care service suitable for patient safety, they can learn from their mistakes, without violating patient rights.[12-16]

Clinical decision-making is a vital step in the nursing practice, and it stemmed from the acquisition of critical thinking skills, empathy, and positive attitude.[17] High levels of knowledge and efficient clinical decision making process are the main pillars that enable nurses, to deliver care. Hence, nursing educators are required to produce graduates that are competent and able to provide quality health care.[18] Therefore, continuous development of the curricula in addition to using innovative methods for teaching is paramount to produce competent graduates.[19] Studies suggested that conventional teaching methods are not sufficient to teach students "beyond knowledge" such as critical thinking, and synthesis of the theoretical knowledge in the practice. This could lead to inadequate levels of skills needed for practicum courses in an ever-changing global health system. Health care graduates should be exposed to a wide range of health scenarios. However, the availability of clinical settings that accept students for training are limited.[20] Besides, medical and health allied students are competing with nursing students in terms of practicum placements. Further, some clinical placements are not only a few but also limit health students, including nursing students, to perform specific procedures. This carries lots of negative clinical experiences which might influence students' confidence, attitude, and learning abilities.[21] High fidelity simulation (HFS) is an effective method that is frequently used to teach students complex knowledge and skills in group or individual basis.[16,22.]

In this context, HFS can be used in teaching endotracheal suctioning, a complex medical intervention. If nursing students have sufficient knowledge and skills on how to apply closed system endotracheal suctioning, they can prevent vital problems in clinical settings. At this point, evidence-based approaches and guidelines put forward by national/international health organizations are important for performing a correct and effective endotracheal suctioning. One of the most widely used international guidelines on endotracheal suctioning is the American Association for Respiratory Care Clinical Practice Guideline: Endotracheal Suctioning, which was created by the American Association for Respiratory Care and was last revised in 2022.[23]

In the literature, HFS is used in nursing skills training generally to compare its effectiveness with standardized patient care, traditional learning and low-reality simulation methods.[24-26] Studies have found no superiority of these methods over each other, but determined an increase in knowledge, skill

and performance scores of nursing students who received a training based on HFS. Studies have also reported that HFS training increases students' critical thinking, decision making, self-confidence, motivation and motor skills.[27-30] However, there is no national and international study on the reflection of skills training with HFS on clinical decision-making and practices. In this sense, this study aimed to determine the effect of HFS applied to senior nursing students for developing endotracheal suctioning skills and diagnosing patients' need for endotracheal suctioning on clinical decision-making and practices.

HYPOTHESIS OF THE RESEARCH

H1: There is a difference between the mean clinical decision-making scores of senior nursing students who received HFS training and those who did not, in diagnosing the need for endotracheal aspiration.

H2: There is a difference between the average clinical practice skill scores of senior nursing students who received HFS training and those who did not, in improving endotracheal aspiration skills.

MATERIAL AND METHODS

DESIGN AND SETTINGS

This study is an experimental study consisting of pre and post test and randomized control group. It was perform to identify the impact of HFS applied to senior nursing students for developing endotracheal suctioning skills and diagnosing patients' need for endotracheal suctioning on clinical decision-making and practices.

SAMPLE

In this study, the population was consisted of all fourth grade nursing students (n=189) who studied in the nursing school of Sivas Cumhuriyet University in the spring semester. In line with the power analysis, the power value of the study was revealed to be 0.84 and the sample size was defined as 38.

Nursing students were randomly distributed to the groups, considering their clinical decision making mean scores and academic success averages. Before they were assigned to the experimental and control groups, the Clinical Decision Making in Nursing Scale (CDMNS) was applied to all students in the sample, the students were numbered according to their clinical decision-making scores and academic success averages, and then they were assigned to the groups using a table of random numbers.

STUDY INSTRUMENTS

Data were obtained using a form with personal information, the CDMNS, the Diagnostic Form for Patient's Endotracheal Suctioning Need (DFPESN), the Closed System Endotracheal Suctioning Skill Assessment Observation Form (CSESSAOF), and the Debriefing Form.

Personal information form: The form consists of questions about the nursing students' characteristics and it was organized by the researcher.

CDMNS

This scale measures nursing students' perceptions of clinical decision making based on their own expressions and it enhanced by Jenkins (1983) using nursing students in the United States. It was adjusted to Turkish by Durmaz Türkiye-Ede and Sarikaya (2015), where the Cronbach's alpha coefficient was found to be 0.78.[21] The original version of the scale consists of 4 subscales and also 40 items, including "search for alternatives or options", "canvassing of objectives and values", "evaluation and re-evaluation of consequences", and "search for information and adaptation of new information objectively". This is a 5-point Likert type scale.

DFPESN

This form was generated by the researcher based on the American Association for Respiratory Care Clinical Practice Guideline: Endotracheal Suctioning (2010). This is a two-dimensional data collection tool that includes assessments of both nursing students and nurses, who work as facilitators in the simulation laboratory or as observers in the intensive care unit, about the signs and symptoms regarding a patient's need for endotracheal suctioning. In this form, nursing students are expected to express how they decide endotracheal suctioning depending on symptoms and findings in the patient.

CSESSAOF

In the preparation of this form, the researcher has created nursing intervention steps of closed system endotracheal suctioning process, based on the American Association for Respiratory Care Clinical Practice Guideline: Endotracheal Suctioning (2010). The form includes a list of applications that nursing students should perform before, during and after a closed system endotracheal suctioning procedure. The form is scored during a simulation application by facilitator nurses and in clinical practices by observer nurses as "1=insufficient", "2=partially sufficient", and "3=sufficient" according to whether nursing students perform endotracheal suctioning using appropriate techniques and methods. The lowest and highest scores on the form are 33 and 99, respectively.

DEBRIEFING FORM

The form created by the researcher based on the literature consists of open-ended questions about the feelings, knowledge and experiences of nursing students during HFS of endotracheal suctioning and what they have learned from this simulation experience.

PROCEDURES

The study was implemented in the spring semester in 2019-2020 academic year. For the application, in the first week of their internship, nursing students in the experimental group were explained about both simulation laboratory and manikin in order to adapt them to the laboratory environment. A preliminary information/prebriefing was given to these students on the same day, and the researcher evaluated their clinical decision-making levels using the CDMNS before the HFS training. The prebriefing lasted around thirty minutes. On the second day of the study, the researcher and the facilitator nurse applied a scenario of patient in need of endotracheal suctioning, evaluated how nursing students in the experimental group would decide on endotracheal suctioning by using the DFPESN, and determined then the level of their endotracheal suctioning skills using the CSESSAOF. Each student was taken to the simulation application one by one, and the implementation of the scenario took about ten minutes for each student. After the scenario implementation was completed, the students in groups of 5 were watched two videos, which were randomly selected from the applications, and then the group debriefing phase was carried out. These process lasted about thirty minutes. In the debriefing session after the application, a feedback was received from the students by enabling them to check their mistakes or deficiencies through video recordings of their applications. The videos were chosen in line with the students' permission (Figure 1).

Nursing students in the control group performed clinical practices in the Anesthesia and Reanimation Intensive Care Unit. They were oriented to the clinic in the first week of their internship and applied the CDMNS. In the second week, they were asked to diagnose the need for endotracheal suctioning in a patient who had similar symptoms to those in the scenario of patient in need of endotracheal suctioning, to observe the suctioning process at first and then to perform the procedure. Both nursing students in the experimental and control groups were observed using the double-blind method by the researcher and the observer/clinic responsible nurse in their natural environment without any involvement and intervention. In order to prevent nursing students in the sample from interacting with each other, a confidentiality agreement was signed for those in the experimental group (Figure 1).

DATA EVALUATION

The data were transferred to computer environment and the statistical analysis was performed using the SPSS 23 (IBM Corp., Armonk, NY, USA) program. The data were evaluated using numbers, standard deviation, mean, percentages, maximum and minimum values, Cronbach's alpha coefficient analysis, Wilcoxon test, Mann-Whitney U test and chi-square analysis. In the evaluation of differences between groups, if $p < 0.05$ and it was accepted that there was a significant difference between groups.

ETHICAL CONSIDERATIONS

Before conducting the research, an ethics committee approval was obtained from the Non-Invasive Clinical Research Ethics Committee at Sivas Cumhuriyet University (date: July 4, 2019, no: 2019-07/14) and a

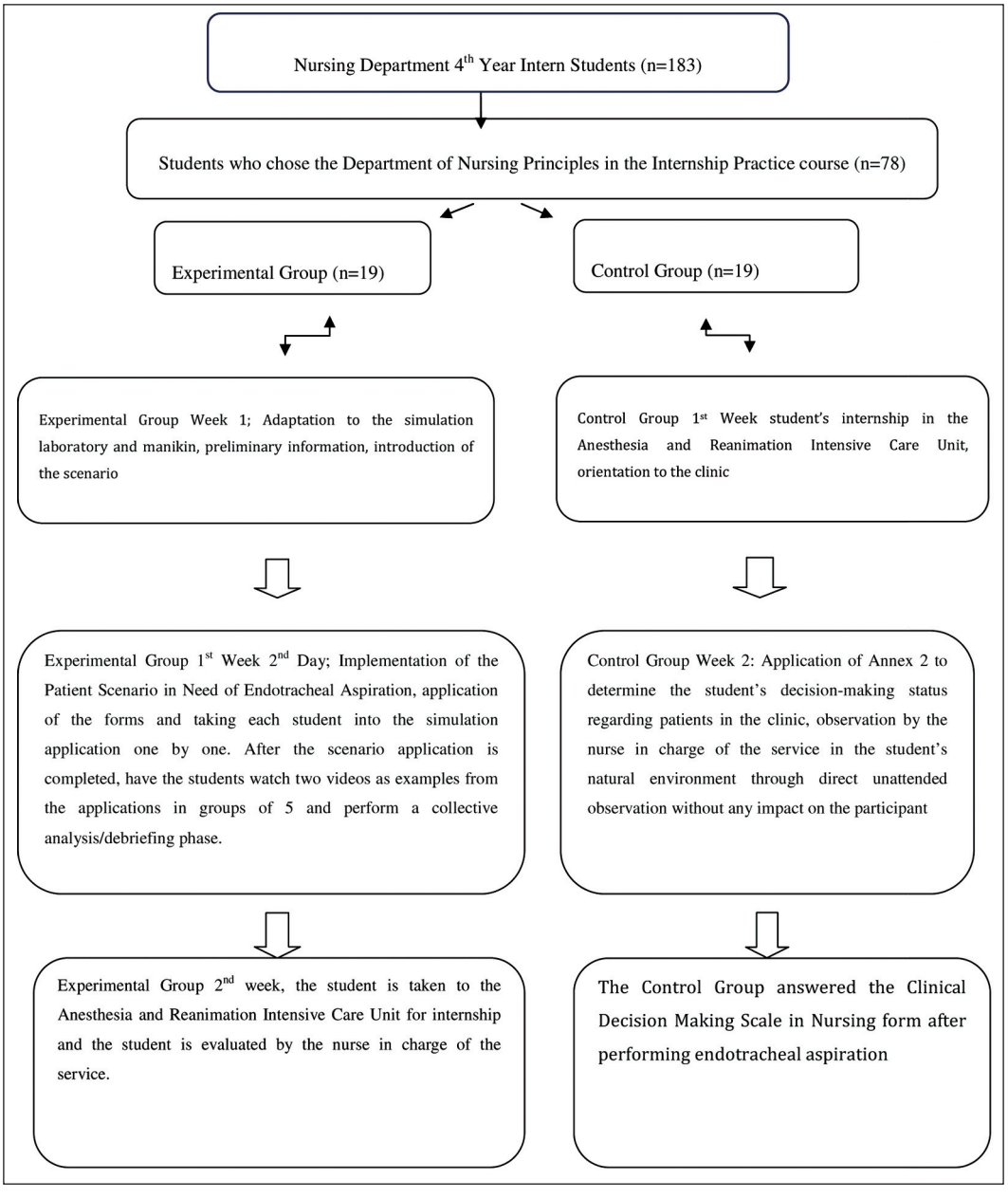

FIGURE 1: Research flow chart.

written research permission was received from the Faculty of Health Sciences. This study was conducted in accordance with the principles of the Declaration of Helsinki. Written and verbal consent was obtained from the students.

RESULTS

In this research, nursing students in the experimental group 63.2% had an academic grade point average between 2.50-3.00, and 42.2% had knowledge of HFS (Table 1).

The CDMNS mean value of nursing students in the experimental group was 154.68±13.54 in the pre-test and 154.63±8.28 in the post-test, where the difference between their mean values was not statistically significant ($p>0.05$). When comparing the CDMNS averages of the experimental and control groups, no significant difference was detected (Table 2).

TABLE 1: Distribution of the personal characteristics of nursing students in experimental and control groups.

		Experimental group (n=19)		Control group (n=19)		
Testing and significance		**Frequency**	**%**	**Frequency**	**%**	**Testing and significance**
Age	21-22 years	12	63.1	11	57.9	χ^{2*}=0.110
	23 years and above	7	36.9	8	42.1	p=0.740
Gender	Male	2	10.5	4	21.1	χ^2=0.792
	Female	17	89.5	15	78.9	p=0.374
Academic grade point average	2.50-3.00	12	63.2	13	68.4	χ^2=0.117
	3.00-3.50	7	36.8	6	31.6	p=0.732
Knowledge of simulation	Yes	8	42.1	11	57.9	χ^2=0.947
	No	11	57.9	8	42.1	p=0.330

*Chi-square analysis.

The CSESSAOF mean value of nursing students in the experimental group was 72.00 in the HFS application and 93.89±4.09 in the clinical application, where the difference between their mean values was statistically significant (p<0.001). Similarly, their CSESSAOF mean value measured before endotracheal suctioning was 20.00 in the HFS application and 22.63±1.16 in the clinical application. Their CSESSAOF mean value measured during endotracheal suctioning was 40.94±4.35 in the HFS application and 48.36±2.38 in the clinical application. Their CSESSAOF mean value measured after endotracheal suctioning was 16.68±3.85 in the HFS application and 22.89±1.19 in the clinical application. In three cases, the difference between their mean values was statistically significant (p<0.001).

Nursing students in the experimental group had higher post-test CSESSAOF mean value than those in the control group, where there was a statistically significant difference between their CSESSAOF total post-test mean scores (p<0.001) (Table 3). In addition, nursing students in the experimental group had statistically significantly higher CSESSAOF mean values than those in the control group before, during and after endotracheal suctioning (Table 3).

The post-test CSESSAOF total score averages of the nursing students in the experimental group were higher than those of the nursing students in the control group. It was determined that there was a significant difference between the groups in terms of the CSESSAOF total post-test mean scores of the students in the experimental and control groups (p<0.001). It was observed that all three of the CSESSAOF total post test mean scores of the nursing students in the experimental group before, during and after aspiration were significantly higher than those of the nursing students in the control group (Table 3).

DISCUSSION

This experimental study consist of pre- and post-test design and randomized control group was performed to designated the effect of HFS applied to senior nursing students for developing endotracheal suctioning skills and diagnosing patients suctioning needs on clinical decision making and clinical practices.

In the literature, there is no study about the effect of HFS on nursing students' clinical decision-making and endotracheal aspiration application skills in clinical practice. Although no statistically significant difference was found between the mean scores of nursing students in the control and experimental groups (p>0.05), the CDMNS total mean score of those in the experimental group increased in clinical practice after the simulation training. In addition, the CDMNS total mean score of nursing students in the control group was higher than those in the experimental group when they started clinical practice, but their mean score decreased after the endotracheal suctioning. The CDMNS total mean score increased in nursing students in the experimental group compared to those in the control group after the application. In line with all results, scenario-based HFS applications in teaching invasive care skills such as endotracheal suctioning are considered to prepare nursing students

TABLE 2: Comparison of the pre- and post-test CDMNS mean scores of nursing students in experimental and control groups.

	Experimental group (n=19)				Control group (n=19)				Experimental and control groups		Experimental and control groups	
	Pre-test	Post-test			Pre-test	Post-test			Pre-test		Post-test	
CDMNS and subscales	X̄±SD	X̄±SD	Z[a]	p value	X̄±SD	X̄±SD	Z[a]	p value	Z[a]	p value	Z[a]	p value
Search for alternatives or options	40.63±3.49	40.26±4.24	0.404	0.686	41.47±5.05	39.05±4.63	1.691	0.091	-0.559	0.576	-1.219	0.223
Canvassing of objectives and values	37.52±4.16	38.00±3.24	0.690	0.490	39.15±4.01	37.63±3.72	1.548	0.122	-1.232	0.218	-0.312	0.755
Evaluation and re-evaluation of consequences	35.42±3.07	36.31±3.18	1.046	0.296	36.94±2.91	35.94±2.41	1.825	0.068	-1.294	0.201	-0.486	0.627
Search for information and adaptation of new information objectively	41.10±4.55	40.05±2.71	0.883	0.377	40.31±2.96	40.26±3.52	0.000	1.000	-0.704	0.481	-0.374	0.709
CDMNS total	154.68±13.54	154.63±8.28	0.142	0.887	157.89±11.98	152.89±10.91	1.682	0.092	-0.614	0.539	-0.833	0.405

[a]Analyzed by Mann Whitney U test. CDMNS: Clinical Decision Making in Nursing Scale; SD: Standard deviation.

TABLE 3: Comparison of the pre- and post-test CSESSAOF mean scores of nursing students in experimental group and post-test score averages of students in the experimental and control groups.

	Experimental groups				Experimental groups	Control groups		
	Pre-test (HFS application)	Post-test (Clinical application)			Post-test (clinical application)			
	X̄±SD	X̄±SD	Z[a]	p value	X̄±SD	X̄±SD	Z[a]	p value
Before suctioning	18.73±3.73	22.63±1.16	3.308	**<0.001**	22.63±1.16	17.10±3.85	4.315	**<0.001**
During suctioning	40.94±4.35	48.36±2.38	3.728	**<0.001**	48.36±2.38	39.26±7.07	4.183	**<0.001**
After suctioning	16.68±3.85	22.89±1.19	3.641	**<0.001**	22.89±1.19	16.78±3.04	5.130	**<0.001**
CSESSAOF total	76.36±6.47	93.89±4.09	3.826	**<0.001**	93.89±4.09	73.15±2.71	4.904	**<0.001**

[a]Wilcoxon test; HFS: High fidelity simulation; CSESSAOF: Closed System Endotracheal Suctioning Skill Assessment Observation Form; SD: Standard deviation.

for clinical practice and strengthen their clinical decision-making skills. During the implementation phase of the study, the COVID-19 pandemic in our country and across the world prevented reaching the planned sample size for the study. Therefore, statistically more significant results can be obtained by increasing the sample size.

Nursing students in the experimental group had higher pre-test mean score on the subscale of search for alternatives or options than those in the control group, but there was no statistically significant difference between the groups' pre-test mean scores on the subscale of canvassing of objectives and values ($p>0.05$). Despite of its insignificancy, this result suggests that search for alternatives or options causes a positive perception of clinical decision making.

In nursing, clinical decision-making is a complex process that includes critical thinking, use of evidence, problem solving, effective use of information and clinical judgment to determine the best clinical practice for patient by improving health and preventing possible harms.[31] Clinical decision-making process, which includes diagnosis and evaluation of abnormal signs and symptoms in a patient's health condition and use of appropriate interventions, is a must for professional nursing care. Therefore, clinical decision-making should be an important skill to be developed through nursing education.[31,32]

Similar to this study, several studies have investigated the effect of HFS on knowledge and clinical decision-making levels of nursing students, and found no statistically significant difference between their CDMNS total and subscales mean scores ($p>0.05$).[32,33] On the other hand, there are also studies suggesting that HFS training increases clinical decision-making skills of nursing students.[18,21] These different results can be explained by the different measurement tools and methods used in the studies and the presence of many other factors affecting clinical decision-making.

Clinical education has an important place in clinical practice skill acquisition among nursing students. An effective clinical education allows nursing students to gain important skills such as critical thinking, analysis-synthesis, communication, psychomotor skills and self-confidence. However, while clinical education provides nursing students with learning experiences on what to do, how and why to do certain interventions, it can also be an important source of stress and anxiety.[34] For this reason, a simulation training given to pre-clinical students can reduce their fear of making mistakes and increase their self-confidence, resulting in more successful implementations.[22,34,35] In this context, the present study aimed to improve endotracheal suctioning skills of nursing students by giving a HFS training to those in the experimental group and allowing them to perform clinical practices. While the rates of nursing students in the experimental group to correctly diagnose the patient's need for endotracheal suctioning before performing endotracheal suctioning were quite different from the evaluations of the facilitator nurse, the assessments of them and observer nurses approached each other in clinical practices. This result suggests that HFS training positively affects nursing students' skills of diagnosing patients' need for endotracheal suctioning. The existing study also found that the diagnoses of nursing students in the control group, who did not receive HFS training and started clinical practice directly, regarding the presence of signs and symptoms of the patient's need for endotracheal suctioning were quite different from the evaluations of the observer nurse. Nursing students in the control group defined some signs and symptoms that were not present in the patient according to the observer nurse's assessment. Based on this result, nursing students are not able to correctly assess patient needs and perform relevant interventions due to hesitations and fear of making mistakes in invasive and applying complex care skills before completing the adequate preparation stages in clinical settings. As a matter of fact, when the patient's need for endotracheal suctioning is not correctly diagnosed, excessive or incomplete aspiration may harm the patient.[23] There is no study in which nursing students are asked to assess patients' need for endotracheal suctioning, and this is important for the originality of the present study.

In the study, endotracheal suctioning practices performed by nursing students in the simulation

center and intensive care unit were scored and evaluated at each stage by the facilitator and observer nurses. As a result, the CSESSAOF mean score of nursing students in the experimental group increased statistically significantly in the post-test ($p<0.05$) contrasted to the pre-test. In addition, the CSESSAOF post-test mean scores of nursing students in the experimental and control groups were compared during clinical practice, and the CSESSAOF total mean score of nursing students in the experimental group was statistically significantly higher than that of those in the control group ($p<0.05$). Accordingly, HFS applications have an effective and important role in teaching invasive and complex care skills before clinical training. In fact, there are studies emphasizing the contribution of HFS to skill development of nursing students, supporting the results of the present study.[35]

Karkada et al. evaluated the nasogastric tube feeding skills of nursing students by comparing simulation and case scenarios, and found that the simulation scenario was more effective in making the students gain the competence than the case scenario.[35] Orhan compared the effects of HFS and low fidelity simulation trainings on aspiration skills in nursing students and determined that nursing students who received HFS training had higher skills.[26]

HFS enables students to integrate a wide range of competencies used in the clinical practice such as physical examination, and practical clinical decision making in a safe and controlled environment. We believe that using HFS encouraged students to think critically and find a solution for clients' problems in a risk-free learning experience. In addition, it strengthened the experience that imitates concepts of the real-life intervention. Thus, HFS allows students to exercise problem-solving approach, and experience changeable and critical circumstances safely.

LIMITATIONS OF THE RESEARCH

The small sample size can be said to be a limitation of this study.

CONCLUSION

This study was determined to be effective in improving clinical decision-making performance. In the post-test evaluation of the closed system endotracheal aspiration skill level of the students in the experimental group who received HFS training, it was determined that it increased compared to the pre-test and the difference between the two scores was statistically significant.

In line with our findings, it is recommended to disseminate scenario-based HFS training by including it in nursing curriculum programs during the education process of nursing students, and to create HFS training environments where students can practice repeatedly before clinical practice. It is also recommended to conduct studies in different populations and larger sample groups, and to plan studies that qualitatively examine the experiences of the experimental group after HFS and after clinical practice.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Burcu Kübra Süha;* ***Design:*** *Burcu Kübra Süha, Şerife Karagözoğlu;* ***Control/Supervision:*** *Burcu Kübra Süha, Şerife Karagözoğlu;* ***Data Collection and/or Processing:*** *Burcu Kübra Süha;* ***Analysis and/or Interpretation:*** *Burcu Kübra Süha;* ***Literature Review:*** *Burcu Kübra Süha, Şerife Karagözoğlu;* ***Writing the Article:*** *Burcu Kübra Süha;* ***Critical Review:*** *Şerife Karagözoğlu;* ***References and Fundings:*** *Burcu Kübra Süha;* ***Materials:*** *Burcu Kübra Süha.*

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