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EXPERIENCE REPORT

Realistic simulation and escape room as combined active strategies in teaching nursing care in sepsis and infected wounds

Simulación realista y sala de escape como estrategias activas combinadas para la enseñanza de cuidados de enfermería en casos de sepsis y heridas infectadas

Simulação realística e escape room como estratégias ativas combinadas no ensino da assistência de enfermagem em sepse e ferida infectada

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Abstract

This study aimed to describe the teaching experience in a Nursing Technician course using Realistic Simulation and an Escape Room in the management of a critically ill patient with suspected sepsis and an infected dressing. A validated script and learning objectives based on Bloom's Taxonomy were used. A medium-fidelity simulator and care mannequins with moulage techniques were employed. The Escape Room strategy comprised three stations: interpretation of vital signs, dressing technique, and nursing records. Debriefing was conducted using the PEARLS tool, facilitated by a performance checklist. High engagement and improvement in clinical reasoning were observed. For the careful design of the scenario, the Realistic Simulation design was based on Jeffries' Theory and the National Institute of Clinical Simulation (INACSL) Best Practices for Simulation in Healthcare, which provided students with security, resulting in safe decision-making and assertive communication. It is concluded that the convergence of strategies favored by knowledge retention and stress management is inherent to professional practice. It is concluded that the combination of educational technologies enhances technical and behavioral skills, reiterating the need for continuous teacher training in evidence-based strategies.

Descriptors: Nursing Education; Patient Simulation; Sepsis; Health Knowledge, Attitudes, Practice; Gamification.

Resumén

Este estudio tuvo como objetivo describir la experiencia docente en un curso de Técnico en Enfermería utilizando Simulación Realista y una Sala de Escape en el manejo de un paciente crítico con sospecha de sepsis y un apósito infectado. Se utilizó un guion validado y objetivos de aprendizaje basados en la Taxonomía de Bloom. Se emplearon un simulador de fidelidad media y maniquíes de cuidados con técnicas de moulage. La estrategia de la Sala de Escape comprendió tres estaciones: interpretación de signos vitales, técnica de apósito y registros de enfermería. El análisis posterior se realizó utilizando la herramienta PEARLS, facilitado por una lista de verificación de desempeño. Se observó una alta participación y una mejora en el razonamiento clínico. Para el diseño cuidadoso del escenario, el diseño de Simulación Realista se basó en la Teoría de Jeffries y las Mejores Prácticas para la Simulación en la Atención Médica del Instituto Nacional de Simulación Clínica (INACSL), lo que brindó seguridad a los estudiantes, resultando en una toma de decisiones segura y una comunicación asertiva. Se concluye que la convergencia de estrategias favoreció la retención del conocimiento y el manejo del estrés inherente a la práctica profesional. Se concluye que la combinación de tecnologías educativas mejora las habilidades técnicas y conductuales, reiterando la necesidad de una capacitación docente continua en estrategias basadas en la evidencia.

Descriptores: Formación en Enfermería; Simulación de Pacientes; Sepsis; Conocimientos, Actitudes y Prácticas en Salud; Gamificación.

Resumo

Objetivou-se descrever a experiência de ensino ao curso Técnico de Enfermagem mediante o emprego de Simulação Realística e Escape room no manejo do paciente crítico com suspeita de sepse e curativo infectado. Utilizaram-se roteiro validado e objetivos de aprendizagem pautados na Taxonomia de Bloom. Empregaram-se simulador de média fidelidade e manequins de cuidados com técnicas de moulage. A estratégia de Escape room compreendeu três estações: interpretação de sinais vitais, técnica de curativo e registros de enfermagem. O debriefing foi conduzido via ferramenta PEARLS, com facilitação por checklist de desempenho. Observou-se elevado engajamento e aprimoramento do raciocínio clínico. Para o desenho criterioso do cenário, o design da Simulação Realística baseou-se na Teoria de Jeffries e nos Padrões de Melhores Práticas para Simulação em Saúde (INACSL), que conferiu segurança aos discentes, refletindo-se em tomadas de decisão seguras e comunicação assertiva. Conclui-se que a convergência das estratégias favoreceu a retenção de conhecimento e a gestão de estresse inerente à prática profissional. Conclui-se que a união de tecnologias educacionais potencializa competências técnicas e comportamentais, reiterando a necessidade de capacitação docente contínua em estratégias baseadas em evidências.

Descritores: Educação em Enfermagem; Simulação de Paciente; Sepse; Conhecimento, Atitudes e Práticas em Saúde; Gamificação.

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Introduction

Sepsis is a complex clinical syndrome resulting from an inappropriate response of the body to an infection, which can rapidly progress to organ dysfunction and death if not promptly recognized and treated. According to the World Health Organization (WHO), sepsis is estimated to affect approximately 49 million people annually, causing about 11 million deaths worldwide[1]. In a hospital setting, early identification and immediate intervention are fundamental to reducing mortality and improving clinical outcomes.

Given the severity of this clinical picture, it is essential that healthcare professionals, including nursing technicians, are able to recognize the initial signs and symptoms of sepsis and intervene safely. To this end, technical training must go beyond the mere acquisition of theoretical content, incorporating pedagogical practices that promote clinical reasoning, decision-making, and teamwork. In this sense, active teaching-learning methodologies have become established as effective strategies in health education, favoring student protagonism, critical thinking, and the integration of theory and practice. The literature indicates that such methodologies are especially useful in the education of nursing technicians, contributing to the development of relevant clinical competencies in simulated and realistic contexts[2-5].

Among these methodologies, Realistic Simulation and educational Escape Rooms have gained prominence for promoting immersive and interactive experiences. Realistic Simulation allows the creation of complex, safe, and controlled clinical scenarios in which students can apply technical knowledge, develop practical skills, and reflect on their performance through debriefing[3,4]. Escape rooms, by using challenges in a collaborative game format with a limited time, stimulate effective communication, leadership, and logical reasoning in high-pressure situations, simulating the dynamics of clinical practice[5].

In a recent study comparing the impact of escape rooms and high-fidelity simulation on interprofessional communication and teamwork, simulation obtained a higher total score in both areas. However, when considering each behavior evaluated in the study individually, each approach proved more advantageous for the development of some of them. Simulation showed better scores in SBAR (Structured Behavior Analysis and Reliability Assessment), patient communication, and requesting external resources, while the escape room obtained better scores in verbally requesting team contributions, cross-monitoring, and closed-loop communication[6].

Considering, therefore, that each approach demonstrates better results in different behaviors, the authors suggest that the decision on which strategy to use should take into account the specific objectives related to the interprofessional communication and teamwork behaviors that one wishes to develop, with recent studies even indicating that combining the two strategies enhances student engagement and expands opportunities for meaningful learning[5,7,8].

According to Jeffries[7], the structured use of simulation in nursing provides significant gains in learning, provided that the objectives are clear and there is qualified teaching supervision. Furthermore, planning training activities based on Bloom's Taxonomy[8] enables progressive and contextualized learning.

Formative assessment, in turn, plays an essential role in this process, offering continuous feedback that guides student performance during simulation and problem-solving activities, especially when integrated with reflective debriefing, contributing to the consolidation of learning and the development of autonomy and self-criticism in future professionals[4]. Thus, both the simulation and the Escape Room were conceived not only as instructional strategies, but also as evaluative and formative moments.

Therefore, this experience report aims to describe the teaching experience in the Nursing Technician course using Realistic Simulation and escape room strategies to develop skills related to nursing care for critically ill patients under investigation for sepsis and performing dressing changes on infected wounds.

Methodology

Regarding the description of the experience and the methodology adopted, the target audience consisted of students from the nursing technician course at two distinct points in the course, with Class 1 enrolled in the Critical Patient Nursing Care Unit and Class 2 in the Specialized Nursing Care Unit. The total workload of the activity was 4 (four) hours, of which two hours were dedicated to Realistic Simulation, covering the stages of pre-briefing, running, and debriefing, and the other two hours were dedicated to the development of the Escape Room. The learning objectives were listed according to Bloom's Taxonomy, and for the Realistic Simulation, the following were established: to provide nursing care to the critically ill patient during the dressing of an infected wound; to employ aseptic technique in performing the dressing; to report the appearance of the wound to the Nurse and to complete the Nursing Record. For the Escape Room, the defined objectives were to identify the signs of sepsis; To assess and treat the infected wound; to record the nursing actions. The team involved consisted of faculty members from the Nursing Technician course, one of whom holds a PhD in Realistic Simulation, and had the support of the institution's Laboratory Technician.

Experience Report

With the theme "Nursing Care during Wound Dressing in an Infected Wound in a Critically Ill Patient," for the proposed scenario, the patient's current and previous clinical history (simulator) was developed, and a scenario similar to a Semi-Intensive Care Unit was set up, with a cardiac monitor, gas regulator, hospital bed, continuous infusion pump, emergency cart, and nursing station. A medium-fidelity, monitored simulator was used, with a lesion developed by moulage (Figure 1) on the left lower limb.

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Figure 1. Moulage of an infected lesion on the left lower limb of a patient simulator. Campinas, SP, Brazil, 2025

Source: Authors' collection.

Figure 2. Excerpt from the Script for a Realistic Simulation Scenario containing the case briefing and patient's clinical history. Campinas, SP, Brazil, 2025

Case Briefing	
Name: Maria Luiza Pereira **Age:** 52 years **Comorbidities:** Systemic arterial hypertension (SAH) and decompensated type 2 diabetes mellitus, with irregular use of medication. **Length of hospital stay:** 2nd day Maria Luiza was admitted with a history of persistent fever (> 39 °C), tachycardia, profuse sweating, and dyspnea. She presents a lesion on the lower left limb (LLE), with local signs of infection: • Saturated secondary dressing • Purulent exudate with foul odor (+++) • Intense flogistic signs on the skin surrounding the lesion • Pain exacerbated by manipulation On the morning of the second day of hospitalization, the patient showed significant decline in general condition, with reduced level of consciousness (obtunded, non-verbal, non-responsive). You (nursing technician) are assigned to perform wound care for LLE.	
Patient clinical history	Decompensated systemic arterial hypertension and type 2 diabetes mellitus, without therapeutic adherence. During hospitalization, a family member reported that the LLE lesion began after the patient had a deep vein thrombosis (DVT) about one year ago. She was hospitalized at that time and followed up at the Primary Health Care Center, but she did not like to change the dressing regularly.
Assistance already provided	Patient monitored, medication already prescribed in the medical chart, and bed bath has been completed.
ICHC (Infection Control Hospital Committee) guidance	Type of precautions: standard and contact.

Source: Oliveira's Script Model[9] with a clinical case developed by the authors of this study.

Figure 3. Observer checklist. Campinas, SP, Brazil, 2025

	Item	How you would do it
Action		

Source: Adapted from Oliveira[9].

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For the development of the clinical case and other information for the scenario, the Realistic Simulation Scenario Script was used, which allows listing the information inherent to the simulation, from Theme, Learning Objectives, necessary structure, type of simulator, simulator programming, script for the actors, necessary equipment and supplies, information from the case briefing (Figure 2) and Observer Checklist (Figure 3).

The design of the realistic simulation[3] was organized as follows.

Prebriefing

Preparatory session for the simulation, including welcoming the students, a brief explanation of the simulation method, followed by a confidentiality agreement and guidelines related to the expected professional ethical conduct of the simulation participant. Next, there was an orientation period for all participants to familiarize themselves with the scenario and select volunteers. Once the volunteers were selected, the observer checklists were distributed, and instructions for completion were given (Figure 2). The clinical case was then read, and the scenario began.

Filming the Scene

This is the moment when volunteers effectively assist, with interactions from the simulator, including speech (an actor interpreting the voice of the patient simulator, complaining of intense pain upon manipulation of the lesion) and physiological responses to the students' actions, according to a pre-defined program configured in the patient simulator software.

At this point, the facilitator of the realistic simulation monitors the volunteers' actions and records whether the learning objectives were achieved. Similarly, the clinical simulation observers record the actions they observe and the actions they would take in the volunteers' place, for later discussion during the debriefing. This scenario was scheduled to run for 12 to 15 minutes and lasted 18 minutes.

Debriefing

A session approximately three times longer than the scenario filming, in which there is discussion and reflection on the action observed and performed by the volunteers, mediated by the simulation facilitator with the participation of all participants present. The PEARLS tool was used to conduct this debriefing[4].

Escape Room

Following the debriefing of the simulation, the students had a 15-minute break and, upon returning to the Nursing laboratory, were invited to participate in the Escape Room activity, following the same theme: Nursing care during wound dressing of an infected wound in a critically ill patient. An Escape Room script was developed, containing three challenges to be completed by the students, who were divided into 4 groups of approximately 5 people. Four low-fidelity simulators (care mannequins) were placed at four workstations, each presenting a wound developed by moulage in different body sites, in which, in one of the challenges, the dressing had to be performed using aseptic technique.

The challenges listed for each group for this Escape Room were:

1. Station 1: Deciphering the Signals

Objective: To identify the clinical signs of sepsis.
Challenge: Participants received information via a projector about the patient's condition. Vital signs: temperature 39.4º; BP: 95x68mmHg; HR 128 bpm; RR 27 bpm. Oxygen saturation 91%, presents with dyspnea and decreased level of consciousness.
Expected solution: Recognition of signs suggesting sepsis.
Key to the next step: QR Code for the next challenge, to be developed on the same patient (mannequin).

2. Station 2: Critical Treatment

Objective: To assess and perform dressing changes on an infected wound.
Challenge: Your simulated patient presents with a wound with a saturated dressing.
Expected solution: 1. Assess local signs of infection; 2. Change the dressing using aseptic technique according to the Nursing Prescription.
Necessary items: Dressing materials are available on the counter and in the Nursing Prescription.
Access password to dressing materials: Will be generated when the following questions are answered correctly:

a) What is the most common type of exudate in an infection?
b) What are the signs of infection in a wound?

Key to the next step: A QR code hidden under the dressing with access to a sepsis protocol.

3. Station 3: Nursing Record

Objective: To complete the Nursing Record
Challenge: Based on the actions performed, participants must record the care provided in the patient's chart.
Expected solution: The Nursing Record should contain: 1. Aspect of the lesion and exudate; 2. Procedure performed; 3. Type of dressing used (according to Prescription and Nursing); 4. Patient's response; 5. Communication with the team.
Final key: Upon correctly completing the protocol, they receive the final password to "release" the patient from progression to septic shock, projected on the board.

Escape Room Debriefing

After the procedure, a brief structured debriefing was conducted covering the following points: 1. What was the most challenging aspect? 2. How did the team organize themselves? 3. Which signs of sepsis were the most difficult to identify? 4. Was the dressing technique adequate? 5. What would you do differently in a real-life case?

Quality control

It is important to emphasize that each group was supervised by a professor from the Nursing Technician course to guide the activities and, as a quality control measure, ensure that each group achieved its learning objectives.

Perceptions

A major concern during the development of the activity was to foster an environment like clinical practice in terms of realism and environmental fidelity, while simultaneously being welcoming and psychologically safe for the participants of the Realistic Simulation. From the welcoming atmosphere to the dialogue presentation about the method itself and the real opportunity for learning in an immersive, collaborative, and safe activity, each explanation was carefully considered to involve the students and allow them to ask questions and interact to dissipate anxieties and tensions that could affect their performance during the class. Clearly noticeable results showed increased student motivation and engagement. During the simulation, their attention and focus on the actions, accompanied by the completion of the observer checklist[9], demonstrated clear engagement and emotional involvement with the care provided and the case presented. Their eyes remained attentive to each decision made by the volunteers during the care and, later, during the dressing change and interactions with the simulator.

The students' responses were not collected. These perceptions were confirmed during the debriefing discussion, when the students had the opportunity to express their thoughts and feelings during the simulation, as well as the positive points and areas for improvement noted, what they would have done differently from the volunteers, and even the volunteers, as recorded in their checklist, explaining what they would improve in their own care. Such interaction and exposure denote a psychologically safe environment conducive to reflection and meaningful learning.

Teamwork, decision-making focused on patient safety, and assertive communication in the context of clinical reasoning during patient care were evident during the activity. The active participation and demeanor of the volunteers and observers were verified in the courteous comments made during the debriefing. Learning progress was monitored using the Facilitator's Checklist[9], an integral part of the Script used to develop the Simulation Scenario, which guides the instructor in observing the actions performed and the achievement of the learning objectives outlined for the lesson during the simulation design.

During the Escape Room, student engagement combined with enthusiasm, given the strategy's premise, in which they felt like they were in teams, facing challenges to overcome. With each challenge overcome, a "key" was given to advance to the next station. Each student actively participated and contributed their knowledge to decision-making and clinical reasoning when dealing with their patient (low-fidelity simulator). This was evident in the quality of group discussions about the case and in deciding which actions to take, including choosing the best technique for wound care, assessing the appearance of the secretion (using moulage), and indicating the dressing prescribed by the nurse. Group members demonstrated teamwork with assertive communication and problem-solving skills. Each group was mediated by a teacher, who handed out the keys as they progressed in the tasks.

Discussion

Developing lessons using active methodologies is a didactic and pedagogical challenge, given the degree of complexity that each methodology brings with it and its theoretical framework.

For the design of the Realistic Simulation, we based our theoretical framework on Jeffries' Theory[7] and the Simulation Standards for Best Practices in Healthcare (INACSL - International Nursing Association for Clinical Simulation and Learning)[3], already incorporated as best practice in Realistic Simulation in national and international contexts. Jeffries' Simulation "Framework" emphasizes the careful design of the scenario, aspects such as the student and teacher profiles, the realism and fidelity incorporated into the scenario, and the definition of learning objectives, which were listed based on Bloom's Taxonomy. This allows for the correlation of students' cognitive progression with expected actions, the promotion of meaningful learning, and the robustness of the strategy, thus contributing to the method's effectiveness[8].

Following the principle that learning is greatly enhanced when the student is placed at the center of the learning process, in this case, both the Simulation and the Escape Room granted autonomy to the participants, who, in turn, demonstrated good knowledge retention, as perceived by the teachers present. This principle, emphasized by Jeffries, aligns with the importance of structuring the simulation with reference to the student's existing potential, maximizing their performance within the competencies already developed in their learning trajectory[7]. Such protagonism, when well guided by the facilitating teacher, creates conditions for the student to feel more confident and satisfied after the simulation experience.

Section 6 of the Simulation Standards for Best Practices in Healthcare[3] presents the Debriefing Process as a process facilitated through multiple techniques that provide feedback and opportunities for guided reflection on professional practice, granted through "keys" during the Escape Room, with immediate feedback upon completion of the actions.

For conducting simulation debriefing, the PEARLS (Promoting Excellence and Reflective Learning in Simulation)[4] tool was used. Approximately 45 minutes were allocated to the scenario debriefing, during which a safe environment and structured mediation were implemented, allowing students to: 1. Briefly express their thoughts and feelings about the scenario; 2. Objectively describe their understanding of the case; 3. Analyze the performance domains: decision-making, technical skills, communication, teamwork; 4. Identify the main lessons learned related to their practical application in the next similar opportunity.

At the facilitator's preference, the order in which participants speak during the Simulation is organized so that volunteers first present their impressions and reflections, followed by the Simulation observers, with the aim of promoting self-analysis and reflection on their own performance, as emphasized in the PEARLS tool[4].

It was observed that not all teachers are prepared to act as facilitators in Realistic Simulation, which reinforces the need for continuous qualification and training of the teaching staff to develop skills such as scenario creation, debriefing mediation, in conducting a safe environment for constructive feedback and guided reflection for practice[3,4,9], considering that Realistic Simulation, specifically, has been considered the future of teaching in healthcare[10,11].

Another key point in applying the methodology was the creation of an effective simulation scenario, with a structured and validated script[9], a step that requires pedagogical and logistical planning time. Among the steps, we highlight the need to construct clinical records that adhere to the simulation, scripts, evaluation of specific competencies, team training, and logistical organization[11].

Final Considerations

The scenario developed for the Realistic Simulation, as well as the script for the Escape Room, were created from structured scripts, compressed teaching strategies, the use of a medium-fidelity patient simulator and care mannequins, lesions developed by moulage, dressings, and equipment very close to the hospital environment, generating greater realism, environmental fidelity, and interactivity between the participants and the mannequins. This involved the use of a broad theoretical framework and knowledge to be employed by the teachers in the development and application of the strategies.

Good interaction, engagement, and motivation were observed among the students during the simulation scenario and debriefing, as well as during the execution of the Escape Room tasks. These activities fostered the training of clinical reasoning, the activation of fundamental concepts and principles of care for patients suspected of sepsis, assertive communication, teamwork, proper application of aseptic technique for wound care, and decision-making under pressure. It is believed that the combination of the two strategies favored these skills, as well as time management for providing care and managing the stress experienced in professional practice. Active student participation was observed in both strategies. In the simulation, this participation occurred during the running and debriefing phases, where everyone was invited to share their ideas and reflections; and in the escape room, everyone needed to engage in actions and discussions to overcome the challenges. Student performance was closely monitored by faculty, who divided themselves among the stations and mediated the stages of skill development and formative assessment of the learning process provided throughout the course. This initiative proved effective for training skills and building competencies for nursing professionals. It is suggested here that faculty receive continuous training in the application of new technologies and evidence-based teaching strategies, as well as the development of validated instruments for such strategies to enhance learning in healthcare.

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