Original Article

Access this article online

Quick Response Code:

Website: www.jehp.net

DOI: 10.4103/jehp.jehp_711_23

The effect of escape room clinical evaluation method on satisfaction, learning, and preparedness to practice as interns of nursing students: A quasi-experimental quantitative study

Najmeh Ghiamikeshtgar, Fereshteh Ghaljaei[1], Mahnaz Ghaljeh[1], Bentolhoda Taherizade[1], Nasrin Mahmoodi[1], Simin Sharifi[1]

Department of Operating Room, School of Nursing and Midwifery, Zahedan University of Medical Sciences, Zahedan, Iran, [1]Department of Nursing, School of Nursing and Midwifery, Zahedan University of Medical Sciences, Zahedan, Iran

Address for correspondence:
Dr. Fereshteh Ghaljaei, Department of Nursing, School of Nursing and Midwifery, Community Nursing Research Center, Zahedan University of Medical Sciences, Zahedan, Iran.
E-mail: ghaljaei_f@yahoo.com

Received: 23-05-2023
Accepted: 25-07-2023
Published: 11-07-2024

Abstract:

BACKGROUND: Clinical evaluation utilizing the escape room game is recognized as a novel method for assessing the team-oriented performance of learners. It is a tool for evaluating teamwork skills in clinical settings, which can boost student motivation and learning. This study aimed to investigate the effect of clinical evaluation through escape rooms and feedback provision through the PEARLS (promoting excellence and reflective learning in simulation) approach on pre-internship nursing students' satisfaction, learning, and preparedness to practice as interns.

MATERIALS AND METHOD: The current research is a quasi-experimental quantitative study conducted with a census sample of 42 sixth-semester undergraduate nursing students in 2022. The escape room method was utilized to evaluate entry preparedness into the clinical field. Reliable and valid researcher-made questionnaires were administered to assess the impact of the intervention on learning, satisfaction, and preparedness. The data were analyzed in SPSS version 26 using descriptive and inferential tests. The significance level was considered to be less than 0.05.

RESULTS: Twenty-six males and 16 females constituted the 42 participants (mean age: 23.46 years). The clinical evaluation method of the escape room game was deemed satisfactory or highly satisfactory by 80% of students. From the perspective of 72% of students, escape rooms were definitely or highly effective in shaping their preparedness to enter the clinical field. Comparing the students' mean learning scores (self-assessment of clinical skills) before and after the test revealed that their post-test scores (55/16 ± 13/33) were significantly higher than their pre-test scores (45/58 ± 16/58) ($P < 0.001$).

CONCLUSIONS: It appears that using the escape room evaluation method in conjunction with other student evaluation methods has helped improve students' interpersonal communication, problem-solving skills, critical thinking, and teamwork. The experience of working in a group not only improves these skills and is enjoyable to students but can also enhance their learning. Clinical education is dependent on teamwork. The escape room test can be viewed as a valuable tool for encouraging students to collaborate as a team. Therefore, it is suggested that students in all medical education groups be evaluated clinically using this test.

Keywords:

Escape room, games, learning, nursing student, nursing education

How to cite this article: Ghiamikeshtgar N, Ghaljaei F, Ghaljeh M, Taherizade B, Mahmoodi N, Sharifi S. The effect of escape room clinical evaluation method on satisfaction, learning, and preparedness to practice as interns of nursing students: A quasi-experimental quantitative study. J Edu Health Promot 2024;13:225.

Background

The duty of nursing schools is to train nurses with knowledge and clinical skills who can provide the highest quality health care.[1] Clinical education is an important part of nursing education to achieve professional competence and skill.[2] Among the continuous stages of clinical education, the internship period can be called the most important stage when the student enters the practical stage from the theoretical stage and feels himself in the role of a future nurse.[3] The better prepared the nursing students are what about whether they enter this stage from a practical or scientific point of view, they will be able to perform their assigned tasks in a better way in the way of treating patients.[4] Studies have shown that nurses who have learned knowledge have not seen some practical and necessary skills or have not done independently, and this has caused many problems in patient management[5]. Studies show that most graduates suffer from a lack of professional preparation[6]. Hinds and Harley (2001) state that the biggest challenge for students is to use the knowledge learned during their studies in a real way[7]. In Iran, many studies have acknowledged that nursing graduates do not have enough preparation to provide high-quality services at the beginning of their work.[8]

In terms of the great importance of the internship period, clinical evaluation before entering the field is also very important to measure the success in the basic, clinical training of nursing students[9], and it can evaluate the professional abilities of nursing students before entering the field. In fact, evaluation is one of the important and integral components of learning in every educational program and the basis for decision-making in scientific and operational activities.[2] Conducting evaluation has an effect on students' motivation and especially can affect learners' willingness to accept responsibility for learning, independent progress and exhibit continuous motivation in learning.[10] It evaluates students scientifically and that too on a limited level, and the interns do not have the necessary preparation to start the responsibility, especially in the fields of knowledge and skills. Areas, especially communication and teamwork skills, should be planned more widely.[11] OSCE is one of the accepted evaluation methods for the pre-internship test of nursing students. However, since the students are evaluated individually in the OSCE test, the basic aspects of clinical performance is not assessed in the same way as communication skills or teamwork.[12] Among the disadvantages of this method, it can be mentioned that it is expensive and time-consuming and creates anxiety in students[13]. In clinical evaluation, it should be ensured that students use critical thinking in clinical environments and have appropriate professional behavior; they establish proper interaction with patients, prioritize problems, have basic knowledge about clinical methods, and use care methods correctly.[10]

The escape room game is one of the new methods of clinical evaluation that evaluates students' problem-solving skills, clinical skills, communication skills, teamwork, and critical thinking in a group during a team activity.[14] Escape rooms are interactive and attractive games in which players are placed in a locked room and work together to solve a series of puzzles to escape from the room within a certain period of time to get the codes and solutions to get out of the room. Most escape rooms are purely recreational. However, educational escape rooms with professional programs are becoming more popular as a means of engaging students in their learning environment and encouraging cooperation and developing social and team skill sets.[8]

As an evaluation method, the escape room can provide students with a safe environment for evaluation, which is not possible in traditional evaluation methods. In addition, in the evaluation of the escape room game, it provides an opportunity to evaluate areas such as communication skills, self-learning, and respect for others, which cannot be easily evaluated through traditional evaluation methods; this adds a new value to learners' evaluations, where the traditional purpose of evaluation was to describe the abilities and skills of nursing students required for a proposed clinical case.[15]

In a study, Gutiérrez-Puertas reported the escape room as a useful tool for evaluating nursing students in contrast to the use of objective structured clinical assessment and acknowledged that the escape room has the ability to become a new method of evaluation.[16]

Roman *et al*.'s results show that nursing students prefer the escape room evaluation system to the traditional OSCE test.[14]

In the study of Schmaldinst *et al*., it is also pointed out that the escape room game allows students to be evaluated in an attractive, fun, non-threatening, and non-clinical activity that enhances teamwork and effective leadership.[17]

In escape room evaluation, the goal of evaluation is to create and strengthen students' strategies and strengths through problem-solving. Thinking is group coordination and communication. Among the advantages of the escape room as an evaluation method compared to traditional clinical evaluation methods such as OSCE, we can mention reducing stress, improving motivation, identifying strengths and weaknesses, making better clinical decisions, and creating motivation to improve professional performance. It shows that

students' performance may be impaired if they feel stress, anxiety, or fear, and this potentially creates a negative perception in their attitude toward assessment. Therefore, considering the benefits of the escape room game and solving the problems in clinical evaluation, the present study was conducted with the aim of investigating the effect of clinical evaluation in the escape room method and providing feedback to students with the PEARLS model on the satisfaction, learning, and readiness to enter the field of pre-practice nursing students in Zahedan University of Medical Sciences.

Materials and Methods

This research is a quasi-experimental quantitative study conducted in 2022. The aim was to examine the satisfaction, learning, and preparedness to practice as interns of pre-internship nursing students upon participating in escape room-based clinical evaluations.

Study design and setting

In the present quasi-experimental quantitative study, the study population comprised all sixth-semester nursing students of Zahedan University of Medical Sciences in 2022. The inclusion criterion was willingness to participate in the study and being a student in sixth semester of nursing; exclusion criteria comprised having incomplete grades, not enrolling in the internship course, and not taking the test due to the absence or illness, among others. In case of unwillingness to participate in the study, samples were allowed to withdraw from the study at any stage.

Study participants and sampling

The sampling method was the census of all the intended students (42) during the period of the study. Finally, 42 questionnaires were completed and received.

Data collection tool and technique

To hold the test, the escape room test committee was formed in the first step, followed by an examination of the clinical skills learning objectives for nursing students and the determination and confirmation of the final evaluation objectives. Certain clinical skills were identified as must-learn skills, and a blueprint of educational content was developed. Clinical functions that students must master include hand hygiene, communication with the patient, control and monitoring of vital signs, gavage and lavage, venipuncture and fluid therapy, injections, vaccinations, oxygen therapy, cardiopulmonary resuscitation, teamwork, and wound care and dressing. Afterward, the escape room scenario was designed based on the evaluation of the mentioned skills. The escape room is located in the Faculty of Nursing and Midwifery's skills lab; the rooms were designed similarly to hospital ward rooms. A manikin serving as the simulated patient was placed on the bed, and a speaker was installed in each room. A person spoke in place of the simulated patient in the room (manikin). A list of sixth-semester nursing students, along with their GPAs, was requested. In accordance with their six-semester GPA, 42 sixth-semester nursing students were divided into five groups of eight–nine individuals, and a group leader was appointed for each group. Immediately before the commencement of the escape room game, all the students participated in a 10-minute introductory meeting in which they were presented with the necessary rules and explanations. The students subsequently entered the quarantine room, and self-assessment questionnaire of clinical skills pre-test was completed by students. Three groups of students were evaluated simultaneously using three escape rooms, and each group was given 45 minutes to solve the escape rooms' puzzles. The evaluator used a camera to observe how the students in each team performed their skills, and the learners' performance was evaluated as a team. After solving the escape room puzzles, the results of the students' skills were evaluated, and the evaluator reviewed the students' performance in person. Using the PEARLS model, faculty members provided each group with feedback during a sixty-minute session.

Simulation programs use the PEARLS model for feedback provision, which includes five steps:

1- Presenting the program schedule (the operational program of the feedback session) to the students to foster a secure learning environment
2- Obtaining students' initial reactions/emotions with the intent of exploring and investigating students' emotions regarding the evaluation.
   Participants are asked about their emotions.
3- Description: The purpose of the description is to provide information and clarify the facts, including posing questions such as what happened and what actions were taken. The evaluators must determine whether or not the reason for poor student performance is obvious, whether the student is using the equipment properly, or whether the student does not know what to do.
4- Analysis: In this stage, the learners are required to identify their successful interventions and those they would change if they could go back in time, explaining why they would do so. The evaluator will present the knowledge/information necessary for eliminating student performance gaps.
5- Summary of applications/lessons learned. Students are asked to identify two points they can apply in the future.

Students were given a full explanation of the scenario, the study procedures, and the nursing skills assessed in the escape room. To better answer the students' questions

about the evaluated equipment and clinical skills, a feedback presentation session was held in the escape room so that, if necessary, the students' troublesome clinical skills could be applied to a simulated patient. In the end satisfaction questionnaire, clinical skills self-assessment questionnaire post-tests, PEARLS-based feedback questionnaire, and the preparedness assessment questionnaire were completed by the students. The assessment instruments were four-part researcher-made questionnaire, satisfaction questionnaire, clinical skills self-assessment questionnaire, PEARLS-based feedback questionnaire, and the preparedness assessment questionnaire.

The six-item student satisfaction questionnaire was scored on a five-point Likert scale ranging from strongly agree (5 points) to strongly disagree (1 point). The minimum and maximum possible scores are 6 and 30, respectively. A score of 1–10 suggests undesirable satisfaction, a score of 10–20 is indicative of relatively favorable satisfaction, and a score of 20–30 indicates desirable satisfaction. The researcher-made questionnaires were given to ten nursing and medical education faculty members to assess their face validity. Face validity was evaluated based on a tool's appearance and the writing and readability of the items. The reliability of the questionnaires was also evaluated using the internal consistency method. The Cronbach's alpha for this survey was 0.88.

The clinical skills self-assessment questionnaire contained 12 questions, each of which was scored on a five-point scale from *very certain* (5 points) to *very uncertain* (1 point). The minimum and maximum possible scores on this survey are 12 and 60, respectively. A score between 1 and 20 indicates an undesirable clinical skill status, a score between 20 and 40 indicates a relatively desirable status, and a score between 40 and 60 is regarded as desirable. The researcher-made questionnaires were given to ten nursing and medical education faculty members to assess their face validity. Face validity was evaluated based on a tool's appearance and the writing and readability of the items. The reliability of the questionnaires was also evaluated using the internal consistency method. The Cronbach's alpha for this survey was 0.82.

The PEARLS-based feedback questionnaire consisted of five questions, each of which was scored on a five-point Likert scale ranging from *strongly agree* (5 points) to *strongly disagree* (1 point). This questionnaire has a minimum score of 5 and a maximum score of 25. Scores between 1 and 8 indicate undesirable satisfaction, scores between 8 and 16 indicate somewhat satisfactory satisfaction, and scores between 16 and 25 are regarded as satisfactory. The researcher-made questionnaires were given to ten nursing and medical education faculty members to assess their face validity. Face validity was evaluated based on a tool's appearance and the writing and readability of the items. The reliability of the questionnaires was also evaluated using the internal consistency method. Its Cronbach's alpha coefficient was 0.85.

The preparedness assessment questionnaire contains seven items that are scored on a five-point Likert scale ranging from *definitely effective* (5 points) to *definitely ineffective* (5 points) (1 point). The minimum and maximum possible scores on this survey are 7 and 35, respectively. A score between 1 and 12 indicates undesirable preparedness, a score between 12 and 24 indicates relatively desirable preparedness, and a score between 24 and 35 indicates desirable preparedness. The researcher-made questionnaires were given to ten nursing and medical education faculty members to assess their face validity. Face validity was evaluated based on a tool's appearance and the writing and readability of the items. The reliability of the questionnaires was also evaluated using the internal consistency method. The Cronbach's alpha for this survey was 0.87.

Data were analyzed using IBM SPSS Statistics 22. Corp., Armonk, NY, USA. $P < 0.05$ was considered as statistical significance. Descriptive statistical tests were employed to screen for missing data, including frequencies, percent, mean, and standard deviation. The paired *t*-test (two series of scores from the same group of students) was utilized to compare the mean scores of clinical skills self-assessment among students. Cronbach's alpha coefficient was calculated to confirm the questionnaires' reliability. The acceptable range for Cronbach's alpha in this study was above 0.80. The majority of questions regarding missing data were answered, and any missing data were omitted from the analysis.

Ethical consideration

After the approval of the research project (10779), an ethics code was obtained from the ethics committee of the university (IR.ZAUMS.REC.1401.291). Explaining the goals of the study, obtaining informed consent, assuring of the confidentiality of the data, registering the data without the name, and respecting the principle of secrecy were observed.

Results

This study examined 42 students. The results indicated that the mean age of students was 23.46 ± 2.46 years. Regarding gender, 61.9% and 38.1% of the students were female and male, respectively, and their mean GPA was 15.44 out of 20. The mean and standard deviation of the students' satisfaction with the test was 24.38 ± 3.4, which was desirable. Indeed, 45% of the students strongly agreed that holding the escape

room test could meet the students' clinical education requirements [Table 1].

The mean and standard deviation of participant satisfaction with the test feedback was 21.64 ± 2.27, which was favorable according to the Likert scale. The nursing students' highest levels of satisfaction with the test feedback were associated with the following statements: "The facilitator assisted me in recognizing how to improve my performance or how to sustain it if it was good" and "The facilitator provided me with specific feedback about my or my team's performance based on an honest and accurate perspective." The statement that generated the least satisfaction was, "The facilitator prompted in-depth conversations that stimulated me to reflect on my own or my team's performance" [Table 2].

According to the Likert scale, the mean preparedness to practice as an intern was 28.45 ± 5.7, which was desirable. In addition, 38% of students believed that the escape room game test effectively prepared them for the internship [Table 3].

The average score of students' clinical skills in the post-test was significantly higher than in the pre-test [Table 4].

Discussion

The present study was conducted with the aim of investigating the effect of clinical evaluation in the escape room method and providing feedback to students with the PEARLS model on the satisfaction, learning, and readiness of entering the field of pre-practice nursing students. The results showed that the implementation of the test was able to have a positive effect on the satisfaction and be prepared to enter the field of students and improve the learning of nursing students compared to before the course.

Regarding satisfaction, the level of students' satisfaction with this new evaluation method has been favorable, in line with this study. *Roman et al*. conducted a study on nursing students with the title of escape room as a clinical evaluation method. Data analysis showed a high average of students' satisfaction with this new method of clinical evaluation compared to traditional tests. Many students prefer the escape room test over traditional evaluation methods, and the highest degree of student satisfaction was related to the effect of the test in meeting the students' educational needs. They considered this experience valuable because it helped students identify gaps and share knowledge and skills among group members.[16] They conducted the test (OSCE) using escape room in Spain. The findings showed that the escape room is a useful evaluation system that can complement other existing evaluation types and a new method for evaluating nursing students. Also, the results showed that nursing students prefer the escape room evaluation system to the traditional OSCE test and the level of students' satisfaction with this evaluation method was favorable, which is in line with the present study.[14]

Molina-Torres *et al*. (2021) conducted a study called escape room versus traditional evaluation in physiotherapy students. In this comparative study, 56 physiotherapy students were clinically evaluated using two traditional methods and escape room. The results showed that students' perceived anxiety and stress were higher in traditional evaluation. And the escape room can replace the traditional evaluation due to the reduction of students' anxiety. Also, the results showed that in the escape room group, following the reduction of students' anxiety, their satisfaction increased. This study is also in line with the present study.[18]

This issue can indicate that in the escape room method, by creating a calm atmosphere along with teamwork and

Table 1: Students' satisfaction with the test (*n*=42)

Item	Strongly agree		Agree		Somewhat agree		Disagree		Strongly disagree	
	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency
Appropriate notifications regarding the escape room were provided.	57.1	24	40.5	17	2.4	1	-	-	-	-
The execution procedure for the escape room test was clearly defined.	31.0	13	50.0	21	16.7	7	2.4	1	-	-
The length of the escape room test was sufficient.	33.3	14	42.9	18	21.4	9	2.4	1	-	-
The physical setting of the escape room test was appropriate.	33.3	14	42.9	18	16.7	7	7.1	3	-	-
The escape room test motivated me to learn.	28.8	12	40.8	17	24.0	10	7.1	3	-	-
The escape room test can help students meet their clinical training requirements.	45.6	19	48.0	20	7.1	3	-	-	-	-

Table 2: Feedback satisfaction with the PEARLS model (*n*=42)

Item	Definitely agree		Agree		Somewhat agree		Disagree		Definitely disagree	
	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency
The facilitator conducted briefing in an organized manner.	38.1	16	54.8	23	7.1	3	-	-	-	-
The facilitator prioritized learning over making people feel bad about making mistakes.	42.9	18	45.2	19	11.9	5		-	-	-
The presenter prompted in-depth conversations that stimulated me to reflect on my or my team's performance.	28.6	12	47.6	20	14.3	6	2.4	1	-	-
The facilitator provided me with specific feedback about my or my team's performance based on an honest and accurate perspective.	40.5	17	42.9	18	14.3	6	2.4	1	-	-
The facilitator assisted me in recognizing how to improve my performance or how to sustain it if it was good.	40.5	17	50	21	9.5	4		-	-	-

Table 3: Preparedness of students to practice as interns (*n*=42)

Item	Definitely effective		Very effective		Effective		Not effective		Definitely ineffective	
	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency
Has the escape room game evaluation prepared you adequately for the internship?	38.1	16	33.3	14	21.4	9	4.8	2	2.4	1
Has the evaluation of the escape room game increased your confidence to enter the internship?	38.1	16	31.0	13	26.2	11	2.4	1	2.4	1
Has the evaluation of the escape room game improved your critical thinking skills?	26.2	11	47.6	20	21.4	9	2.4	1	2.4	1
Has the evaluation of the escape room game improved your problem-solving skills?	47.6	20	26.2	11	23.8	10	-	-	2.4	1
Has the evaluation of the escape room game decreased your anxiety about the internship?	40.5	17	40.5	17	14.3	6	2.4	1	2.4	1
Has the feedback session following the escape room game enhanced your internship preparedness?	38.1	16	38.1	16	19.0	8	2.4	1	2.4	1
Has the escape room's open-ended evaluation and subsequent feedback session served to familiarize you with aspects of teamwork?	42.9	18	38.1	16	14.3	6	-	-	4.8	2

Table 4: Mean scores of clinical skills (*n*=42)

Self-assessment score	Mean and standard deviation	*P*
Pre-test	40.26±4.04	0.000
Post-test	51.69±3.51	

sharing knowledge and skills among group members and learning from peers, the stress level of students is reduced, and however, by helping students identify their weak points. And considering the test score as a group and the welcome of new evaluation methods has caused them to be satisfied.

Martin and his colleagues also used the PEARLS model to provide feedback to students in an educational intervention with the aim of playing an escape room game to guide medical students from the pre-clinical environment to the bedside. The results of this study indicated the positive effect of providing their feedback on student satisfaction. which was in line with the results of our study.[19]

The purpose of monitoring the learning process during education and presenting it to students and professors in the field of learning successes and failures is to evaluate. The result of feedback to students is to strengthen successful learning and identify learning errors and correct them, and for professors, information to improve education. And it provides recommendations for individual or group remedial measures to the learners. If this feedback is given in a group form, it can improve the working group among the students and increase the motivation and learning level of the learners.[20] In the present study, after the execution of the escape room test, the students received feedback using the PEARLS model, and the results showed that the escape room test increased the students' learning level. However, clinical work is a vital part of medical education, and to make full use of clinical experiences, it is necessary to provide regular feedback on learners' performance. Unfortunately, doing this important thing in clinical learning environments is difficult and challenging, and clinical educators often shy away from this important responsibility. In most cases, students complain about the lack of feedback.[21] Therefore, using the escape room test in clinical environments can be helpful in providing effective feedback to students.

In relation to learning Birganinia *et al*. conducted a study with the aim of designing, implementing, and evaluating the educational escape room game by peers to improve the knowledge and skills of paramedical students of Jundishapur University of Medical Sciences, Ahvaz. In the end, the levels of satisfaction, knowledge, and skills of the students were investigated after playing the escape room game. The results of the evaluation showed that most of the students were completely satisfied with playing this game and considered the escape room to be effective as a new educational method and wanted to continue this process in the college, and the learning score of most of the students increased after participating in the escape room, which shows the positive effect of the escape room on the students' learning, which is in line with the present study.[22] Also, in the study of Li *et al*., titled "Escape room game design for cardiopulmonary resuscitation training" in Taiwan, the results showed that the amount of knowledge and learning of the research samples before and after participating in the escape room has increased significantly, which shows the effectiveness of the escape room in promoting learning.[23]

The escape room game is a type of active learning strategy, which makes the learner the spectator. It turns the passive into an active participle. These methods have been shown to have beneficial effects on students across educational programs, increasing grade point averages for each course, increasing understanding of concepts, increasing students' positive perceptions of learning material, and reducing student anxiety and dropout rates as follows.[24] The escape room seems to provide frequent opportunities to enhance learning through intra-team discussions to reach a comprehensive decision.

Regarding the increase of students' preparation in the study of Beheshtifar *et al*. with the aim of determining the effect of training based on the escape room game on the preparation of undergraduate nursing students in facing bioterrorism, the results showed that the training based on the escape room had an effect on the preparation of the research units.[25] Also, in the study of Martin *et al*., the escape room game increased the readiness of medical students to enter the bedside,[19] which is in line with the present study. In the EUKEL study in the United States, which was conducted under the title of design and evaluation of the game based on escape room on the preparation of management of diabetic patients in pharmacy students, the results of the study showed a statistically significant increase in the preparation of students in the field of management of diabetic patients after completing the escape room game.[26]

It seems that the exchange of information between the students in the escape room and practical exercises allows the students to gain a basic level of preparation because the students are teaching each other when they arrive at a common answer to the puzzles in the escape room. An escape room gives students a chance to work as a team with their classmates and helps turn beginners into experienced ones. And the beginners should think about themselves and what they are doing.

Limitations and recommendation

The small number of participants was the limitations of the present study. Therefore, for the planning of future studies, to achieve more reliable results for decision-making at the macro level of education, it is suggested that the present research be conducted on a larger scale and compared to other evaluation methods with the presence of a control group.

Conclusion

In conclusion, it appears that using the escape room evaluation method in conjunction with other student evaluation methods has helped improve students' interpersonal communication, -solving skills, critical thinking, and teamwork. The experience of working in a group not only improves these skills and is enjoyable to students but can also enhance their learning. Clinical education is dependent on teamwork. The escape room test can be viewed as a valuable tool for encouraging students to collaborate as a team. Therefore, it is suggested that students in all medical education groups be evaluated clinically using this test.

Acknowledgement

The researchers would like to thank the deputy of research and technology and the students of nursing of Zahedan University of Medical Sciences for their sincere cooperation in the present study.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Cronenwett L, Sherwood G, Barnsteiner J, Disch J, Johnson J, Mitchell P, *et al*. Quality and safety education for nurses. Nurs Outlook 2007;55:122-31.
2. Penn BK, Wilson LD, Rosseter R. Transitioning from nursing practice to a teaching role. Online Journal of Issues in Nursing. 2008;13.
3. Esteves LSF, Cunha ICKO, Bohomol E, Negri EC. Supervised internship in undergraduate education in nursing: Integrative review. Rev Bras Enferm 2018;71(suppl 4):1740-50.
4. Baumann A, Crea-Arsenio M, Hunsberger M, Fleming-Carroll B, Keatings M. Work readiness, transition, and integration: The challenge of specialty practice. J Adv Nurs 2019;75:823-33.
5. Rogers S, Redley B, Rawson H. Developing work readiness in graduate nurses undertaking transition to practice programs: An integrative review. Nurse Educ Today 2021;105:105034.
6. Hezaveh MS, Rafii F, Seyedfatemi N. Novice nurses' experiences of unpreparedness at the beginning of the work. Glob J Health Sci 2013;6:215-22.
7. Mampunge F, Seekoe E. Experiences of final-year nursing students at a public college of nursing regarding their preparedness to become registered nurses: Part 1: Contemporary issues in nursing. South African Journal of Higher Education. 2014;28:1929-42.
8. Zamanzadeh V, Jasemi M, Valizadeh L, Keogh B, Taleghani F. Lack of Preparation: Iranian nurses' experiences during transition from college to clinical practice. J Prof Nurs 2015;31:365-73.
9. Mohammed B, Ahmed W. Evaluation of nurse interns' satisfaction and hospital as an educational environment in nursing internship training program, Saudi Arabia. Evaluation. 2020;9:22-9.
10. Vincent SC, Arulappan J, Amirtharaj A, Matua GA, Al Hashmi I. Objective structured clinical examination vs traditional clinical examination to evaluate students' clinical competence: A systematic review of nursing faculty and students' perceptions and experiences. Nurse Educ Today 2022;108:105170.
11. Belay LM, Sendekie TY, Eyowas FA. Quality of multiple-choice questions in medical internship qualification examination determined by item response theory at Debre Tabor University, Ethiopia. BMC Med Educ 2022;22:635.
12. Nazem M, Garakyaraghi M, Hosseinpour M, Khoddami Ar. Interns' Viewpoints Concerning their Readiness for Entering Internship in Isfahan Medical University. Iranian Journal of Medical Education. 2005;5:157-64.
13. Ghiasi F, Bastami M, Azadi H, Kheiri M, Kheiri A, Sharifi N, *et al*. The impact of OSCE test workshop on reducing anxiety in anesthesia and operating room students.
14. Roman P, Rodriguez-Arrastia M, Molina-Torres G, Márquez-Hernández VV, Gutiérrez-Puertas L, Ropero-Padilla C. The escape room as evaluation method: A qualitative study of nursing students' experiences. Med Teach 2020;42:403-10.
15. Anguas-Gracia A, Subirón-Valera AB, Antón-Solanas I, Rodríguez-Roca B, Satústegui-Dordá PJ, Urcola-Pardo F. An evaluation of undergraduate student nurses' gameful experience while playing an escape room game as part of a community health nursing course. Nurse Educ Today 2021;103:104948.
16. Roman P, Rodriguez-Arrastia M, Molina-Torres G, Márquez-Hernández VV, Gutiérrez-Puertas L, Ropero-Padilla C. The escape room as evaluation method: A qualitative study of nursing students' experiences. Med Teach 2020;42:403-10.
17. Schmaldinst K. The impact of an escape room simulation on confidence and competence in nursing student's identification of critical changes in patients: A mixed-method approach. 2021.
18. Molina-Torres G, Sandoval-Hernández I, Ropero-Padilla C, Rodriguez-Arrastia M, Martínez-Cal J, Gonzalez-Sanchez M. Escape room vs. traditional assessment in physiotherapy students' anxiety, stress and gaming experience: A comparative study. Int J Environ Res Public Health 2021;18:12778.
19. Martin A, Gibbs S. An escape room to orient preclinical medical students to the simulated medical environment. MedEdPORTAL 2022;18:11229.
20. JÖNSSON, Anders. Definitions of formative assessment need to make a distinction between a psychometric understanding of assessment and "evaluative judgment". In: *Frontiers in Education*. Frontiers Media SA, 2020. p. 2.
21. Burgess A, van Diggele C, Roberts C, Mellis C. Feedback in the clinical setting. BMC Med Educ 2020;20(Suppl 2):460.
22. Birganinia M, Eslami K, Arjmand R, Izadpanah M, Yazdaninejad H. Design, Implementation and evaluation of peer educational escape room games to improve the knowledge and skills of paramedical students of ahvaz jundishapur university of medical sciences. Educational Development of Judishapur. 2019;10:262-70.
23. Li C-T, Huang Y-J, Yeh C-M, Chen W-L, Chen G-Y, Cai H-X, *et al*., editors. Designing an escape room educational game for cardiopulmonary resuscitation training: The evaluation of learning achievement and flow state. 2020 9th International congress on advanced applied informatics (IIAI-AAI); 2020: IEEE.

24. Messmer PR, Jones SG, Taylor BA. Enhancing knowledge and self-confidence of novice nurses: The "Shadow-A-Nurse" ICU program. Nurs Educ Perspect 2004;25:131-6.
25. Beheshtifar M, Pishgooie SAH, Sharififar ST, Khoshvaghti A. Evaluation of the effect of gaming based education themed escape room on preparedness of aja undergraduate nursing students in dealing with bioterrorism. Military caring sciences journal. 2021;8(3):218-29.
26. Eukel HN, Frenzel JE, Cernusca D. Educational gaming for pharmacy students-design and evaluation of a diabetes-themed escape room. Am J Pharm Educ 2017;81:6265.