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RESEARCH / ARAŞTIRMA

The Effects of Using "Postpartum Care Escape Game" on Nursing Students' Learning Process, Motivation, and Satisfaction: A Pilot Study

"Doğum Sonrası Bakımdan Kaçış Oyunu" Kullanımının Hemşirelik Öğrencilerinin Öğrenme Süreci, Motivasyon ve Memnuniyetlerine Etkisi: Pilot Bir Çalışma

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Abstract

Objective: Team-based learning and gamification, which positively affect students' learning, include an active learning strategy. The escape room is a game designed to solve puzzles and uncover clues to physically or virtually escape from a room as a team. This pilot study aims to investigate the effects of the Postpartum Care Escape game on the postpartum care learning process, satisfaction and motivation of senior nursing students.

Material and Methods: Senior students who received an Obstetrics and Gynecology Nursing course participated. The study was carried out from the stages of preparation, implementation, and feedback. Firstly, the skill laboratory was converted into a patient room. Then, students were taken to the room in seven groups. Each group, who followed the clues and completed the postpartum evaluation steps correctly, found the key and left the room. During the feedback, students watched and discussed the videos from the escape room.

Results: The mean duration to complete the game was 13 minutes 21 seconds. 85.3% of students stated it improved their problem-solving skills. 91.2% considered it was an opportunity to apply theoretical knowledge to patient care. 82.4% thought it expedited the decision-making process in patient care. 88.2% stated that it was an opportunity to gain experience in women's health care in a fun way. 61.8% indicated that the reward increased their motivation.

Conclusion: Escape game provided an interactive learning experience that increased the motivation of the students.

Keywords: Educational activities, nursing education, patient simulation, postpartum care.

Öz

Amaç: Öğrencilerin öğrenmesi üzerinde olumlu etkileri olan takım temelli öğrenme ve oyunlaştırma, aktif bir öğrenme stratejisi içerir. Kaçış odası, bir ekip olarak bir odadan fiziksel veya sanal olarak kaçmak için bulmacaları çözmek ve ipuçlarını ortaya çıkarmak üzere tasarlanmış bir oyundur. Bu pilot çalışma, Doğum Sonrası Bakımdan Kaçış oyununun son sınıf hemşirelik öğrencilerinin doğum sonrası bakımı öğrenme süreci, memnuniyeti ve motivasyonu üzerindeki etkilerini araştırmayı amaçlamaktadır.

Gereç ve Yöntem: Bu çalışmaya Kadın Hastalıkları ve Doğum Hemşireliği dersi alan son sınıf öğrencileri katılmıştır. Çalışma hazırlık, uygulama ve geri bildirim aşamalarından şeklinde gerçekleştirilmiştir. İlk olarak beceri laboratuvarı hasta odasına dönüştürülmüştür. Daha sonra öğrenciler yedi grup halinde odaya alınmıştır. İpuçlarını takip eden ve doğum sonrası değerlendirme basamaklarını doğru tamamlayan her grup anahtarı bularak odadan ayrılmıştır. Geri bildirim sırasında öğrenciler kaçış odasından videolarını izlemiş ve tartışmışlardır.

Bulgular: Oyunu tamamlama süresi ortalama 13 dakika 21 saniyedir. Öğrencilerin %85,3'ü problem çözme becerilerini geliştirdiğini belirtmiştir. Öğrencilerin %91,2'si teorik bilgileri hasta bakımına uygulamak için bir fırsat olduğunu düşünmektedir. Öğrencilerin %82,4'ü hasta bakımında karar verme sürecini hızlandırdığını düşünmektedir. Öğrencilerin %88,2'si kadın sağlığı alanında eğlenceli bir şekilde deneyim kazanma fırsatı olduğunu belirtmiştir. Öğrencilerin %61,8'i ödülün motivasyonlarını artırdığını belirtmiştir.

Sonuç: Kaçış oyunu, öğrencilerin motivasyonunu artıran interaktif bir öğrenme deneyimi sağlamıştır.

Anahtar Kelimeler: Eğitim aktiviteleri, doğum sonrası bakım, hasta simülasyonu, hemşirelik eğitimi.

1. Introduction

In today's world, where information is constantly renewed, nursing education should be designed in line with the era by integrating novel methods/technology into its curriculum (1,2). It is of considerable importance for nursing students to gain proficiency in systematic thinking, discipline-specific knowledge, evidence-based practices, and clinical decision-making (3).

The youth of today's generation grow up in the fast and fast-paced digital world, either at home or in game centers, both with computers and mobile phones (4). The vast majority of undergraduate nursing students are millennials. Nursing educators need to use teaching techniques that will attract students' attention, motivate them, and facilitate their active learning (5). The technology/game needs of students should be considered, and course contents should be integrated into the curriculum in a gamified way (4).

The game can be described as a pedagogical tool that provides students with interesting, interactive media and a learning opportunity beyond entertainment (3). The use of games in education is not a new practice and is widely used in health education (6). Games provide a comprehensive, virtual environment for students to practice and develop various competencies (3). Games are a technique that can attract students' attention and can be used instead of motivating passive learning methods (5). In the literature, it has been suggested that educational games should contain elements, such as problem-solving, feedback, winning ability, rules, goals, competition, and fun (7).

The implementation of games in nursing education is still under development (8). The need for game design in nursing education has come to the fore, specifically in the field of developing clinical practice skills for students (9). Thanks to the use of games in nursing education, complex subjects can be taught without the use of patients and expensive clinical equipment, and students can learn the consequences of erroneous interventions in the clinical environment without harming the patient. Besides, games can be adapted to the clinical situation away from anxiety and stress, thereby bolstering the connection between theoretical knowledge and practice and transferring it to practice more easily. Game-based education is a teaching method that takes place in a competitive environment in accordance with specified rules. With this method, students improve their decision-making, problem-solving and critical thinking skills in a realistic and safe learning environment (2,10).

Many studies have been conducted to investigate the effects of games on nursing education. For example, the play adapted from the television play "Jeopardy" and renamed "Nursopardy" was utilized to reconsider the underpinnings of nursing knowledge (5). After another activity, the "PICO Game," in which questions about clinical cases were asked using cards, students reported their satisfaction with the gamified education (11). Similarly, the "3D GameLab" and "Rezzly" online learning platforms are game-based e-learning tools that focus on evidence-based practices, where groups of students gain points by solving questions and completing tasks. According to researchers, these activities result in favorable outcomes regarding satisfaction, motivation, and learning (12).

The concept of the "Escape game," which is based on reality in a virtual environment and originates from Japan, consists of escaping from a room in a limited time by searching for clues and passing tests. The game is played in groups and based on team rules. While knowledge transfer and analysis-synthesis skills are bolstered in the game, solving puzzles in a limited time enhances critical thinking, and motivation is increased with rewards at the end of the game. Moreover, as it must take place in a limited time frame, it allows nursing students to learn how to provide fast and priority-based care (13,14). This study aims to investigate the effects of the "Postpartum Care Escape Game" game on postpartum care learning processes, motivations and satisfaction in senior nursing students who take the theory of obstetrics and gynecology within the scope of the Nursing Care Management course and practice in the clinic.

In this study, we addressed three hypotheses;

Hypothesis 1. (H1): We assumed that using the game called "Postpartum Care Escape Game" for senior nursing students increases the postpartum care learning process.

Hypothesis 2. (H2): We assumed that using the game called "Postpartum Care Escape Game" increases the motivation of senior nursing students to learn postpartum care.

Hypothesis 3. (H3): We assumed that using the game called "Postpartum Care Escape Game" increases the satisfaction of senior nursing students from the postpartum care learning process.

2. Materials and Methods

2.1. Study design and sample selection

The data of this pilot study were collected between 15th November and 10th December 2021. The population of this study were senior students studying at the Faculty of Nursing in the 2021-2022 academic year. All senior students participating in the Women's Health and Diseases Nursing course were reached and all (n=34) students who volunteered to play the Escape game were included in the study. The data were collected by face-to-face method. Written informed consent was obtained from the students to use the images and videos in the escape game.

2.2. Conceptual framework

For the development of the Postpartum Escape Game, the NLN/Jeffries Framework was used Jeffries Simulation Theory was created within the scope of the “nursing education simulation framework” (NESF). This theory provides a conceptual framework for the design, implementation and evaluation of simulation. NESF is built on five main components: participant, facilitator, educational practices, simulation design characteristics and outcomes (15).

This framework was used as a guide in several ways. First, the characteristics of the simulation design and the components of the educational practice of the framework were implemented when the simulation scenario was modified. For example, we verified that the objectives and learner behaviors were appropriate, and that the scenario was inspired by the clinic and was prepared on a high-quality mannequin, specific to the symptoms in the case. Second, we incorporated the lecturer's component by including faculty members with clinical expertise related to the content of the scenario. Third, the concepts within the student component of the NESF were key to this study. The scenario used was appropriate for senior students. Finally, students' learning process, motivation and satisfaction were measured as an outcome in our study.

Within this simulation experience is a dynamic interaction between the facilitator and the participant. In our study, participants were senior students who received theoretical-practical training in Obstetrics and Gynecology Nursing within the scope of the Nursing Care Management course. The lecturer's component including faculty members with clinical expertise related to the content of the scenario acted as facilitators at different stages of the simulation experience. Educational practices were suitable for collaboration, time management, active learning and interaction. Simulation design characteristics are characterized by a realistic environment that is interactive, collaborative, and learner-centered. All materials that can be used to mock up postpartum care: female and baby mannequin, postpartum care supplies (e.g., gloves, foley catheter, urine bag, pad, stethoscope, sphygmomanometer and thermometer), a specially printed puzzle for the game, a locked box with the key, camera and loudspeaker were placed in the Rooms to play the soundtrack titled "I want to play a game" in the background, and the laboratory room was converted into a patient room. A written case sample that aims to assess postpartum and starts the game. Case: A 42-year-old woman with gestational diabetes, defined as overweight in line with BMI. The new mother gave birth to a baby girl weighing 4100 g by cesarean section 30 minutes ago. The clues related to the case were placed on the mannequin representing the mother, the baby, and various places in the room, apart from the case example. Along with the clues, the puzzle pieces were also hidden, and the students found a puzzle piece for each clue. For the students to unlock the door by following the clues, they needed to know and apply the symptoms of postpartum bleeding, risk factors, and nursing interventions (monitoring vital signs, checking the urinary catheter, evaluating fundus and lochia/pad tracking, fundus examination and supporting/continuing breastfeeding) (Table 1). The clues given in the game were arranged according to the postpartum evaluation steps, and when the final puzzle was completed, the key that would enable them to escape from the room was reached (Figure 1). The outcomes of the simulation largely focus on participants' outcomes including reaction (satisfaction, self-confidence), learning (changes in knowledge, skills, attitudes), and behavior (how learning transfers to the clinical environment). In this study, Escape game outcomes were determined by learning process, skills, motivations and satisfaction.

2.4. Procedures

The implementation process took place in three stages.

First Stage: It continued as "Trainer Session," "Pilot Study" and "Student Session." The pre-preparation sessions for the game began with the trainer sessions. Two sessions were held with the trainers before and after the pilot study implementation. In the sessions for trainers, subjects, such as implementation steps, learning objectives, rules, and steps of the procedure were discussed and evaluated. The implementation of the pilot study was instructive. The pilot study was first applied to a different student group (five master students) and the execution steps of Escape Game were analyzed. In the pilot study, the students' time to finish the game was 13 minutes. Following the pilot study, a training session was held again, and final decisions were made regarding the implementation and rules of the game.

In the sessions for the students, the students who volunteered to participate in this study were informed about the rules of the game and their questions were answered. Not allowing items, such as personal electronic devices (phones and laptops), during the game was one of the important rules for the student. In addition, the students were informed that video and audio recordings would be taken during the game and necessary consent was obtained. It was ensured that the groups completing the game did not encounter each other, by keeping the groups on different floors of the building and taking their phones away. These sessions took one hour.

Second Stage: This stage is the implementation stage of the Postpartum Escape Game.

The escape game was conducted in seven groups in total, each group involving five students, by taking precautions against the pandemic (e.g., use of mask, hand and surface disinfectant, ventilation of the area, determining the number of students in line with the size of the area). While the groups were being formed, they were structured in a way that would not make a difference between the groups, given the general success of the students. The researchers placed clues on various objects/places in the room where the game would be played, the groups were taken to the room where the escape game would be implemented, the camera recording system was started, and the room door was locked by the instructor. As soon as the door was locked, one of the researchers, as an observer, started the chronometer outside the room, recording the time passed until the students left the room. In addition, this process was recorded with a video camera. The students, who followed the clues and performed the proper nursing interventions, found the key to the room in the last step and left the room.

The researchers watched the students from the glass partitioned room throughout the game and recorded whether the clues were completely found, whether any steps were not followed in the escape diagram or the presence of missing nursing interventions. Moreover, video recordings were watched and assessed by the

Table 1. ***Hints, Tasks and Game Room Preparation***

Objects to which clues are attached	Place in the room	Task	Aim
The form in which the case is written	At the patient's bedside at the entrance to the room	Interpreting the nurse observation form	Providing care according to postpartum evaluation steps
Sphygmomanometer	On the bottom shelf of the cupboard	Measuring, interpreting, and recording vital signs (blood pressure, pulse measurement)	Monitoring the vital signs of the puerperant every 15 minutes in the first hour and every 30 minutes in the next hour
Thermometer	In the bottom drawer of the cupboard	Measuring, interpreting, and recording vital signs (Fever measurement)	Monitoring the postpartum body temperature of the puerperant
Stethoscope	On the top shelf of the cupboard	Measuring, interpreting, and recording vital signs (measuring respiratory rate and listening to breathing sounds)	Evaluating postpartum respiration of the puerperant
Sanitary Pad	In the perineum of the mannequin	Evaluating the amount, color, location, line, and texture of the lochia, performing fundus massage	Knowing postpartum bleeding risk factors, controlling bleeding
Urine bag	Hanging on the bedside	Controlling the urine output, monitoring the amount of fluid taken in and out	Knowing that a full bladder may cause atony, measuring the amount of urine, checking the clamp of the urinary catheter and the catheter line
Baby	In the crib	Initiation of breastfeeding	Initiating breastfeeding in the first half-hour after delivery, knowing that oxytocin secreted by breastfeeding will increase uterine contractions and protect the puerperant from postpartum hemorrhage.
Puzzle	Under the crib	Completing the puzzle and checking the postpartum assessment steps	Being able to guess the location of the key with the clue written in the puzzle if all the steps are applied correctly.
Floral wall decoration	On the clothes hooks in the room	Finding the little key hidden in the ornament	Being able to open the box with the big key that unlocks the escape room
Locked gift box	On the top shelf of the cupboard	Opening the box with the small key	Unlock and escape the room

Figure 1. Hidden Clues

researchers. The group that completed all interventions in the shortest time and first won the game. After the game, the students who won the game were awarded symbolic medals prepared by the researchers to congratulate their success in escaping the room. In addition, the students had the opportunity to take a group photo with a poster with the inscription "We Escaped" to symbolize the event.

The third stage was the feedback session: The game was evaluated together with the students; the students answered the questionnaires and gave suggestions about the game. In addition, in this session, the trainers contributed to the learning process of the students by informing the students about the missing steps and watching the video of the group that completed the fastest. This session took around 40 min.

2.5. Data Collection Tools

Research data were collected using "Descriptive Information Form" and "Escape Game Evaluation Form." Besides, the video recording of the process was taken, and the recordings were watched by the researchers.

Descriptive Information Form: It was generated by the researchers in accordance with the literature (16,17). The form consisted of five questions containing descriptive information, such as sex, age, family income, easy learning path, and preferred education system.

Escape Game Evaluation Form: It was prepared by researchers based on the literature on the subject (16,18-20). All of the researchers had a PhD degree in the use of Different Models in Nursing Education, and one of the researchers received comprehensive training in using gamification in education. The form was created to evaluate the effects of the game on the learning process, considering literature and the experiences of the researchers, and in this respect, it was sent to eleven academic nurses experienced in nursing education to obtain expert opinions. After taking the expert opinions, necessary adjustments were made in the form and the last version of the form with eighteen questions was generated. While six of these questions measured the learning process, three questions measured the motivation provided by the game, and eight questions measured the students' satisfaction with the process. As a result of the evaluation of the form, the percentage of students' participation was obtained for each item. The suitability of the evaluation form was assessed in a pilot study with five master students.

Video recordings: The video recordings of each playgroup were watched by at least three of the researchers and assessed regarding process steps.

2.6. Ethics Statement

Ethical approval was obtained from Dokuz Eylül University Non-Interventional Research Ethics Committee (Date: December 07, 2020, Decision No: 2020/29-33) to conduct this study. Institutional permission was obtained from the Faculty of Nursing of the university where this study would be conducted. This research was conducted voluntarily, and informed consent was obtained from the participants who participated in this study.

2.7. Statistical Analysis

The data obtained in this research were analyzed using the statistical software package IBM SPSS 22. Number and percentage were used in the data analysis.

3. Results

3.1. Descriptive Characteristics

In this study, the mean age of students was 22.30±3.30, and 94.1% of them were female. The easiest learning method preferences of the students were 79.4% kinesthetic (by practicing), 44.1% visual, and 14.7% auditory. The preferences of the students regarding the education and training system were 58.8% problem-based learning, 35.3% flipped classroom, 32.4% face-to-face and 14.7% distance (online) education (Table 2).

Table 2. ***Characteristics of Students (n= 34)***

	$\bar{x}$	SD
Age	22.30	3.30
	n	**%**
Sex		
Female	32	94.1
Male	2	5.9
The way they were raised by their mothers		
Democratic	18	52.9
Authoritarian	4	11.8
Perfectionist	4	11.8
Overprotective	6	17.6
Inconsistent	2	5.9
The way they were raised by their fathers		
Democratic	18	52.9
Authoritarian	10	29.4
Perfectionist	2	5.9
Overprotective	2	5.9
Inconsistent	2	5.9

Table 2 (continued). ***Characteristics of Students (n= 34)***

	Yes n (%)	No n (%)
Preferences for learning methods		
Visual learning	15 (44.1)	9 (55.9)
Auditory learning	5 (14.7)	29 (85.3)
Kinesthetic learning	27 (79.4)	7 (20.6)
Preferences regarding the education and training system		
Distance (Online) education	5 (14.7)	29 (85.3)
Face-to-face education	11 (32.4)	23 (67.6)
Flipped classroom	12 (35.3)	22 (64.7)
Problem-based learning	20 (58.8)	14 (41.2)

3.2. Completion Time of Postpartum Care Escape Game

The group that took the shortest time to complete the escape game completed it in nine minutes 38 seconds, whereas the group that completed the longest time completed it in 18 minutes and 45 seconds. The mean Postpartum Care Escape Game Completion Time of the Groups was 13 minutes 21 seconds. A group of students could not complete the game because they did not control the clamp of the urinary catheter, which is one of the steps of the postpartum escape game. During the feedback session, the missing point of the group was completed with the learning process by giving feedback.

3.3. The Effects of Postpartum Care Escape Game on Students' Learning Process, Motivation and Satisfaction

In this study, the findings showed that 85.3% of the students considered the escape game as evaluating the level of theoretical knowledge, improving problem-solving skills, providing critical thinking, and promoting group communication. Moreover, 91.2% of the students regarded the escape game as providing a transfer of theoretical knowledge to patient care and an opportunity to experience teamwork, while 82.4% regarded it as accelerating the decision-making process about patient care.

When the benefits of the game were considered regarding motivation, 61.8% stated that the reward in the game increased their motivation and 79.4% stated that it increased their interest in the lesson. Besides, the majority of the students (88.2%) underscored that the game provided an opportunity to experience women's health nursing skills in a fun way, 79.4% of them increased their interest in the lesson and 64.7% of them emphasized that it provided a competitive environment that promoted teamwork. When their satisfaction with the game was evaluated, 82.4% of the students stated that the playing time was adequate, 85.3% of them stated that the clues given in the game were understandable and all of the students stated that the information about the game was adequate (Table 3).

4. Discussion

The findings show that an escape room could provide a suitable environment for students to apply their knowledge of postpartum care in a practical setting. Many studies have suggested that nursing students have a fun time using gamification applications, retain information better, use critical thinking skills and improve their clinical skills (21). Game time in escape rooms is limited and gives urgency to players' actions. A systematic review has revealed that the escape game time interval ranges from 20 to 120 minutes. In our study, the mean duration of the game was 13 minutes. The first 1-2 hours after birth is a critical period; postpartum hemorrhages mostly occur in this period. The nurse should carefully evaluate the puerperium in the postpartum period and be able to make a critical decision regarding the complications that may develop and show a rapid reaction. Hence, in medical research, the time constraint is considered a game design dimension and an educational dimension because working collaboratively in a limited time is a life-saving skill for healthcare professionals. It has been shown that the learning objectives of escape games used as active learning methods are mostly a combination of theoretical knowledge and clinical skills (22). Likewise, in the present study, the findings showed that the learning goal was achieved by the majority of the students, with the statements that the game provides transferring theoretical knowledge into practice. Wu et al. (23), similarly, highlighted in their study that the use of escape games improves problem-solving and leadership skills among medical students. In our results, in addition to these, many of the students emphasized that this process improves their critical thinking skills and allows them to question their theoretical knowledge.

In our study, the students regarded the game as an exciting game that promotes group interaction and is understandable. Similarly, in the literature, it has been stated that students enjoy using games in education, and instructors actively observe students during the activity (17,19,21). In addition to that, using escape rooms may make a good platform for implementing team education (24). There is a worldwide problem related to teaching integrating teamwork in nursing education. Studies have revealed that students are more intrinsically motivated to learn by playing the escape game, although there are sometimes external factors, such as competition, time constraints and grading (25-27). Intrinsically, the will to win reinforces quick thinking and quick decision-making.

Likewise, in our study, students stated that the game at the highest rate increased their interest in the lesson and thus motivated them. Furthermore, the items "the fact that there will be an award at the end of the game" and "Competition in the game" were also determined as a remarkable motivation factor by more than half of the students in this study. Here, students' motivation to win can be interpreted as an intrinsic motivation for learning.

Table 3. ***Assessment of the Postpartum Escape Game in terms of Students' Learning Process, Satisfaction, and Motivation***

Escape game evaluation form items	Agree n (%)	Disagree n (%)
Learning process		
1. The game allowed me to test my theoretical knowledge	29 (85.3)	5 (14.7)
2. The game allowed me to transfer my theoretical knowledge to patient care	31 (91.2)	3 (8.8)
3. The game allowed me to experience women's health nursing skills	30 (88.2)	4 (11.8)
4. The game allowed me to use my problem-solving skills	29 (85.3)	5 (14.7)
5. The game allowed me to use my critical thinking skills	29 (85.3)	5 (14.7)
6. The game sped up my decision-making process about patient care	28 (82.4)	6 (17.6)
7. The game allowed experiencing teamwork	31 (91.2)	3 (8.8)
Motivation		
8. The fact that I will receive an award at the end of the game has increased my motivation	21 (61.8)	13 (38.2)
9. The game increased my interest in the lesson	27 (79.4)	7 (20.6)
10. The game provided a competitive environment	22 (64.7)	12 (35.3)
Satisfaction		
11. The game was suitable for me to experience women's health nursing skills	29 (85.3)	5 (14.7)
12. The hints given in the game were understandable	29 (85.3)	5 (14.7)
13. The game increased group interaction	29 (85.3)	5 (14.7)
14. The information about the game before the game was sufficient	34 (100)	-
15. The rules of the game were understandable	28 (82.4)	6 (17.6)
16. The game was exciting	31 (91.2)	3 (8.8)
17. Play was a fun way to learn	31 (91.2)	3 (8.8)
18. The time allotted for the game was adequate	28 (82.4)	6 (17.6)

4.1. Limitations

Some limitations should be considered in the interpretation of the findings obtained in this study. The findings are not generalizable because this study was only conducted with senior students in the Division of Women's Health and Disease in the Department of Nursing. Besides, because of the nursing skills laboratory's old design, simulation techniques and materials, such as maternal care simulators, could not be used, making the game more realistic and enjoyable for the students, and increasing their satisfaction.

5. Conclusion

Escape rooms appear as a helpful tool in the learning process of nursing students, favorably impacting motivation and satisfaction. With its positive elements, such as fun, internalization, critical decision-making, and cooperation, it is recommended to use the escape game as an active learning method in various subjects during nursing education. This gamification strategy has been effective in supporting the knowledge acquired from the classroom. The use of more active education methods and these methods in nursing education will prepare nurses to think quickly and effectively and will enable the implementation of more qualified nursing care.

6. Contribution to the Field

Other health programs of nursing departments can plan escape games for their students (e.g., medicine and physiotherapists). Hence, the hard-won teamwork skills can contribute to the development of all health program students with cooperative and fun practices from student time. This is noteworthy because teamwork is a key issue for the healthcare system and public health of countries. Also, we recommend that this study should be replicated using a larger sample group and simulation laboratory techniques and materials for further research.

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Conflict of Interest

There is no conflict of interest regarding any person and/or institution.

Authorship Contribution

Concept: HY, HÖ, MP, DB, MAT; **Design:** HY, HÖ, MP, DB, MAT; **Supervision:** HY, HÖ, MP; **Funding:** HY, HÖ, MP, DB, MAT; **Materials:** None; **Data Collection/Processing:** HY, HÖ, MP, DB, MAT; **Analysis/Interpretation:** HY, HÖ, MP, DB, MAT; **Literature Review:** HÖ, MP; **Manuscript Writing:** HY, HÖ, MP; **Critical Review:** DB, MAT.

References

1. Kaya H, Akçin E. Learning styles and nursing education. Journal of Cumhuriyet University School of Nursing. 2002;6(2):31-36.

2. Şahin G, Başak T. Hemşirelik eğitiminde oyun temelli öğrenme. Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi. 2019;8(3):308-314.

3. Dariel OJP, Raby T, Ravaut F, Rothan-Tondeur M. Developing the Serious Games potential in nursing education. Nurse Educ Today. 2013;33(12):1569–1575. doi:10.1016/j.nedt.2012.12.014.

4. White M, Shellenbarger T. Gamification of nursing education with digital badges. Nurse Educ. 2018;43(2):78–82. doi:10.1097/NNE.0000000000000434.

5. Boctor L. Active-learning strategies: the use of a game to reinforce learning in nursing education. A case study. Nurse Educ Pract. 2013;3(2):96–100. doi:10.1016/j.nepr.2012.07.010.

6. Gibson V, Douglas M. Criticality: the experience of developing an interactive educational tool based on board games. Nurse Educ Today. 2013;33(12):1612–1616. doi:10.1016/j.nedt.2013.01.022.

7. Gallegos C, Tesar AJ, Connor K, Martz K. The use of a game-based learning platform to engage nursing students: A descriptive, qualitative study. Nurse Educ Pract. 2017;27:101–106. doi:10.1016/j.nepr.2017.08.019.

8. Tan AJQ, Lee CCS, Lin PY, Cooper S, Lau LST, Chua WL, et al. Designing and evaluating the effectiveness of a serious game for safe administration of blood transfusion: A randomized controlled trial. Nurse Educ Today. 2017;55:38–44. doi:10.1016/j.nedt.2017.04.027.

9. Koivisto JM, Haavisto E, Niemi H, Haho P, Nylund S, Multisilta J. Design principles for simulation games for learning clinical reasoning: A design-based research approach. Nurse Educ Today. 2018;60:114–120. doi:10.1016/j.nedt.2017.10.002.

10. Reed JM, Ferdig RE. Gaming and anxiety in the nursing simulation lab: A pilot study of an escape room. J Prof Nurs. 2021;37(2):298-305. doi:10.1016/j.profnurs.2021.01.006.

11. Milner KA, Cosme S. The PICO game: An innovative strategy for teaching step 1 in evidence-based practice. Worldviews Evid Based Nurs. 2017;14(6):514–516. doi:10.1111/wvn.12255.

12. Davidson SJ, Candy L. Teaching EBP using game-based learning: improving the student experience. Worldviews Evid Based Nurs. 2016;13:285–293. doi:10.1111/wvn.12152.

13. Zhang XC, Lee H, Rodriguez C, Rudner J, Chan TM, Papanagnou D. Trapped as a group, escape as a team: applying gamification to incorporate team-building skills through an'escape room'experience. Cureus. 2018;10(3):e2256. doi:10.7759/cureus.2256.

14. Smith VR, Paul PA. Escape Room: Innovative teaching strategy to stimulate critical thinking/judgment in nursing students. Nurs Educ Perspect. 2021;42(6):E154–E155. doi:10.1097/01.NEP.0000000000000700.

15. Jeffries PR, Rogers KJ. Theoretical framework for simulation design. In P. R. Jeffries (Ed.), Simulation in nursing education: From conceptualization to evaluation (pp. 25e41) (2nd ed.). 2012, New York, NY: National League for Nursing.

16. Aubeux D, Blanchflower N, Bray E, Clouet R, Remaud M, Badran Z, et al. Educational gaming for dental students: Design and assessment of a pilot endodontic-themed escape game. Eur J Dent Educ. 2020;24(3):449–457. doi:10.1111/eje.12521.

17. Gómez-Urquizaa JL, Gómez-Salgadob J, Albendín-Garcíaa L, Correa-Rodrígueza M, González-Jiménezaa E, Cañadas-De la Fuentea GA. The impact on nursing students' opinions and motivation of using a "Nursing Escape Room" as a teaching game: A descriptive study. Nurse Educ Today. 2019;72:73–76. doi:10.1016/j.nedt.2018.10.018.

18. Berthod F, Bouchoud L, Grossrieder F, Falaschi L, Senhaji S, Bonnabry P. Learning good manufacturing practices in an escape room: Validation of a new pedagogical tool. J Oncol Pharm Pract. 2020;26(4):853–860. doi:10.1177/1078155219875504.

19. Edwards T, Boothby J, Succheralli L. Escape Room: Using an Innovative teaching strategy for nursing students enrolled in a maternity clinical course. Teach Learn Nurs. 2019;14(4):251-253. doi:10.1016/j.teln.2019.05.001.

20. Brown N, Darby W, Coronel H. An Escape Room as a simulation teaching strategy. Clin Simul Nurs. 2019;30:1-6. doi:10.1016/j.ecns.2019.02.002.

21. Gutiérrez-Puertas L, Márquez-Hernández VV, Román-López P, Rodríguez-Arrastia MJ, Ropero-Padilla C, Molina-Torres G. Escape rooms as a clinical evaluation method for nursing students. Clin Simul Nurs. 2020;49:73-80. doi:10.1016/j.ecns.2020.05.010.

22. Veldkamp A, Van de Grint L, Knippels MCP, Van Joolingen WR. Escape education: A systematic review on escape rooms in education. Educ Res Rev. 2020;31:100364. doi:10.1016/j.edurev.2020.100364.

23. Wu C, Wagenschutz H, Hein J. Promoting leadership and teamwork development through escape rooms. Med Educ. 2018;52(5):561–562. doi:10.1111/medu.13557.

24. Friederich C, Teaford H, Taubenheim A, Boland P, Sick B. Escaping the professional silo: an escape room implemented in an interprofessional education curriculum. J Interprof Care. 2018;33(5):573–575. doi:10.1080/13561820.2018.

25. Giang C, Chevalier M, Negrini L, Peleg R, Bonnet E, Piatti A, Mondada F. Exploring escape games as a teaching tool in educational robotics. In Educational robotics in the context of the maker movement. Springer International Publishing; 2020. pp. 95-106.

26. Peleg R, Yayon M, Katchevich D, Moria-Shipony M, Blonder R. A lab-based chemical escape room: educational, mobile, and fun! J Chem Educ. 2019;96(5):955–960. doi:10.1021/acs.jchemed.8b00406.

27. Watermeier D, Salzameda B. Escaping boredom in first semester general chemistry. J Chem Educ. 2019;96(5):961–964. doi:10.1021/acs.jchemed.8b00831.