




Araştırma Makalesi/ Research Article

## Nursing Students' Views on the Virtual Escape Room Application

### Hemşirelik Öğrencilerinin Sanal Kaçış Odası Uygulamasına İlişkin Görüşleri

Gülsüme Satır<sup>1</sup>  Gizem Kaya<sup>2</sup>  Nezihe Kızılkaya Beji<sup>3</sup> 

<sup>1</sup>Department of Anesthesia, Vocational School, Biruni University, Istanbul, TÜRKİYE

<sup>2</sup>Department of Nursing, Faculty of Health Sciences, Fenerbahçe University, Istanbul, TÜRKİYE

<sup>3</sup>Department of Nursing, Faculty of Health Sciences, Biruni University, Istanbul, TÜRKİYE

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#### ABSTRACT

**Objective:** This research was conducted to determine the students' opinions about the virtual escape room application in postoperative patient care.

**Methods:** This study was conducted as a descriptive study with 3rd and 4th year nursing students who took the surgical diseases course at the Faculty of Health Sciences of a foundation university in Istanbul between February 2021 and May 2021. Data were collected with the Postoperative Nursing Care Form and Personal Information Form.

**Results:** The mean age of the study participants was 21.74±0.94. 51.1% of the students are women, and 61.8% are 3rd-grade students. They stated that 100% of the students liked the virtual escape game, 32.6% found it fun, and showed knowledge about the surgery lesson. Students did not choose the items I am undecided, disagree, and completely disagree on this 5-point Likert-type form.

**Conclusions:** The results obtained from this study showed that nursing students' views about the virtual escape room were positive. They also said they learned and had fun during the virtual escape room game.

**Keywords:** Learning, nursing, virtual escape room

#### ÖZ

**Amaç:** Bu araştırma, öğrencilerin ameliyat sonrası hasta bakımı alanında yapılan sanal kaçış odası uygulamasına ilişkin görüşlerini belirlemek amacıyla gerçekleştirildi.

**Yöntem:** Bu çalışma Şubat 2021-Mayıs 2021 tarihleri arasında İstanbul'da bulunan bir vakıf üniversitesinin Sağlık Bilimleri Fakültesi'nde cerrahi hastalıklar dersini almış 3. ve 4. sınıf hemşirelik öğrencileri ile tanımlayıcı bir çalışma olarak yapıldı. Veriler Kişisel Bilgi Formu ve Ameliyat Sonrası Hasta Bakımı Formu ile toplandı.

**Bulgular:** Çalışmaya katılan öğrencilerin yaş ortalaması 21.74±0.94'dür. Öğrencilerin %51.1'i kadın, %61.8'i 3. sınıf öğrencisidir. Öğrencilerin %100'ünün sanal kaçış oyununu beğendiği, %32.6'sının sanal kaçış oyununu eğlenceli bulup cerrahi dersi konusunda bilgi seviyesi gösterdiğini ifade etmişlerdir. Öğrenciler 5'li likert tipte olan bu formda kararsızım, katılmıyorum ve tamamen katılmıyorum maddelerini seçmemişlerdir.

**Sonuç:** Bu çalışmadan elde edilen sonuçlar hemşirelik öğrencilerinin sanal kaçış odasına ilişkin görüşlerinin olumlu olduğu bulunmuştur. Ayrıca öğrenciler sanal kaçış odası oyunu sırasında hem öğrendiklerini hem eğlendiklerini ifade etmişlerdir.

**Anahtar Kelimeler:** Hemşirelik, sanal kaçış odası, öğrenme

**ORCID IDs of the authors:** GS: 0000-0003-1314-8488; GK: 0000-0003-1871-3677; NKB: 0000-0002-6254-4412

**Sorumlu yazar/Corresponding author:** RN, MSc, Lecturer, Gülsüme Satır

Department of Anesthesia, Vocational School, Biruni University, Istanbul, TÜRKİYE

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**e-posta/e-mail:** gsatir@biruni.edu.tr

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## Introduction

Creating a positive environment to increase motivation and make the teaching-learning process more attractive is important. Gamification is important to create this positive emotional environment and increase motivation. Gamification uses game elements and design techniques to engage people and solve problems (Sánchez-Martín et al., 2020; Wynn, 2021). According to studies, gamification has been found to increase student participation and academic performance (López-Belmonte et al., 2020; Wynn, 2021). In addition, it was stated that with game-based learning, students could learn time management, teamwork, and critical thinking (Adams et al., 2018).

An example of gamification is the escape room (López-Belmonte et al., 2020). Escape rooms are a game in which players collaboratively discover clues, solve puzzles, and complete tasks in one or more rooms to progress and reach a specific goal (Barker et al., 2020; Guckian et al., 2020). Escape room game is accepted as a global, widespread, and popular entertainment appealing to all age groups (Taraldsen et al., 2022; Zhang et al., 2018).

The escape room teaches students teamwork and effective communication in an exciting way. It also develops skills such as critical thinking and working under pressure (Kutzin, 2019; Sánchez-Martín et al., 2020). In the studies, it has been determined that there is an increase in the knowledge level of the students with the escape room, and it is an alternative learning method to fulfill the given goals (Garwood, 2020; Wynn, 2021).

Nursing is a profession that requires knowledge and professional skills (Morrell and Eukel, 2021). The idea of escape rooms in nursing is designed to define the clinical decision-making pathway that students will need to provide safe patient care (Barker et al., 2020). Escape rooms are recognized as a helpful learning tool for nursing students. In the studies conducted, nursing students stated that they liked escape rooms applied for learning, were satisfied, had fun, were motivated, and that the puzzles required teamwork, cooperation, critical thinking, and concentration (Garwood, 2020; Gutiérrez-Puertas et al., 2020; Kutzin, 2019; Morrell and Eukel, 2021; Morrell et al., 2020; Rosenkrantz et al., 2019).

When planning online courses at universities, instructors should prioritize students' needs, and each class should be an interactive experience for students. While teaching online courses, instructors should receive feedback, support students'

autonomy by allowing them to make decisions, and choose exciting activities to encourage participation (Chertoff and Thompson, 2020; Neumann et al., 2020). Virtual escape rooms can transform any lesson into an exciting learning environment (Neumann et al., 2020). Virtual escape rooms can be remarkable activities for students to practice problem-solving and team-building skills (Chertoff and Thompson, 2020). Virtual escape rooms can be created free to students and easily accessed using personal electronic devices. Google Forms allows nursing students to practice clinical decision-making with a variety of question formats and the ability to include pictures and videos (Smith and Davis, 2021). With the virtual escape room, students can solve the application repeatedly without fear of error (López-Belmonte et al., 2020). Therefore, the virtual escape room is an innovative method and is thought to contribute to developing nursing students' clinical practice skills.

Postoperative nursing care is extremely important and is necessary for early detection and intervention of complications that may arise. It is also among the learning objectives of the surgical nursing course. This study was planned to be conducted with the idea that the virtual escape application would be useful in teaching the basic principles of postoperative patient care. This study was planned to determine nursing students' views on the contribution of the virtual escape room application to their clinical practice knowledge and skills in the Surgical Nursing course.

## Method

### Design and Participants

This descriptive study was conducted to determine nursing students' views on the virtual escape room application in the field of postoperative patient care. The study was conducted at the Faculty of Health Sciences of a foundation university in Istanbul between February 2021 and May 2021. The study population consisted of 142 students, and 89 students constituted the study sample with the known sampling method. Data were collected online (Google Forms) by 3rd, and 4th-year students who accepted the study, answered all questions, and took the Surgical Nursing course. The average time to complete the questionnaire forms was 25 minutes.

### Instrument

The data collection tools consist of two parts. The first part is the personal information form and the second is the virtual escape room game questions evaluating Postoperative Nursing Care Form.

**Personal Information Form:** The 13-question personal information form created by the researchers in line with the literature includes questions about the students' sociodemographic characteristics, their ideas about the escape game, and its effect on motivation and learning. The questions in the form were answered as "I completely agree," "I agree," "I am undecided," "I disagree," and "I completely disagree" (Gómez-Urquiza et al., 2019; Smith and Davis, 2021; Sánchez-Martín et al., 2020).

**Postoperative Nursing Care Form (Virtual Escape Room Game):** The form containing questions about nursing care practices in the postoperative period, created by the researchers in line with the literature, consists of 24 questions. While creating this form, expert opinions were obtained from 3 academic professionals who had experience working in surgical clinics and also worked as nursing faculty members in the institution. According to expert opinion, the necessary adjustments were made and the final version was given. There are questions about vital signs, bleeding risk, follow-up, mobilization, and postoperative treatment, which are important components of postoperative care (Koçhan and Akin, 2018; Olmaz and Karakurt, 2019; Ünver and Yılmaz, 2020; Yavuz, 2017).

#### **Data Collection**

After the approval of the Ethics Committee, the research data were sent to the university e-mail addresses of the students via Google Forms. If they wanted to participate in the study, they were first asked to approve the informed consent page, and then students were given access to the data collection tools. Before starting the virtual escape room game, students were verbally informed about how the platform works. Questions about the care of a patient diagnosed with gastric cancer in the postoperative period were transformed into a virtual scenario. This scenario (Table 1) was communicated to the students via Google Forms. Students correctly answered the nursing care questions to exit the rooms and entered the password. While applying the postoperative patient care form, the students were given clues in line with their questions and were enabled to complete the virtual escape room. After playing the game, a personal information form was

applied, and students' views about the escape room were obtained.

#### **Data Analysis**

The Statistical Package for Social Sciences (SPSS) 22.0 package program analyzed the data. For descriptive features, mean, standard deviation, minimum and maximum values, number and percentage calculations were used in categorical measurements.

#### **Ethical Considerations**

Ethics committee permission numbered 2021/47-35 was obtained from Biruni University Non-Interventional Clinical Research Ethics Committee for the research. The students were informed about the research and included in the study after obtaining the volunteers' consent. Research and publication ethics were complied with.

#### **Results**

The mean age of the students participating in the study was  $21.74 \pm 0.94$  years. 55.1% were female, and 61.8% were 3rd-grade students. It was found that 100% of the students liked the virtual escape game 27% of them found the virtual escape game entertaining and felt like a nurse working in a hospital, 22.5% had fun and showed their level of knowledge about the surgery course, 20.2% had fun and repeated the surgery course, 16.9% had fun and were more interested in the surgery course, 13.5% had fun and learned (Table 2).

Students' views on the virtual escape room are given in Table 3. In this 5-point Likert-type scale, students did not select the items "I am undecided," "I disagree," and "I completely disagree." The students answered the "completely agree" option to the items; "I think that such activities make education more fun" (100%), "I think that such activities make education more interesting" (97.8%), "I think that such activities increase my theoretical knowledge" (96.6%), "I would like to repeat such activities during my undergraduate education" (95.5%), "I think that such activities have a positive effect on my clinical skills" and "I would like such activities integrated into every applied course" (94.4%) and "I think that such activities have a positive effect on my motivation" and "I think this activity will help me with my exams" (92.1%).

**Table 1.** Virtual escape room patient scenario

<b>Patient Name Surname:</b> Ali T.	<b>Age:</b> 51
<b>Preliminary Diagnosis:</b> Stomach Cancer	
<b>Marital status:</b> Married	<b>Profession:</b> Teacher
<b>Blood Type/Blood Transfusion:</b> A Rh(+) / No	
<b>Chronic Diseases:</b> No	<b>Operations:</b> No
<b>Continuously Used Drugs:</b> None	
<b>Height-weight:</b> 175 cm – 82 kg	<b>BMI:</b> 26.8 kg/square meter
<b>Addictions:</b> None	<b>Allergy:</b> None
<b>Operation underwent:</b> Subtotal Gastrectomy	<b>Operation Date:</b> 05.12.2021
His Complaints: He has been admitted to the hospital with complaints of abdominal pain, loss of appetite, weakness, weight loss, nausea, and vomiting for four months.	
Mr. Ali, who was taken to the service after the operation, is conscious and oriented. At the same time, there are two drains on the right and left, a Foley catheter and a Nasogastric Tube (NGT).	
<b>Medications that were ordered to the patient on the 0th postoperative day</b>	
Isoyte S 1000 cc 2*1 Isotonic 1000 cc 1*1 Clexane 0.4 ml 2x1 10:00 22:00 Metpamide ampoule 2x1 10:00 22:00 Assist ampoule IV 3 ml 3x1 10:00 18:00 24:00 Arveless bulb 4x1 12:00 18:00 24:00 06:00 Panto vial IV 40 mg 1x 1 10:00 Combivent nebul 4x 1 12:00 18:00 24:00 06:00 Pulmicort nebul 4x 1 12:00 18:00 24:00 06:00	
<b>ROOM 1 - VITAL SIGNS</b>	
How often do you follow Mr. Ali's vital signs in the first hour?	
(1) every 5 minutes (2) every 15 minutes (3) every 30 minutes (4) every 40 minutes	
<b>ROOM 2 - TREATMENT</b>	
Mr. Ali has a lot of pain. VAS: defines it as 10. You need to apply the ordered analgesic. Choose and apply ☺	
(1) Arveless bulb (2) Panto vial (3) Metpamide bulb (4) Contravel bulb	
<b>ROOM 3 - TRACKING WHAT HE INTAKES AND WHAT HE DRAINS</b>	
When Mr. Ali returned from surgery, he had two drains, right and left, a Foley catheter, and NGT. What should you pay attention to during drain control?	
(1) The amount of content (2) Color (3) Odor (4) All	
<b>ROOM 4 - POST-OPERATIVE PATIENT TRAINING</b>	
Mr. Ali is awake and wants to listen to your training. Your first training is oral care. Tell Mr. Ali about oral care with baking soda.	
(1) Gargle with 1 teaspoon of baking soda in 1 glass of water. (2) Gargle with 1 tablespoon of baking soda in 1 glass of water. (3) Gargle with 1 full tablespoon of baking soda in 1 glass of water. (4) Gargle with 1 spoon of baking soda in 2 glasses of water.	
<b>ROOM 5 - MOBILITY</b>	
When mobilizing Mr. Ali, you need to monitor the signs of orthostatic hypotension. Know the signs of orthostatic hypotension.	
(1) Fatigue (2) Dizziness (3) A decrease of 20 mmHg in systolic blood pressure and 10 mmHg in diastolic blood pressure (4) All	
<b>ROOM 6 - BLOOD VALUES OF THE PATIENT</b>	
Mr. Ali has mobilized. When you checked his right drain, it was 150 cc. You recorded it and informed the physician. The physician ordered you to do a haemogram check. Which color tube should you take the haemogram in?	
(1) Yellow (2) Blue (3) Purple (4) Green	
<b>ROOM 7 - BLOOD TRANSFUSION</b>	
You took blood to find out Mr. Ali's hematocrit. His hematocrit is 29%. The physician ordered 1 unit of Erythrocyte Suspension. Mr. Ali's blood type is A Rh+. You need a Croos match. Which color tube should you use?	
(1) Green (2) Blue (3) Purple (4) Black	

IV: Intravenous; VAS: Visual Analogue Scale; RI: Diet 1

**Table 1.** (Continue) Virtual escape room patient scenario

<b>ROOM 8 - PARENTERAL AND ENTERAL NUTRITION</b>	
On the 2nd day of Mr. Ali's operation, the physician asked you to remove the NGT, and you did. The physician said you could give R1 to the patient. Mr. Ali asked you if he could eat custard. What would your answer be?	
(1) No, you cannot. Custard belongs to the R2 group.	
(2) No, you cannot. You can eat rice pudding.	
(3) Yes, you can. You can also eat mash.	
(4) Yes, you can. You can also have soup.	

*IV: Intravenous; VAS: Visual Analogue Scale; R1: Diet 1*

**Table 2.** Descriptive characteristics of the students (N: 89)

Age	Avg±SD	Min-Max
	21.74±0.94	20-23
	Number (n)	Percentage (%)
<b>Age Group</b>		
20-21 years old	36	40.4
22-23 years old	53	59.6
<b>Gender</b>		
Female	49	55.1
Male	40	44.9
<b>Grade</b>		
3rd. Grade	50	56.2
4th. Grade	39	43.8
<b>The status of liking the Virtual Escape Room</b>		
Yes	89	100
No	0	0
<b>How did the virtual escape room make you feel</b>		
I had fun and learned.	12	13.5
I had fun and revised the surgery lesson.	18	20.2
It was fun, and I saw my level of knowledge about the surgery lesson.	20	22.5
I felt like a nurse working in a hospital and had fun.	24	27.0
I had fun, and I was more interested in the surgery lesson.	15	16.9

*Avg: Average; SD: Standard Deviation; Min: Minimum; Max: Maximum*

**Table 3.** Students' views on the virtual escape room (N: 89)

Students' Views	Completely Agree		Agree	
	n	%	n	%
1. I think that such activities make education more interesting.	87	97.8	2	2.2
2. I think that such activities make education more fun.	89	100	0	0
3. I would like to repeat such activities during my undergraduate education.	85	95.5	4	4.5
4. I think that such activities increase my theoretical knowledge.	86	96.6	3	3.4
5. I think that such activities have a positive effect on my clinical skills.	84	94.4	5	5.6
6. I think that such activities have a positive effect on my motivation.	82	92.1	7	7.9
7. I would like such activities integrated into every applied course.	84	94.4	5	5.6
8. I think this activity will help me with my exams.	82	92.1	7	7.9

*Only the options selected by the students are given in the table. The students did not select other options.*

### Discussion

The gamification method, one of the new education methods, causes students to motivate, change their desired behavior, teach cooperation, and develop problem-solving skills (Cunha et al., 2023; Day-Black et al., 2015). Health professionals

in the hospital should both work in cooperation and can solve problems. For this reason, nursing students should learn cooperation and problem-solving skills at university. The virtual escape room is an innovative training method (Cunha et al., 2023). Virtual escape rooms allow students to



practice knowledge repetition, problem-solving, and clinical decision-making skills to escape from a virtual room (Cesari et al., 2021).

Our study determined that 100% of the students liked the virtual escape room game about postoperative patient care. Similar to our findings, other studies reported that nursing students liked the virtual escape room application (Anguas-Gracia et al., 2021; Cunha et al., 2023; Rodríguez-Ferrer et al., 2022; Smith and Davis, 2021). The fact that nursing students like the virtual escape room suggests that the innovative application is successful and can be applied to other theoretical courses.

Our study determined that the nursing students found the virtual escape game the most fun and felt like a nurse working in a hospital. Other statements about the virtual escape room were determined as 'It was fun and showed the level of knowledge about the surgery course,' 'It was fun and repeated the surgery course,' 'It was fun and attracted more interest in the surgery course,' 'It was fun and learned.' All of the students found the virtual escape room fun. In some studies in the literature, similar to our findings, students found the virtual escape room game fun (Badr, 2022; Cunha et al., 2023; Cook and Camp-Spivey, 2022; Pozo-Sánchez et al., 2022; Rodríguez-Ferrer et al., 2022; Vergne et al., 2020). All students marked, "I think that such activities make education more fun." It can be said that applying for a theoretical course with a virtual escape room for the first time entertained the students.

When the students' opinions regarding the virtual escape room were examined, most marked the item "I think that such activities make education more interesting," as they completely agreed and agreed. Like our findings, students stated that they found the virtual escape room applied to nursing students for the Pharmacology course interesting (Smith and Davis, 2021). Since the new generation of individuals is accustomed to technology and digital platforms, it is thought that they see a virtual escape room game as interesting.

Most participants marked the item "I think that such activities increase my theoretical knowledge" as completely agree. Like our findings, Hursman et al. (2022) reported that students increased their theoretical knowledge in a study involving dietetics, health services, nursing, pharmacy, and radiological sciences students (Hursman et al. 2022). In another study with nursing students, students reported that the virtual escape room application increased their knowledge (Rodríguez-Ferrer et al., 2022). The

virtual escape room is a student-oriented and active teaching strategy. Virtual escape rooms can be implemented in physical and online classes (Makri et al., 2021). It can be said that while students are in the listening position while the theoretical lessons are taught in nursing education, the student's theoretical knowledge increases due to the active participation of the students in the virtual escape room game.

The literature has reported that virtual escape room application is effective in clinical decision-making in nursing students (Díaz and Clapper, 2021; Smith and Davis, 2021). In our study, most students marked, "I think that such activities have a positive effect on my clinical skills". Another study found that games help to learn and prepare for the clinic (Cunha et al., 2023; Rodríguez-Ferrer et al., 2022). Similar to our findings, studies conducted with nursing students reported that the application combines theoretical and practical knowledge (Anguas-Gracia et al., 2021; Cook and Camp-Spivey, 2022). It can be thought that the students felt like they were in the clinic because the virtual escape room game of postoperative care of a gastric cancer patient after surgery, which we applied to the students, gave them the option of deciding what to do as a nurse, which medication and exercises to apply to the patient after surgery, and how to apply them.

Virtual escape rooms in nursing education and training allow students to solve physical and mental puzzles, acquire basic professional competencies, develop teamwork skills, and use multiple intelligences to solve problems (Anguas-Gracia et al., 2021). In our study, most participants marked "I would like such activities integrated into every applied course" and "I would like to repeat such activities during my undergraduate education" as completely agree. Similar to our finding, a study conducted with nursing students stated they wanted to see this practice in every course (Anguas-Gracia et al., 2021). It can be said that integrating the virtual escape room into every lesson will increase the satisfaction of the students so that the nursing education consists of theoretical and practical courses and the students do not feel uneasy when they come to the clinic for the first time.

Motivation is defined as "an individual's desire to act" and "the reasons why individuals behave in a certain way in a particular situation" (Irvine, 2018). With the gamification method, it is stated that students' motivation increases, and they feel less pressure (Anguas-Gracia et al., 2021; Dimeo et al.,

2022; Rosillo and Montes, 2021). In our study, most nursing students marked, "I think that such activities have a positive effect on my motivation", as completely agree. Similar to our study, in an escape room study conducted for community health nursing, students stated that their motivation increased (Anguas-Gracia et al., 2021). Another study conducted with nursing students found that the virtual escape room increased students' motivation (Cunha et al., 2023). Learning motivation plays an important role in learning behaviors and activities (Chen et al., 2017). It can be said that educators in higher education institutions should develop different educational strategies to increase students' motivation.

In our study, most nursing students marked the item "I think this activity will help me with my exams" as completely agree. Similar to our finding, in a study conducted with nursing students, students thought the virtual escape room application would help with exams (Anguas-Gracia et al., 2021). In the study conducted for the pharmacology course, it was stated that the virtual escape room applied before the exam contributed to the students reviewing their knowledge for the exam (Smith and Davis, 2021). It can be stated that students updated their knowledge about the course and easily prepared for the exam due to the use of visual elements while designing virtual escape rooms and the support of educators for questions that were unknown or incorrect to exit the escape room.

#### Limitations of the study

The study was limited only to students studying at a foundation university. It covers nursing students and cannot be generalized. This constitutes the limitation of the research.

#### Conclusion and Recommendations

In our study, using this innovative method in nursing education, students stated that they liked the virtual escape room application and were motivated. In addition, students stated that they learned while having fun and that it prepared them for exams. Virtual escape room application can help nursing students to make clinical decisions because it provides repetition of theoretical knowledge and combines theoretical and practical knowledge. For this reason, it is recommended that the virtual escape room application should be integrated into all courses as it will allow students to feel like they are in the clinic.

**Ethics Committee Approval:** Ethics committee permission numbered 2021/47-35 was obtained from Biruni University Non-Interventional Clinical Research Ethics Committee for the research. The students were informed about the research and included in the study after obtaining the volunteers' consent. Research and publication ethics were complied with.

**Peer-review:** External referee evaluation.

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**Conflict of interest:** The authors declare that they have no conflict of interest.

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#### What did the study add to the literature?

- Nursing students can increase their knowledge level with the virtual escape room application.
- The virtual escape room application will allow students to have a virtual experience before going to the clinic.
- Virtual escape room application can help nursing students to make clinical decisions because it provides repetition of theoretical knowledge and combines theoretical and practical knowledge.

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