

Escape Room, a New Method to Assess the Learning of Nursing Students: A Scoping Review

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Abstract

Background: The escape room game is a very useful and effective learning process used to teach various medical students, including nursing students. Escape rooms are increasingly used in higher education to supplement traditional teaching methods, allowing students to recall and apply knowledge gained in the classroom. In addition, given that the escape room is fun, it encourages them to study.

Objectives: This systematic review aims to investigate the impact of using escape rooms in nursing education and their effectiveness in evaluating students' competencies.

Methods: This scoping review adhered to the PICO systematic review guidelines. The present study is a targeted and integrated review. First, a comprehensive search was conducted using keywords related to "escape room", "nursing education", "assessment", "evaluation" and "student learning" in Elsevier, SID, Magiran, Google Scholar, Science Direct, and PubMed databases to identify relevant studies published between 2010 and 2024. The studies about the effect of escape rooms on the teaching and learning of nursing students were included.

Results: The first search identified 150 articles. After a more detailed review based on the purpose of the current research, 35 articles were included in the second phase of the study. Finally, after reviewing the full text, 10 articles reported the use. These articles' findings have shown that using escape rooms in nursing education improves student participation, teamwork, effective communication, and problem-solving skills. By carefully designing and implementing escape room activities, nursing educators can increase student engagement, teamwork, critical thinking, and problem-solving skills in a fun and interactive way.

Conclusion: This review provides valuable insights into the benefits and potential challenges of incorporating escape rooms into nursing curricula. The immediate feedback and other advantages make escape room training a valuable addition to nursing education. However, it's important to note that more research is needed to fully establish the validity and reliability of using escape rooms as an assessment tool in nursing education.

Keywords: Learning Outcomes; Assessment Methods; Nursing Students; Education

Background

Traditional teaching methods for nursing students usually include lectures and practical demonstrations. These methods effectively teach students the knowledge and skills necessary to become competent nurses. However, these methods may sometimes be repetitive, leading to decreased motivation and interest among students. Also, lecture-based learning methods are

suitable for achieving low-level cognitive goals, but they are not suitable for higher-level education, which includes analysis, evaluation, and synthesis, and requires full participation in learning. (1-3).

Among the games that are growing in the education of medical sciences is Fare's Room, which has been used to train various medical students, including nursing students, in various subjects (4). The new educational

method called escape room offers a unique and interactive approach to learning. Escape rooms have emerged as a popular educational tool in recent years, providing participants with an immersive and interactive learning experience. Escape rooms have rapidly become popular within health professions' education (5, 6).

In this training method, the participants are locked inside a room with a specific goal and a limited time to escape (7). Each escape room has a different background and objective, usually related to finding some object (8). To overcome the escape room, you need to find objects and clues that, through thinking and logic, will help you move forward in the story and open locks and doors to exit the room (9, 10). Since opening the first escape room in Kyoto, Japan, in 2007, escape rooms have become a global phenomenon (9). One of the main advantages of the escape room teaching method is its ability to promote teamwork, critical thinking, problem-solving skills, and communication of knowledge (11). These skills are essential to nursing practice, as nurses often work in fast-paced, high-pressure environments where quick decision-making is critical. Integrating escape rooms into nursing education provides a practical approach to assessing students' clinical reasoning and problem-solving skills (12).

Using the escape rooms allows students to remember and use the knowledge acquired in the classroom. Furthermore, since the escape room is fun, it encourages them to study. In this approach, educators can assess students' ability to apply theoretical knowledge in practical settings by immersing them in simulated patient care scenarios (13). Moreover, considering the high importance of hands-on experience in nursing, it is crucial to thoroughly evaluate educational activities; with the feedback received, necessary changes can be made to the academic program (curriculum) (14).

Objectives

The study aimed to investigate the outcomes of utilizing escape rooms as a novel educational approach in nursing student education and to assess their efficacy.

Methods

Selected reporting items for systematic reviews and meta-analyses for scoping reviews (PRISMA-ScR) were followed as the methodology and reporting in this study (Diagram 1).

To find the most reliable information, it is crucial to seek the best available evidence in the shortest time possible. Therefore, utilizing the best guidelines (PICO)

is crucial. The Table 1 illustrates the research methodology (15).

Search Strategy and Eligibility Criteria

A systematic search was conducted in electronic databases, including Elsevier, SID, Magiran, Google Scholar, Science Direct, and PubMed, to identify relevant studies published between 2010 and 2023. The search strategy included keywords related to "escape room," "nursing education," "assessment," "evaluation" and "student learning." Certain factors, such as publication date, study design, and focus on educational outcomes were selected. Data extraction included the identification of key variables such as sample size, study setting, outcome measures, and conclusions regarding the use of escape rooms in nursing education. Analysis was performed by combining findings across studies to identify common themes and outcome variations.

Study Selection and Data Extraction

Inclusion criteria were external studies that evaluated the use of escape rooms to assess nursing student learning outcomes. A total of 10 studies met the inclusion criteria and were included in the final analysis. In terms of article type, clinical trial, review, and cross-sectional articles were included, which are listed separately in Table 2. Case reports and studies with a sample size of less than 15 were excluded from the study. Data from different databases were entered into EndNote X8 software, and duplicate entries were removed. The full text of the articles was reviewed. The data collection process included the use of Excel software. Data collected for each article included information such as authors, publication years, title or purpose of the research, results, and other relevant details. Inclusion criteria were studies that evaluated the use of escape rooms as a method to assess nursing student learning outcomes.

The search strategy included keywords related to escape rooms as a new educational method, nursing, students, education, assessment methods, and learning outcomes. Studies that met the inclusion criteria and provided valuable insight into using escape rooms as an assessment method in nursing education were finalized in an independent screening process.

Results

Extracting the data: Data related to studies (such as author, year, and study design), participant details (demographics), escape room intervention details (design, objectives), and evaluation methods used were extracted. Following a systematic approach to study selection and data extraction, this extensive

methodology warranted a comprehensive literature review of escape rooms as a new assessment method in nursing education (Table 2).

Discussion

This study was conducted to review the effectiveness of the escape room in evaluating nursing students' learning. After a comprehensive review of the articles, ten studies in different cultures and ethnicities were included according to the mentioned keywords. Escape rooms provide a unique and immersive learning experience that simulates real-world scenarios and challenges, making them an attractive option for assessing the knowledge and skills of nursing students (25). Gamification has been gaining momentum in medical and health science education around the world, with studies showing that educational gaming stimulates students' engagement and persistence on tasks, which in turn enhances deep learning. By placing students in a simulated environment where they must work together to solve puzzles and complete tasks under time constraints, escape rooms can provide valuable insights into their use in applying theoretical knowledge in practical situations. Additionally, the collaborative nature of escape rooms promotes communication and teamwork skills that are essential for effective nursing practice (26-30).

Escape room training can be more effective in the clinical education of nursing students than traditional methods for several reasons. Escape rooms provide a hands-on and immersive learning experience that allows nursing students to develop their knowledge and skills. Utilizing a realistic and attractive environment, this practical experience can help students develop confidence and competence in clinical practice and strengthen critical thinking and decision-making skills by asking students to think critically, solve problems, and make decisions under pressure in escape rooms. These skills are essential in nursing practice, where quick thinking and problem-solving abilities are critical to providing safe and effective patient care. The escape room creates teamwork and is effective in establishing communication. Nursing is a collaborative profession that requires teamwork and effective communication skills. Escape rooms promote teamwork, collaboration, and student communication as they work together to solve puzzles and challenges. These skills are critical to successful patient care in clinical settings. Escape rooms often simulate real-world scenarios that nursing students may encounter in clinical practice. By experiencing these scenarios in a controlled environment, students can better

prepare for the challenges they may face in their future nursing careers (31-33).

However, there are challenges in using escape rooms to train nursing students.

Using escape rooms in nursing education raises several ethical considerations that must be addressed. For example, ensuring that the scenarios presented in the escape room are aligned with the educational objectives of the nursing program is critical to maintaining the integrity and validity of the assessment (34). Additionally, it is important to consider the emotional and psychological impact of escape room challenges on students, especially those who may struggle with stress or anxiety. Besides, funding is essential when implementing escape rooms as an assessment tool in nursing education. Developing and maintaining escape rooms requires financial resources to design scenarios, purchase materials, and create physical space. Funding from institutional sources, grants, or partnerships with industry stakeholders may be necessary to support the continued use of escape rooms as an assessment method. Assessing student learning outcomes in an escape room environment can be challenging. It may be difficult to measure student performance or assess specific learning objectives within an escape room scenario (35).

Integrating escape rooms into the nursing curriculum requires careful planning to ensure that activities are aligned with learning objectives and complement other teaching methods. Nursing educators may face challenges creating and maintaining escape rooms, especially in busy academic environments. Educators must balance escape rooms with traditional teaching approaches to create a holistic learning experience. While escape rooms offer unique advantages for teaching nursing students, educators should be aware of the challenges and limitations associated with this method (36). Nurses are central health care providers with extensive patient interaction that makes their work performance critical (37). By carefully designing and implementing escape room activities, nursing educators can increase student participation, teamwork, critical thinking, and problem-solving skills in a fun and interactive way. Generally, learning and remembering are two important principles in nurses' career process and should be considered in modern teaching methods such as escape rooms or The Café Model is an innovative, interactive teaching method designed to enhance the learning experience for nursing students that are suitable and practical. Still, the use of these methods is not approved in every group.

Therefore, using modern teaching methods to train nurses requires many studies and research (38-40).

Limitation: Potential limitations of this review are that some studies could not be identified because of access issues and that some studies included participants other than nursing students.

Conclusion

The findings revealed key points about using escape rooms to assess nursing students' learning. These include improved levels of student engagement, increased teamwork abilities, increased motivation to learn complex concepts, and higher levels of satisfaction with the assessment process among students and instructors. Additionally, studies have demonstrated that escape rooms provide a challenging yet rewarding experience for nursing students, allowing them to demonstrate their knowledge and skills in a real-world setting. The collaborative nature of escape room activities fosters teamwork and communication among students and enhances their ability to work effectively in clinical settings. Experiential learning theory believes that people learn best through direct experience and reflection on that experience. In the context of nursing education, practical activities requiring problem-solving skills can enhance student learning outcomes. Escape rooms provide opportunities to engage in real-life scenarios where students must apply their knowledge. Collaboratively solving problems in a time-limited environment aligns with active learning theories. It enhances critical thinking skills for nursing practice.

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Table 1. Research Question Design (PICO)

Population (P)	Intervention (I)	Control (C)	Outcome (O)
Nursing students	Escape room, a new method to assess the learning	Traditional Learning	The effect of using the escape room educational method on the learning rate of students

Table 2. Summary of the articles conducted in the field of the escape room's effects to evaluate nursing students' learning

The responsible author of the Research and the publication date	Title	Intervention	Type of study	Participants	Results
Martin A 2022 (16)	An escape room to orient preclinical medical students to the simulated medical environment	A 90 activity A minute to learn pre-clinical skills in the escape room was designed and implemented to reduce students' anxiety	Interventional	This research was performed on 148 second-year medical students. Sampling was done by census method.	Based on this study, the researchers stated that playing the escape room game for pre-clinical medical students is effective and useful in preparing them to participate in the first simulated medical environment scenario.
Reed JM 2021 (17)	Gaming and anxiety in the nursing simulation lab: A pilot study of an escape room. Journal of Professional Nursing	In the beginning, the nursing professors explained to the students about the expectations, mannequins, and equipment in the room for ten minutes. The students were given an anxiety questionnaire, and the students received the rules and goals of the game along with the patient's written report.	This research is a semi-experimental study of a group with a pre-test-post-test, in which sampling was done by the available method.	Nursing students	This study noted increased collective efficacy among participants, indicating increased teamwork skills.
P Roman, M Rodriguez-Arrastia 2020 (18)	Escape room as an evaluation method: a qualitative study of nursing student experiences	The OSCE, in combination with the Escape Room, lasting a maximum of 30 minutes, consisted of a group assessment (5 participants) in which they were confronted with various stations, which included different clinical cases, part of one entire case with the same.	Interventional	In January 2019, 9 focus groups (FG) were held, with 95 final-year nursing students. We applied qualitative content	Based on the results of this study, it can be concluded that the use of the escape room helps, along with other pre-existing methods, and complements how students are evaluated and the development of essential nursing skills such as teamwork and communication
L Gutiérrez-Puertas, VV Márquez-Hernández 2020 (19)	Escape rooms as a clinical assessment method for nursing students	Tools used: • Game experience scale (GAMEX) to measure students' game experience. • Case scale to measure students' satisfaction with the escape room as an evaluation tool	Quasi-experimental with an experimental group (escape room) and control group (traditional OSCE).	Participants: 237 nursing students were randomly divided into two groups.	The results of this study showed that escape rooms are a valuable tool for evaluating 12th-grade nursing students compared to the use of objective structured clinical assessment.
ER Millsaps, AK Swihart 2022 (20)	Time is brain: using escape rooms as an alternative teaching assignment in undergraduate nursing education	Students completed a pre-class worksheet, participated in an escape room, and then participated in a debriefing using the GAS (gather, analyze, summarize) model.	Interventional	Twenty-four students completed this escape room experience.	According to the findings of this study, escape room experiences can be used in the preparation for nursing associate degree

Li C-T, Huang Y-J (21)	Designing an escape room educational game for cardiopulmonary resuscitation training	In this study, the escape room was designed as a computer game called "Silent Hill", in which a student suffered a cardiac arrest in the story of the game, and the students participating in the game had to answer various questions related to cardiac resuscitation and solve the riddles of the room.	This research was a semi-experimental	The study was conducted on 38 junior high school students in northern Taiwan. Sampling was done by the census method	Based on the results of this study, children's themed escape rooms are an innovative educational method to integrate into your curriculum
Urquiza, C HuesoMontoro 2022 (10)	Nursing students' experience using an escape room to teach clinical skills and competencies in emergency care: a qualitative observational study	This study explored nursing students' experiences using an escape room as a game-based learning tool to teach clinical skills and competencies in emergency care. This study lacked a control group that could provide comparative insight into the effectiveness of traditional learning methods versus game-based learning.	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	Based on this study, the use of an escape room to evaluate the knowledge of nursing students is a practical approach
L Moore, N Campbell 2021 (22)	Effectiveness of an escape room for undergraduate interprofessional learning: a mixed method, single-group pre-post-group evaluation.	A pre-post one-group mixed design was used to evaluate the effect of the escape room on student engagement and learning. The intervention consisted of an escape room activity and an interactive training session.	Interventional	Fifty students (78% female) from seventeen universities and seven professions participated in teams of three to six members. Most participants (66%) had not previously completed an escape room	In this study, the escape room intervention added value to the curriculum and was flexible for a heterogeneous student group.
A Anguas-Gracia, AB Subiron-Valera 2021 (23)	Evaluation of undergraduate student nurses' playful experiences while playing an escape room game as part of a community health nursing course.	The escape room game occurred in a Faculty of Health Sciences classroom. The measures included the GAMEX scale in its Spanish version and a self-reported questionnaire to evaluate the student's outcome of the escape room game immediately After the end of the activity.	This study was a cross-sectional descriptive study	Participation of 126 third-year nursing students.	Based on the results of this study, gamification in general, and escape rooms in particular, has been proven authentic tools for acquiring professional competencies in higher education.
Emine Kuruca Ozdemir2022 (24)	Game-based learning in undergraduate nursing education: A systematic review of mixed studies	A search was conducted using Medline, PubMed, Science Direct, Scopus, and Web of Science electronic databases. Quantitative, qualitative, and mixed methods studies on nurse education published in English between 2000 and 2020 were considered.	A systematic review of mixed-methods studies.		Based on the results of this study, game-based learning is a valuable method to achieve learning outcomes, mainly in the cognitive domain, with some positive and negative aspects. Further research should examine the effects of games on emotional and behavioral learning outcomes and the use of games to assess learning outcomes.

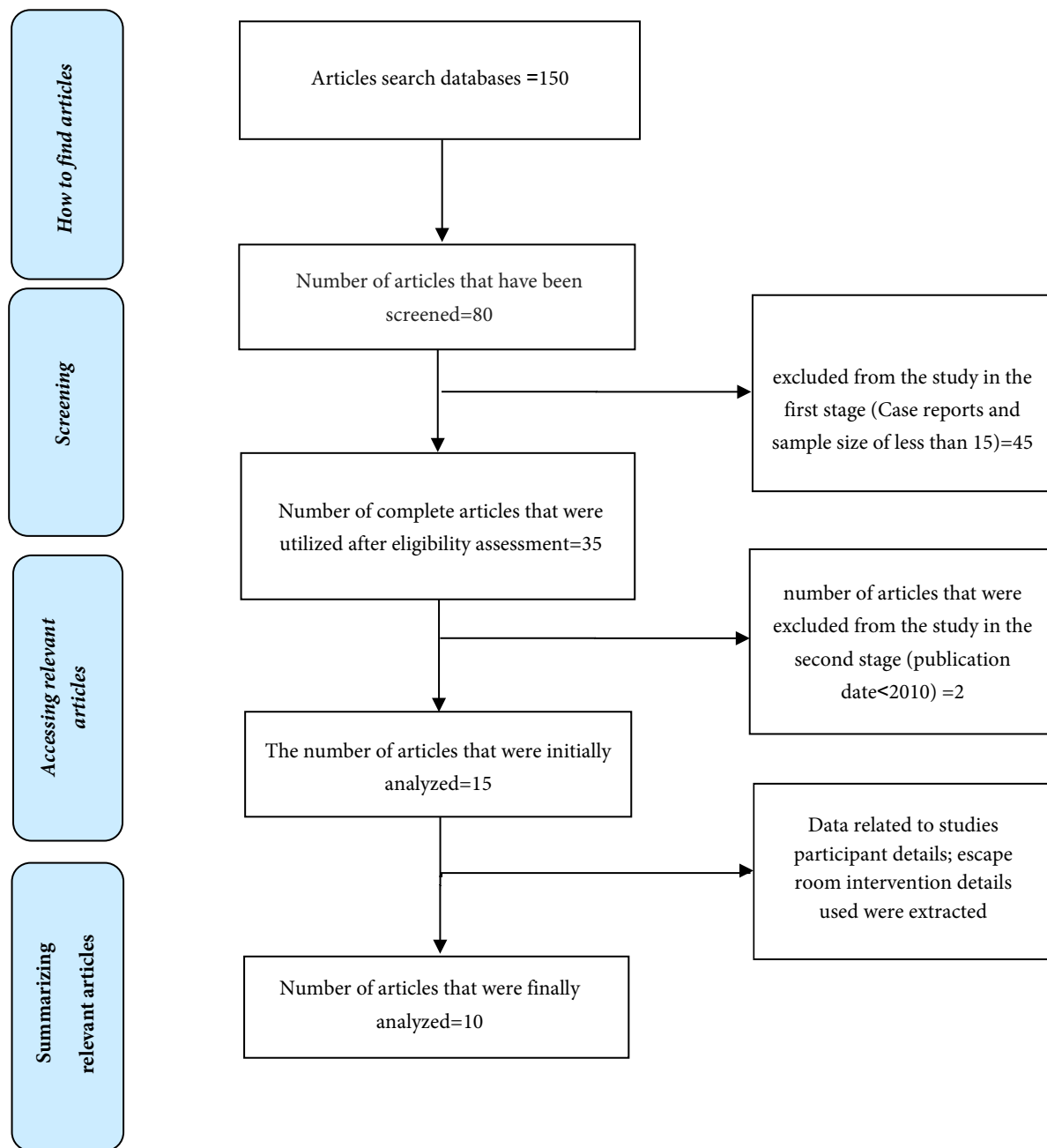


Diagram 1: Flowchart of screening and selection of articles