

The Impact of Using the Wound Care Escape Room as a Teaching Game on the Opinions and Motivation of Nursing Students

Abstract

Background: Using games as a teaching strategy can promote students' engagement, increasing their learning motivation and interest.





Aim: This study was conducted to examine the nursing students' opinions and motivations regarding the wound care escape room (WCER) teaching game.

Methods: The sample of the descriptive research comprised 105 students. Before initiating the game, the students were divided into 21 groups, each consisting of five students. The students were required to answer the questions and find the correct options as soon as possible to enter and escape from the WCER. The students were free to try all options. After the WCER game, the students were asked in another classroom to fill out a 5-point Likert-type questionnaire consisting of six items. Descriptive statistical methods (number, percentage, and mean, standard deviation, minimum, median, and maximum) were used when evaluating the data.

Results: The mean age of the students was 20.7128 ± 1.72 years, and most of them were female (69.5%). Concerning the opinions and motivations of the students regarding the game, the answer with the highest score (4.7333 ± 0.57624) was "I had fun playing the game. The following two answers with the highest mean scores were "Playing the game helped me learn the subject" and "There should be more games of this type in nursing education," with 4.6381 ± 0.60644 and 4.6000 ± 0.68781 .

Conclusion: The WCER game can be an enjoyable activity for students in learning a subject, enhancing their motivation before the final exam.

Keywords: Motivation, nursing students, university, wound care escape room

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Introduction

In a technology-oriented world where information is only one click away, it is vital for nursing educators to determine which teaching method should be used to involve students in the learning process better.¹ In the current technology era, universities are expected to employ various teaching methods to address students' learning needs and expectations.² The teaching techniques used in education aim to encourage the active use of knowledge and enhance students' high-level critical thinking skills and motivations.³

Various methods have been proposed to ensure students' active participation and motivation, such as problem-based learning,⁴ jigsaw classrooms,⁵ game-based virtual reality applications,³ and escape room.⁶⁻⁹ Of these methods, the escape room teaching game is reported to be a highly dynamic option for assessing theoretical and practical knowledge. It is also emphasized that this game might increase students' motivation by enhancing teamwork and the ability to work under pressure.⁸

Active learning methods are increasingly used in health sciences education. As one of these methods, the escape room teaching game is reportedly successfully used in many disciplines, including medicine⁹⁻¹¹ and nursing.^{8,12} According to researchers, such activities lead to positive outcomes regarding satisfaction, motivation, and learning.^{13,14}

The escape room is a live-action game in which teams try to get out of a locked room or solve a puzzle using clues.¹⁵ Escape rooms are inspired by video games.¹⁶ Nursing is a field that merges art and science. To offer care of higher quality, the nursing profession

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requires students to become innovative, active, and capable of critical thinking. Game-based learning is a creative platform that enables nursing educators to use technology and games appropriately to enhance students' motivation.¹ Koivisto et al¹⁷ have reported that games might be effective in improving nursing students' clinical reasoning in postoperative care. Strickland and Kaylor¹⁸ have asserted that game-based learning might improve teamwork, critical thinking, time management, and creativity. Moreover, Rutledge et al¹⁹ have pointed out that turning activities into games can motivate students to learn and increase their knowledge retention. In addition, Gómez-Urquiza et al⁸ have described that the escape room game has enhanced nursing students' motivation and should be incorporated into the nursing curriculum as a teaching method.

The Chinese proverb "Tell me and I forget, teach me and I may remember, involve me and I learn" implies the importance of a well-designed game in learning. Therefore, given the benefits of game-based learning, we assumed it might be beneficial to design a game to introduce a different perspective on active learning methods in nursing education in Türkiye and make it available in adult nursing education in universities. In this study, we designed the "wound care escape room (WCER)" teaching game to increase students' motivation and satisfaction in making quick assessments and correct decisions through teamwork in a dynamic educational setting.

Research Questions

- What is the impact of WCER as a teaching game on students' opinions?
- What is the impact of WCER as a teaching game on students' motivation?

Methods

Study Design

This study was designed as a descriptive study. The study data were collected in May 2019.

Population and Sample

The research was conducted with second-grade nursing students studying in a nursing faculty during the 2018–2019 academic years. The subject of wound care was taught practically and theoretically within the scope of the surgical nursing course to all students taking the course. The study was planned to be conducted outside the course content and hours. The students were informed that this research was an extracurricular activity, participation was voluntary, and it did not affect their course grades. Then their consent was received. The study population consisted of 109 nursing students who were in the 2nd year of nursing education and took the surgical nursing course. Four students were not included in the study due to non-attendance in the course. The students who took the course and volunteered to participate ($n=105$) were included in the study. The students who participated in the research represented 95.4% of the research population.

Data Collection Tools

After the game was finished, an academic, who had no prior knowledge about the game and was not involved in the education of the students, applied questionnaires individually to each student in a different classroom. The first section of the questionnaire consists of questions concerning sociodemographic data (e.g., age, gender). The

second part of the questionnaire contains six questions prepared by the researcher in line with the literature to evaluate the opinions and motivations of the students regarding the WCER game.^{8,20} These six questions were scored using a 5-point Likert type where the answers ranged from "strongly disagree" (1) to "strongly agree" (5).

Rules and Design of WCER Game for Nursing Students

The wound care course subject, which covers a curriculum of eight-course hours (4 h theoretical and 4 h laboratory applications), is taught to nursing students in the second semester of the 2nd year of their undergraduate education. As part of the theoretical part of the wound care course, the students are informed about the definition, etiology, and healing process of the wound, as well as the nursing applications, complications likely to develop, and current approaches in wound care. Accordingly, in the 1st week of the 14-week course program and on the determined date and hour, the wound care subject was taught to all students taking the surgical nursing course, and its laboratory application was carried out.

The WCER game was applied outside the surgical nursing course, 2 weeks before the final exam, in a laboratory. Before the actual game, two pilot trials were made with two different student groups who had been taught wound care. The process was evaluated at different stages and times. No change was introduced to the game's stages based on the pilot trials. The mean escape time of the pilot student groups were 2 min and 88 s, respectively. Considering the time required to arrange the room and for the next group to get ready for the game, the time interval between the groups was planned as 10 min.

The researchers reshaped the wound care student information guide upon the preliminary application. Information on the rules and content of the WCER game were included in this guide for the students. The students volunteering to participate in the study were divided into 21 groups comprising five individuals. After the game was theoretically planned and all the necessary laboratory materials were placed inside the room, the students were told to come to the front of the glass partitioned section of the laboratory at different hours determined individually for each group and notified in advance. The chronometers on the entry and exit doors of the room were started following the "go" instruction and stopped when the students opened the exit door.

To prevent information sharing between the groups during the game, the students were told that the group that finished the game in the shortest time would receive the highest score. The game's goal was to pass to the next stage using the clue questions. The questions about wound care were prepared as multiple-choice, and the students were free to try all the options. However, the time elapsed between their entrance to the laboratory room and exit was recorded. In addition, to exit the WCER, the questions were required to be answered with the right options as soon as possible. The student groups were informed that they would be scored according to the time elapsed during their performance. The groups were ranked according to the time they spent completing the task. The group that escaped the room in the shortest time was given 100 points, whereas the group with the longest escape duration was given zero points. Moreover, the other groups were scored five points less than the previous group in the rank. The same score was given to all students in a group. Similarly, the groups completing the game within the same duration were also given the same score. Three faculty members were present during

the game to assess the students' performance. The faculty members knew all clues related to the game but did not provide the students with any theoretical or practical assistance.

Designed Steps of WCER Application

- The door of the laboratory room was locked, and there was a question written on the laboratory door: What are the characteristics of surgical wounds according to the color classification? There were three keys in red, yellow, and black colors under this question. Accordingly, the students had to choose the correct one among the keys representing the answers to enter the escape room.
- The students were required to assess the surgical incision wound on a dummy in the laboratory room. There were three locked boxes on which the three wound stages (inflammation, proliferation, and maturation) were written. The students were required to choose the box representing the correct answer (inflammation) to pass to the next stage.
- The correct locked box contained a question: Which solution do you use to clean a wound? The students were required to choose the correct bottle (normal saline) from three solution bottles located on the bedside (normal saline, alcohol, and 10% povidone-iodine) to pass to the next step. They were also required to take care and find the following clue under the bottle.
- The patient's oxygen saturation rate is 89, and they need to do exercise. In the next step, the students were expected to support the wound region with a small pad/cushion and have the patient perform deep breathing and coughing exercises to bring the oxygen saturation rate to the value specified for the dummy.
- In the final stage, the students were required to read the clue question under the pad/cushion: What complication may develop if you do not support the patient's wound region? In addition, they were required to choose the correct key (evisceration) from three keys hanging on the exit door with the answers written on them (evisceration, keloid, or fistula) to exit the locked WCER.

Ethical Considerations

Before conducting the study, ethical approval was obtained from the Nevşehir Hacı Bektaş Veli University Ethics Committee (Approval Number: 10951/06, Date:26.04.2019). Participation in the study was voluntary, and second-grade nursing students who agreed to participate were included in the study. The WCER performances of the students who volunteered and gave informed consent were recorded on video. This study adhered to the Declaration of Helsinki.

Table 1. Students' demographic characteristics (n=105)

Descriptive characteristics	n	%
Age (year)		
X ± SS	20.7128±1.72	
Gender		
Female	73	69.5
Male	32	30.5
Living place		
Province	31	29.5
Out of province	74	70.5
Income status		
Income less than expenditure	31	29.5
Income equal to expenditure	61	58.1
Income higher than expenditure	13	12.4
Academic achievement perception		
Very successful	4	3.8
Successful	45	42.8
Moderate success	51	48.6
Unsuccessful	5	4.8

Data Analysis

The data obtained from the study were analyzed using the Statistical Package for the Social Sciences for Windows 22.0 program. Categorical measurements were calculated as numbers and percentages, while numerical measurements were calculated as mean, standard deviation, and frequency. The significance level was accepted at all statistical analyses as $P < 0.05$.

Results

Most of the students were female (69.5%), and their mean age was 20.7128 ± 1.72 years (Table 1). The mean escape duration was 2 min and 16 s, and the shortest duration was 1 min and 39 s. When the answers given by the students to the questions on their opinions and

Table 2. Mean scores for the questionnaire items (n=105)

Item	Min-max	Mean score (X±SS)
Playing the game helped me learn the subject	1-5	4.6381±0.60644
I enjoyed playing the game	1-5	4.7333±0.57624
I think the game will help me in the exam	1-5	4.5143±0.72210
I remembered and applied knowledge regarding the subject during the game	1-5	4.5048±0.73542
There should be more games of this type in nursing education	1-5	4.6000±0.68781
The game has motivated me to study more, although the exam is still 2 weeks away	1-5	4.5524±0.67910

1: Strongly disagree, 2: Disagree, 3: Neither agree nor disagree, 4: Agree, 5: Strongly agree.

motivation regarding the game, it was revealed that the mean score received from the answers given to all questions was ≥ 4.5 points (Table 2), the answer with the highest score (4.7333 ± 0.57624) was "I had fun playing the game," which was followed by two answers with mean scores of 4.6381 ± 0.60644 and 4.6000 ± 0.68781 , respectively: "Playing the game helped me learn the subject," and "There should be more games of this type in nursing education."

Discussion

The results indicated that the students considered the WCER game a fun activity, helping them learn the subject and increasing their motivation before the final exam. They also stated that there should be more activities like this in nursing education.

Using games as a teaching strategy can promote students' engagement, increasing their learning motivation and interest.²¹ The students ($n=105$) indicated that they regarded the escape room game as a fun and helpful activity for learning wound care (Table 2). Similar to the results of the present study, Boctor's (2013) Jeopardy-like game Nursopardy was described by the nursing students as a fun and helpful activity for learning.²⁰ In their research incorporating a nursing escape room activity, Gómez-Urquiza et al⁸ (2019) found that the students described this pioneering game as fun and useful. The students also noted that in addition to encouraging teamwork, it might help them remember and implement knowledge. In the said study, the authors also recommended that there should be more similar initiatives in nursing education.⁸ The present study determined that Turkish students had opinions similar to their Spanish counterparts. They pointed out that playing the game helped them learn wound care and motivated them to study for the exam. They also remarked that similar games should be included in the nursing curriculum.

The studies suggest that active learning approaches may improve student attitudes and learning.^{3,22,23} Most studies in the relevant literature have teams consisting of three to eight people in escape room applications, and these teams are given a limited time (1 h in general) to solve a puzzle or escape from the room.^{15,24,25} Unlike other studies in the literature, the present study had no time limit. Although a different method was observed in this study, other recent studies also revealed that escape room game was fun for students and helped them remember the theoretical knowledge.^{8,20,26} Besides, some study results also reveal that the escape room game creates an active learning atmosphere that may render the learning process interesting and fun and promotes using essential skills and abilities such as teamwork, critical thinking, and problem-solving.^{12,18} In light of these, the escape room game can be said to be a positive and fun learning experience for students. In the study, the student nurses indicated that escape room activities should be given more room in education. Previous studies have also supported the use of the game in undergraduate health sciences education due to its positive and versatile effect. The escape room game has been used in many specialties, including child nursing,²⁷ cardiology nursing,²⁴ gynecology nursing,²⁸ and public health nursing.²⁶ Moreover, it has been reported to have a positive learning effectiveness. The results of this study conducted in the surgical nursing field also show that the WCER game can be integrated into the nursing curriculum as an innovative learning strategy that encourages and motivates students to learn.

Limitations

The present study has certain limitations. First, we could not fully determine the opinions and motivation of the students regarding the game due to relying on limited sample size. There might be different factors affecting student motivation. The second limitation is that since participation in the study was voluntary, the sample selection was intentional and not random. Third, although the group that completed the game in the shortest time received the highest score and the groups were prevented from seeing each other, the students who finished the game could have shared information using technology (e.g., through smartphones) with those who had not played it yet. Finally, the findings of this study were obtained through a quantitative method alone.

Conclusion

The nursing students described the WCER game as an enjoyable activity that was helpful for their learning and enhanced their motivation before the final exam. Nursing instructors may consider incorporating an escape room game in the curriculum of other surgical nursing topics. It is recommended that this game, which is believed to promote teamwork, be included in the nursing curriculum and that further quantitative and qualitative studies be conducted on the issue. A specific game that will incorporate more theoretical knowledge and practice regarding wound care may also be planned. When planning the game, taking the opinions of other educators would be helpful.

Ethics Committee Approval: Ethics committee approval was received for this study from the Ethics Committee of Nevşehir Hacı Bektaş Veli University (Approval Number: 10951/06, Date:26.04.2019).

Informed Consent: Written informed consent was obtained from nursing students who participated in this study.

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