

Nursing students' experience using an escape room for training clinical skills and competencies on emergency care

A qualitative observational study

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Abstract

Game-based learning is increasing in nursing education. Also, the assessment of the utility of the escape room game is growing. To explore nursing students' opinion about the escape room as an evaluation game, a qualitative observational study with nursing students was carried out. An ad hoc questionnaire with open questions was sent after the game learning experience. The escape room included knowledge and techniques from different specialties. The escape room learning game was a positive experience for the students. The main highlighted characteristics were fun, dynamic, and motivating way to study and learn. Other interesting variables were: "Working as a team and under pressure" (*It's a group activity in which everyone must work together. It is a good challenge to learn how to work in urgent situations*) and "Different way to assess students' learning" (*In this type of game, I can show more things and not only theoretical knowledge*). Game-based learning is increasing in nursing education, as well as the assessment of the utility of the escape room game. Using an escape room for assessing nursing students' knowledge is a positive experience. This learning experience can be also used with nurses in different specialties to promote teamwork and working under pressure.

Abbreviations: E = exit escape room, F = female, M = male, NE = no exit escape room, P = participant, PICO = population, intervention, comparison, outcome.

Keywords: emergency nursing, escape room, graduate nursing education, nursing education research, nursing evaluation research, nursing students

1. Introduction

The way of teaching is continually changing to achieve a more effective learning.^[1] New educational methodologies aim to improve the acquisition of knowledge through active methods, looking for higher motivation and commitment and involving students in their learning.^[2]

Among the methodologies that differ from the classical exposition classes, there is flipped learning^[3]; problem-based learning, in which a problem is the starting point and students must investigate the solutions^[4]; gamification, which is also earning

interest by applying game principles to academic contents or objectives to motivate students^[5,6]; or game-based learning, that uses games as a tool to motivate and engage students in the learning process.^[7]

Many initiatives are being carried out to know the true impact of games and gamification on nursing university teaching. This interest in games for learning is growing because games capture students' interest and promote motivation, active learning, and thinking.^[8]

Nursing studies have been conducted to assess the use of games. Among others, these have been used: the television

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All data generated or analyzed during this study are included in this published article [and its supplementary information files]

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The University of Granada and the Faculty of Health Sciences gave their consent for doing the nursing escape room. The participation in the escape room and the questionnaire was voluntary and anonymous. Appropriate written informed consents were obtained from the participants. All experimental protocols were approved by University of Granada and the Faculty of Health Sciences. All methods were carried out in accordance with relevant guidelines and regulations.

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game Jeopardy renamed as “Nursopardy” was used to review knowledge on the subject “Fundamentals of Nursing” and students positively assessed it as a method for learning and having fun^[9]; also, the games “3D GameLab” and “Rezzly” for nursing courses based on evidence and research obtained positive results in terms of satisfaction, motivation, and learning.^[7,10] For learning evidence-based nursing, the “Population, Intervention, Comparison, Outcome (PICO) Game” was used in another study to develop 3 PICO questions through cards and clinical situations, and it was assessed as a funny way to reinforce skills for the development of clinical questions.^[11] Other students found useful and satisfactory an online “serious game” for clinical reasoning and decision-making.^[12] Other study used an online game about postoperative clinical situations and decision-making lasting from 30 to 40 minutes to improve students’ clinical reasoning.^[13]

One of the games that is growing in the health sciences education is the “escape room.” An escape room is a game in which a group of a maximum of 5 people are locked inside a room with a specific objective and a limited time to escape. Each escape room has a different background and an objective, which is usually related with finding some kind of object. In order to overcome the escape room, it is necessary to find objects and clues that, through thinking and logic, help you go forward in the story and open locks and doors to exit the room. In general, some clues are given if the group needs them to get out in time.

As mentioned above, the use of the escape room in health sciences education is growing. The escape room has been used with emergency medicine, radiology, and other medical residents,^[14–16] surgical medical students,^[17] students from 5 different health care professions,^[18] nursing students,^[19–24] pharmacy students,^[25,26] and a course for pharmacy management.^[27] All of these studies report positive results in terms of satisfaction, learning, applying knowledge, and work and communication skills. Thus, it is important to assess the speech of the nursing students about the escape room as a new experience of evaluation.

The aim of the study was to explore nursing students’ experience and opinion about using an escape room as an evaluation game for nursing.

2. Methods

2.1. Study design and sample selection

A qualitative, observational study was carried out. The sample was intentionally selected from the students who participated in the escape room (n = 105) developed for the subject Adult Clinical Nursing I of the Nursing Degree from the University of Granada. All the students enrolled in the subject were invited to participate in the study after taking part in the escape room, without following any inclusion criteria depending on age, sex, or their nursing degree marks.

2.2. Data collection

Data were collected in February 2020 through an online questionnaire with 4 open questions located in a Moodle platform where the students have an account, which has been done in similar studies.^[19,28] The day after the participation in the escape room and 7 days later, the students involved were sent an e-mail inviting them to voluntarily respond to the questions. The socio-demographic variables sex and age were collected. The 4 open questions were:

- 1) What is your opinion about the nursing escape room game?
- 2) What do you think about the experience of playing an escape room as an evaluation game?

- 3) What do you think are the positive aspects of this game for nursing education?
- 4) What do you think are the negative aspects of this game for nursing education?

2.3. Data analysis

A descriptive analysis was carried out based on the proposal by Taylor et al.^[29] Initially, the responses obtained from each participant were coded; after this, significant fragments were selected and grouped into codes. Subsequently, the codes were grouped into conceptual analytical categories, taking as reference the questions included in the interview. This scheme was the one used for the presentation of results. Each participant was identified with an alphanumeric code indicating the number of the participant (P; e.g., P1, P2, etc), sex (female [F] or male [M]), and whether the escape room was completed (E: exit escape room; NE: no exit escape room). The ATLAS.ti software was used for data analysis. The transcriptions of the questions and the verbatims used in the results were reviewed by the students to confirm that these were consistent with the idea they wanted to communicate.

2.4. Ethical considerations

The University of Granada and the Faculty of Health Sciences gave their consent for developing the nursing escape room. The participation in the escape room and in the questionnaire was voluntary and anonymous. Appropriate written informed consents were obtained from the participants. All experimental protocols were approved by the University of Granada and the Faculty of Health Sciences. All methods were carried out in accordance with relevant guidelines and regulations.

2.5. The nursing escape room

In the case of the escape room developed in the nursing degree from the University of Granada, the objective was to find a falsified nursing title document. To find the document, each group had 30 minutes and 2 clues (one after 10 minutes and the second one after 20 minutes). At the same time, they should also get the classroom key to escape. The professor was in the room with the group to check that the nursing techniques and procedures were properly followed by the students (Fig. 1).

In the escape room game, students had to demonstrate their knowledge and competencies, and correctly perform different techniques (Table 1) so that they could find objects and clues that could help them escape. All this academic content was previously taught in the subject “Adult Clinical Nursing I.” The instructor of the escape room was an accredited lecturer of the nursing degree from the University of Granada.

3. Results

From the 20 groups of 5 students that took part in the escape room, 75% percent were able to exit. The most frequent error why the 25% did not manage to finish the escape room was calculating the heart rate in the electrocardiogram. The questionnaire was completed by n = 47 participants. Females were 82.9%, and the mean age was 19.9 years.

After analyzing the data, following the schema of the questions, 5 categories were finally established for better compression:

- (1) Nursing students’ opinion and experience about the nursing escape room;
- (2) Working as a team and under pressure;

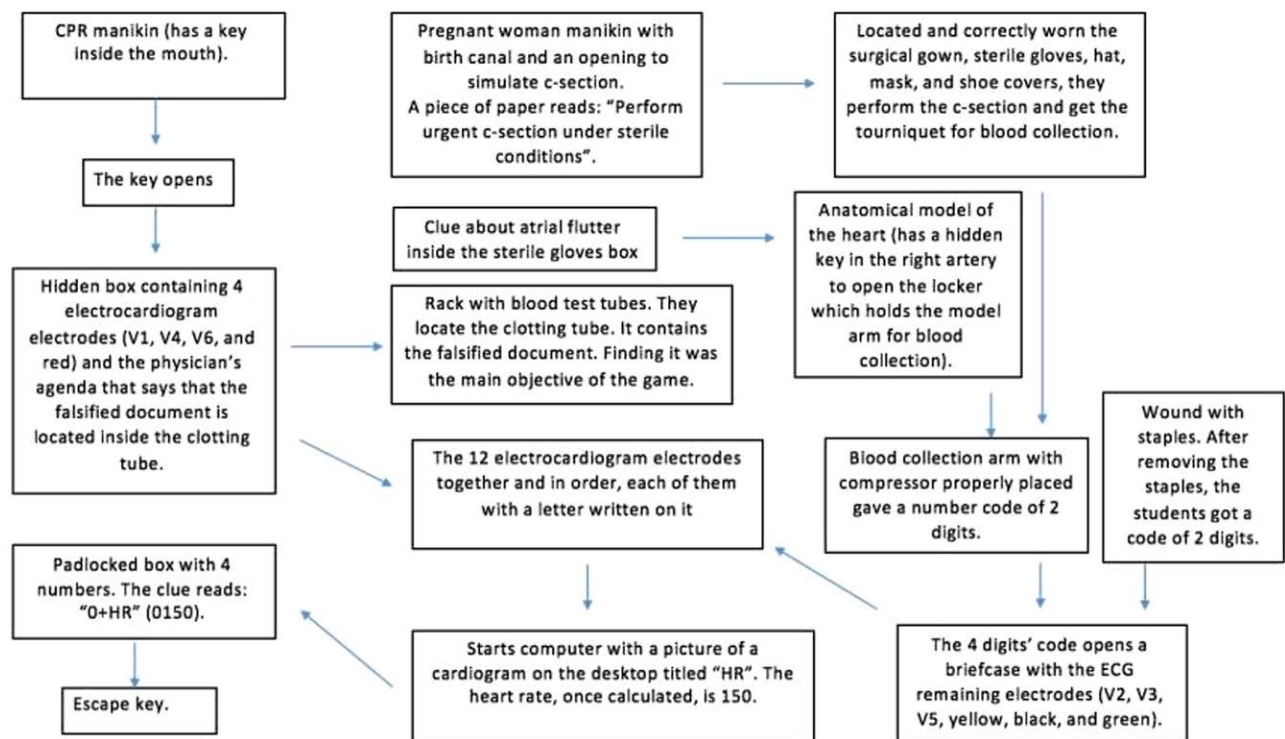


Figure 1. Escape room flowchart. 0+HR = "Zero" plus heart rate, CPR = cardiopulmonary resuscitation, ECG = electrocardiogram.

Table 1
Knowledge, techniques and competencies assessed with the escape room.

Nursing techniques	Knowledge	Competencies
Blood extraction	Heart rate calculation in electrocardiogram	Work under pressure
Put on sterile clothes		
Cardiopulmonary resuscitation	Arrhythmias	Teamwork
Sutures	Blood test tubes	Logical-deductive thinking
Electrocardiogram realization		

- (3) Different way to assess students' learning;
- (4) More games like this in nursing education; and
- (5) Negative aspects of the game.

3.1. Nursing students' opinion and experience about the nursing escape room

Fun, dynamic, and motivating way to study and for evaluation. The students indicated that it was a very fun and motivating game that helped them learn.

"The main positive aspect is the motivation that this has generated among the students and therefore our absolute involvement; in a game, we show the knowledge and learn, almost without realizing it. It's amazing" (P1, F, E).

"You're being evaluated and having fun and it's a really enjoyable experience from which you learn a lot" (P3, M, NE).

"Very entertaining and that's how you learn the things you come across. We've had a lot of fun and it motivate us to study and helped us to show our knowledge" (P6, F, E).

"It's very dynamic, you put into practice the knowledge gained in the subject and it increases your motivation to study the subject" (P2, F, NE).

"The best way to learn is to by enjoying yourself; that way, you never forget: I'll never forget the knowledge put into practice" (P8, M, E).

3.2. Working as a team and under pressure

Nursing students find the game as very useful tool for putting into practice teamwork and improving their personal relationships while feeling the pressure of the time.

"If you want to escape on time you have to work as a team" (P10, F, E).

"It's a group activity in which everyone must work together to get away from the room in time, which improves the relationships with some people" (P9, M, NE).

"It helped us to review knowledge and to work as a team" (P4, F, E).

"It was an amazing way to make us work as a team and to use the learned knowledge. We studied together as a team before the game and motivating each other." (P5, M, E).

"Knowing that there is a limited time to solve the game makes the group work together. I think that the countdown is a good challenge to learn how to work in urgent situations." (P7, F, E).

3.3. Different way to assess students' learning

Students appreciated the game as a different method to demonstrate their knowledge and not being only evaluated with written exams.

"It is a game in which having the whole knowledge is the only thing that counts as it happens in the exam. This activity also values other elements such as teamwork, logic and quick thinking." (P31, F, E).

"I am not particularly good at writing exams despite if having knowledge. In this type of game, I can show more things and not only theoretical knowledge." (P25, M, E).

"It is a different way to demonstrate the knowledge acquired while having fun. It would be good to take into account this game for the final grade of the subject." (P2, F, NE).

3.4. More games like this in nursing education

The need for more games and initiatives like the escape room was identified in the students' speech.

"More activities like this should be done." (P4, F, E).

"I do not know why there are not more activities like this in the nursing education degree. These things motivate us very much and we have fun while learning." (P18, F, E).

"More games like this would make our studies more fun, motivating and easier." (P32, M, E).

"It is a great way to avoid the classic classroom with just PowerPoints. Other subjects should include things like this." (P23, M, NE).

3.5. Negative aspects of the game

Most of the students said that there were no negative aspects but some of them identified the next things.

"The time to escape was very short" (P9, M, NE).

"Some of the clues were not useful at all and that make the game hard" (P2, F, NE).

The word cloud shows that the most frequent words used in the responses given by the students were motivation, studying, learning, team, and funny. The word cloud is shown in Figure 2.

4. Discussion

The objective of this study was to analyze nursing students' experience and opinion about using an escape room as an evaluation game for nursing. Based on the nursing students' speech, we can affirm that this game is an extra tool for nursing lecturers to evaluate their students' knowledge. Nursing students have found the game especially useful for increasing their motivation and a different, funny, and well-prepared tool for their evaluation. They also affirm that the escape room is a good game to work as a team and to put them under pressure. They also demand more games like this in the nursing degree and state just 2 negative aspects related to the time and the clues were observed.

The positive results about the usefulness of the escape room as a game for evaluating and teaching concepts in healthcare professions are in line with other studies^[14,16,17,19,26] that have informed that this kind of game is fun and satisfactory for the students and medical residents and that it promotes teamwork and communication skills and help to reproduce clinical situations and feelings.

Some students think that it would be good for them to be evaluated with different strategies during the nursing degree, like the escape room, and not just by paper-based exams or by multiple choice questions. It is known that all the students do not have the same learning and study skills and that these skills influence their academic achievements.^[30,31] Thus, it is important to offer students different strategies for evaluation and learning that may be better to help some of them with their academic achievement.

The main objective of the nursing degree is to prepare the students for their professional future. Some important competencies that they will have to develop in their future as nurses are teamwork and working under pressure.^[32,33] As shown in the results, the students feel that the escape room promotes working as a team and under pressure. These competencies can also be trained with clinical simulation; however, the clinical simulation rooms and models are expensive,^[34] whereas preparing an escape room in a normal room of the university may be cheaper.

Some disadvantages of the escape room may be the time that it consumes to plan and prepare everything, and also between each group exit and entrance,^[19] but after doing the first game, the process tends to be much easier for the teacher. Finally, not all the students may find useful and fun the use of the escape room, but as has been mentioned, nursing lecturers should try to use different kinds of teaching and evaluation strategies.

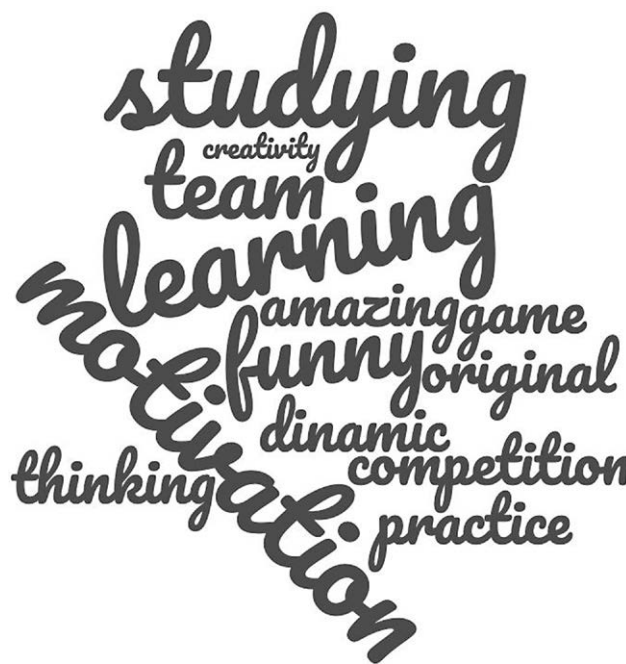


Figure 2. Word cloud.

This study has some limitations. The questions were elaborated by the researchers and the design does not include any control group to compare the final academic results between both groups. Also, literature on the use of these games is still novel, and our perceptions are limited to nursing students' reflections during the data collection time. Finally, the selection of the sample was intentional and a mixed methods study could have provided more information.

Thus, future studies should use experimental designs to analyze the influence of this game on academic achievements and some competencies like teamwork and working under pressure. It would also be interesting to test this kind of game in other nursing subjects with less clinical content that students tend to find less motivating than the nursing subjects with clinical content.

5. Conclusion

The development of an escape room in nursing education is a way to make students have fun with their learning and increase the acquisition of knowledge and techniques while they are being evaluated. In addition, students learn to work as a team, and they get motivated with their studies. Some of the most valued competencies were teamwork and working under pressure.

The "escape room" is a useful teaching game that stimulates learning, is fun to play, and motivates studying while implying the use of several different techniques and proceedings. Nursing students believe that the escape room is an accurate evaluation tool due to the associated analysis of knowledge, skills, and competencies (including the emotional and psychological).

Authors contributions

Conceptualization: JLGU, CHM, MCR, NSM, MBMC, LAG, JGS.

Data curation: JLGU, CHM, MCR, NSM.

Methodology: JLGU, CHM, MCR, NSM, MBMC, LAG, JGS.

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