Development of an *in situ* simulation scenario for respiratory failure management in pediatrics

Desenvolvimento de cenário para simulação *in situ* de insuficiência respiratória em pediatria

Desarrollo de un escenario de simulación *in situ* de insuficiencia respiratoria en pediatría

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Abstract

Objective: To report the development of an *in situ* simulation scenario for respiratory failure management in pediatrics by nurses.
Methods: This is a descriptive study, in the form of an experience report, structured in two phases: clinical case development and scenario development. The research team included nurses with specialization and/or experience in pediatrics, as well as a physician specialized in emergency care.
Results: The clinical case was developed through three virtual meetings to identify the child's respiratory deterioration, monitor hemodynamic parameters, assess the need for oxygen therapy, and analyze the accuracy of participants' decision-making. The scenario was developed across eight domains: Context; Background; Design; Debriefing; Clinical Judgment; Outcomes; Scenario Script; and Storyboard.
Conclusion: It was possible to develop a structured *in situ* simulation scenario for respiratory failure management in pediatrics, representing a potentially useful strategy for training nurses in emergency services.

Keywords

Simulation training; Respiratory insufficiency; Education, nursing; Pediatric nursing; Emergency nursing

Resumo

Objetivo: Relatar o desenvolvimento de um cenário de simulação *in situ* para o manejo da insuficiência respiratória em pediatria por enfermeiros.
Métodos: Trata-se de um estudo descritivo, do tipo relato de experiência, estruturado em duas fases: desenvolvimento do caso clínico e elaboração do cenário. A equipe de pesquisa incluiu enfermeiros com especialização e/ou experiência em pediatria, além de um médico especializado em urgência e emergência.
Resultados: O caso clínico foi desenvolvido em três reuniões virtuais para identificar a piora respiratória da criança, monitorar parâmetros hemodinâmicos, avaliar a necessidade de oxigenoterapia e analisar a assertividade da decisão dos participantes. E, o cenário foi desenvolvido em oito domínios: Contexto; *Background*; Design; *Debriefing*; Julgamento clínico; Resultados; Script do cenário; S*toryboard*.
Conclusão: Foi possível desenvolver um cenário de simulação *in situ* estruturado para o manejo da insuficiência respiratória em pediatria, configurando-se como uma estratégia potencialmente útil para treinamento de enfermeiros em serviços de emergência.

Descritores

Treinamento por simulação; Insuficiência respiratória; Educação em enfermagem; Enfermagem pediátrica; Enfermagem em emergência

Resumen

Objetivo: Describir el desarrollo de un escenario de simulación in situ para el manejo de la insuficiencia respiratoria pediátrica por parte de enfermeros.
Métodos: Se trata de un estudio descriptivo, tipo relato de experiencia, estructurado en dos fases: desarrollo del caso clínico y elaboración del escenario. El equipo de investigación estuvo conformado por enfermeros con especialización y/o experiencia en pediatría, además de un médico especialista en urgencias y emergencias.
Resultados: El caso clínico fue desarrollado en tres reuniones virtuales para identificar el deterioro respiratorio del niño, monitorear los parámetros hemodinámicos, evaluar la necesidad de oxigenoterapia y analizar la precisión de la toma de decisiones de los participantes. El escenario fue desarrollado en ocho dominios: Contexto, Antecedentes, Diseño, Debriefing, Juicio Clínico, Resultados, Guion del Escenario y Storyboard.
Conclusión: Fue posible desarrollar un escenario estructurado de simulación in situ para el manejo de la insuficiencia respiratoria pediátrica, constituyéndose en una estrategia potencialmente útil para la capacitación de enfermeros en los servicios de emergencia.

Descriptores

Entrenamiento simulado; Insuficiencia respiratoria; Educación en enfermería; Enfermería pediátrica; Enfermería de urgencia

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Introduction

Respiratory diseases are a global health problem and one of the leading causes of death among children under five years of age, accounting for approximately 12.6 million deaths. This number has remained stable over the past decade, with respiratory failure (RF) being one of the main causes of pediatric morbidity and mortality, ranking third among causes of pediatric mortality in Brazil.[1,2] Therefore, it is essential that nurses receive adequate training to promptly identify the signs and symptoms of RF, ensuring safe airway management.[2,3]

In Brazil, there were 779 infant deaths due to unspecified RF between 2010 and 2020, with preliminary data indicating 40 new deaths recorded in 2021.[4] Professional training may help reduce these numbers, as RF recognition and management are essential, especially in emergency situations, due to its varying severity.[3] However, failures may occur when these competencies are not adequately addressed during academic training.[5]

In this context, Permanent Health Education is an institutional strategy aimed at improving professional training, with clinical simulation standing out as an effective tool for developing psychomotor, cognitive, and affective skills, while promoting reflective reasoning, clinical judgment, and decision-making.[6] *In situ* simulation, conducted within the actual work environment, enables teams to review their skills and improve clinical reasoning.[7-9]

A study indicates that *in situ* simulation improves professional performance and team dynamics, recommending its periodic implementation in services that care for pediatric patients.[10] Despite the relevance of RF in pediatrics, there is a scarcity of *in situ* simulation scenarios focused on training in the management of this condition, which may negatively impact nursing care. Therefore, this study aims to report the development of an *in situ* simulation scenario for RF management in pediatrics by nurses.

Methods

This is a descriptive study, in the form of an experience report, focused on the development of an *in situ* simulation scenario for RF management in pediatrics aimed at nurses. The study was conducted at the *Laboratório de Pesquisa, Tecnologia e Inovação na Saúde da Criança e do Adolescente* (GEPESCA), affiliated with the *Universidade Federal de Santa Catarina*, as part of a Master's Dissertation in Nursing, between April 2023 and January 2024. As this was an experience report, ethical review was waived.

In this study, the concept proposed by the International Nursing Association for Clinical Simulation and Learning was adopted, in which a simulation scenario is defined as an artificially created simulation experience that enables participants to achieve the proposed objectives.[7] For the clinical case development, the American Heart Association Pediatric Advanced Life Support (PALS) guidelines and the Brazilian Society of Pediatrics protocols were used.[11,12] To establish the learning objectives, David Kolb's theoretical framework,[13] which presents the experiential learning cycle, was adopted, and the scenario structure was based on the Scenario Development Model proposed by the National League for Nursing/Jeffries Simulation Theory.[14]

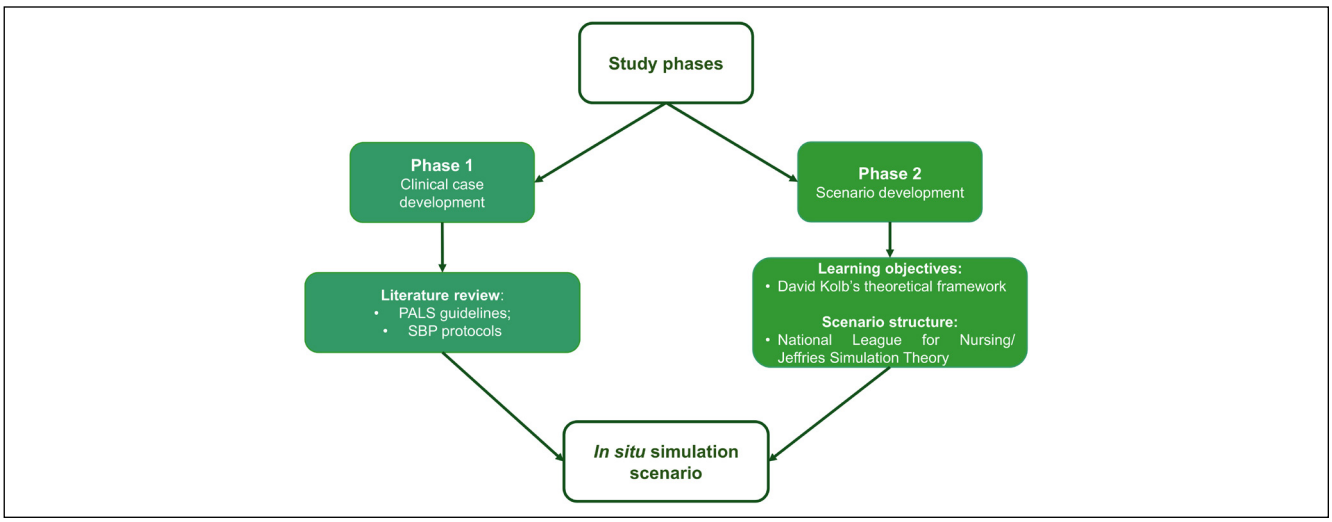
In clinical simulation, several stages structure the teaching-learning process. Pre-simulation corresponds to participants' prior preparation, whereas pre-briefing refers to the initial orientation and clarification of rules. Briefing consists of presenting the scenario and activity conditions, while debriefing is the reflective stage following the simulation, aimed at analyzing participants' actions and consolidating learning.[14]

The study was structured into two phases: clinical case development and scenario development (Figure 1). The research team consisted of nurses with specialization and/or experience in pediatrics and a physician specialized in emergency care.

Results

Phase 1 – Clinical case development

For the clinical case development, three virtual meetings were held. Initially, the main manifestations of respiratory deterioration, specific details about the child, and the initial vital sign values were discussed.



Source: The authors (2026).

Figure 1. Flowchart of clinical case development and scenario development

Subsequently, caregivers' perceptions regarding the progression of a child's clinical deterioration were addressed. Finally, the expected actions of the professionals involved, including nurses, physicians, and nursing technicians, were outlined. These actions were based on the parameters established by PALS guidelines for RF diagnosis and by Brazilian Society of Pediatrics protocols.[11,12]

The clinical case was developed with the purpose of identifying the clinical manifestations of deterioration in the child's respiratory condition, performing monitoring to assess hemodynamic parameters, determining the need to initiate and/or change the oxygen therapy device, and analyzing the accuracy of a participant's decision-making.

The clinical case involves a 5-year-old child under observation in a pediatric emergency department whose clinical condition worsens throughout care. The nurse's role is to recognize the patient's deterioration, initiate the necessary interventions, and, during the simulation, make appropriate decisions based on clues provided by the facilitator, the simulator, the available materials, and the caregiver's report. The clinical case developed is presented below:

"You are the nurse assigned to this unit and are caring for a child named Vitor Forte, a 5-year-old male, weighing 25 kg and measuring 1.20 m in height. This child was admitted to the pediatric emergency department of this hospital at 10:00 a.m., accompanied by his caregiver, who reported to the nurse that his son had experienced worsening flu-like symptoms, nasal obstruction due to a large amount of greenish secretion, and had been coughing for more than one week. The caregiver reported noticing that the child was having difficulty breathing. In addition, the caregiver reported that the child had experienced a fever episode one day earlier, with a temperature of 38.5°C, and had been given Dipyrone, 25 drops (500 mg/mL). However, the fever returns once the medication's effect wears off. The caregiver also reported that his son had never been like this before and, for this reason, decided to bring him to the hospital. He denied allergies or other diseases. He denied continuous use of medication. Upon assessing the vital signs, the nurse obtained the following findings: Axillary temperature = 37°C; Respiratory rate = 38 breaths/min; Oxygen saturation = 95%; Heart rate = 120 bpm; Blood pressure = 100 × 75 mmHg. After the initial assessment, the child was referred for medical assessment. Following medical assessment, the child was diagnosed with an asthma exacerbation. The physician instructed the nurse to place the child in a pediatric bed for observation and provided the medical prescription and a request for a bedside chest X-ray. The nurse scheduled the prescribed interventions and instructed the nursing technician to administer the prescribed treatments and perform the requested procedures. A request was made for the radiology service to perform the examination at the bedside. The nursing technician, together with the nurse, established peripheral venous access using a 24-gauge

over-the-needle catheter on the dorsum of the right hand and initiated intravenous hydration using an infusion pump according to the medical prescription. A capillary blood glucose test was performed, yielding a value of 92 mg/dL. Upon reassessment of a child's clinical condition, the vital signs were: Temperature = 38.5°C; Respiratory rate = 48 breaths/min; O_2 saturation = 89%; Heart rate = 145 bpm".

Phase 2 – Scenario development

The scenario was developed across eight domains:

Domain 1 – Context: The target audience for the simulation (nurses), the scenario title, the modality and location of implementation, and the need to send study materials in advance were defined. The simulation was classified as high-fidelity, considering not only the complexity of the clinical case but also the level of realism incorporated into the scenario, including the use of a medium/high-fidelity simulator, a real clinical environment (*in situ*), healthcare equipment used in practice, and interaction with embedded participants.[15] This classification requires faithful reproduction of the care setting, with dynamic clinical stimuli, real-time monitoring, and active participant involvement, promoting immersion and the development of clinical reasoning and decision-making. The necessary human and material resources were also established, including the essential equipment for the simulation and the procedures involved. The pre-simulation and pre-briefing phases were outlined, as well as the minimum composition of participants: one nursing technician (embedded participant), one caregiver (embedded participant), and one nurse.

Domain 2 – Background: Learning objectives were defined based on David Kolb's theoretical framework[14] and his Experiential Learning Cycle. The objectives were: 1) To identify the clinical manifestations of deterioration in the child's respiratory condition: signs of respiratory distress (suprasternal retractions, intercostal retractions, subcostal retractions, substernal retractions, xiphoid retractions, and nasal flaring), tachypnea,[11] tachycardia,[11] decreased level of consciousness, altered chest expansion, hypoxemia,[11] perioral cyanosis, and gasping; 2) To perform monitoring for the assessment of hemodynamic parameters to ensure appropriate management; 3) To determine the need to initiate and/or change the oxygen therapy device or another necessary procedure; and 4) To analyze the accuracy of participants' decision-making regarding the care provided. The time allocated for planning and implementing the briefing, scenario, and debriefing phases was also established as follows: briefing – 5 minutes; scenario – 10 to 15 minutes; debriefing – 30 minutes.

Domain 3 – Design: The clinical case was incorporated into the scenario, followed by the briefing, during which the child's general condition, signs and symptoms, and vital signs are presented. During the briefing, the facilitator introduces the simulation scenario to the participants, which includes a medium-fidelity simulator (MegaCode Kid) and realistic resources for airway management, monitoring, vascular access procedures, and ventilation. Based on this information, participants are instructed to initiate patient care, thereby beginning the clinical simulation. Scenes described in the storyboard were developed, containing cues that assist participants in carrying out the scenario. These cues are provided verbally, by the simulator, or by the facilitator and include, for example, changes in vital signs displayed on the cardiac monitor, indicating deterioration or improvement in the clinical condition, as well as the availability of devices within the scenario.

Domain 4 – Debriefing: This stage was planned to occur after the simulation and involve all participants. Issues related to self-assessment of the care provided, feelings experienced during the situation, skills developed, strengths in performance, and opportunities for improvement should be addressed, promoting reflection and theorization about these aspects. The debriefing should be conducted in a structured manner:

- Emotional stage: How did you feel while caring for this patient?
- Descriptive stage: Could you describe the clinical condition encountered?
- Evaluative stage: What positive actions did you perform?
- Analytical stage: What would you do differently if you had another opportunity?
- Concluding stage: What lessons from this experience will you apply to your clinical practice?

Domain 5 – Clinical judgment: The scenario was structured to stimulate the participant's clinical judgment by guiding them through three fundamental stages: 1) Observation: gathering information through the caregiver's report and the child's clinical condition (signs and symptoms); 2) Interpretation: performing a general physical examination and focusing on the respiratory assessment; measuring vital signs; and associating the signs of tachypnea,[11] tachycardia,[11] decreased oxygen saturation, and signs of respiratory distress with RF; and 3) Response: conducting systematic assessment and monitoring, identifying signs of respiratory distress and RF, communicating effectively with the healthcare team and family, and performing rapid and safe interventions to stabilize the child.

Domain 6 – Outcomes: The stages of clinical judgment were organized into a checklist, including the main aspects to be observed during the simulation, such as: communication; physical examination; identification and association of signs and symptoms indicating risk for RF; therapeutic interventions (nasal irrigation and suctioning, patient repositioning in bed, lung auscultation, placement of a nasal cannula, suspension of oral feeding in cases of moderate to severe respiratory distress until medical assessment, application of a non-rebreather mask, preparation of a high-flow oxygen system); medications to be administered; monitoring; and the Nursing Process (Chart 1).

Domain 7 – Scenario script: The script defined what is expected from each participant throughout the simulation, detailing the actions to be taken in response to each new cue provided. Domain 8 – Storyboard: A detailed instrument was developed describing each simulation scene, the events that occur, and the actions expected from participants. This instrument provides information regarding the child's initial condition and the progression of hemodynamic parameters, indicating clinical deterioration or improvement through data displayed on the multiparameter monitor, the simulator, and the caregiver's report (Chart 2).

Discussion

In situ simulation is an appropriate educational tool that enables the demonstration, training, and application of technical skills (knowledge and performance of procedures) and non-technical skills (communication, attitude, and teamwork) in a realistic and participatory manner.[16,17] In addition to equipping professionals, it contributes to more effective responses and reduces team vulnerability during emergency situations.[17]

In situ simulation requires careful planning, including an appropriate approach, professional training, and the availability of resources to ensure the effectiveness of training.[9,17] To be realistic and well-structured, a simulated scenario should allow physical assessment, the practice of technical skills, and critical thinking in response to the simulated situation.[16] Simulation design was a key element, defining the objectives, the high-fidelity characteristics, and the key roles expected for problem resolution.[9]

Another relevant aspect was the structuring of the stages: briefing, including presentation of the environment and the clinical case; guidance regarding the scenario and execution of actions by participants, supported by cues for decision-making and clinical reasoning; and, finally, debriefing, a moment of reflection on the actions performed, emotions experienced, aspects requiring improvement, and strategies for enhancement.[9]

The development of *in situ* simulation scenarios focused on RF management in pediatrics enables knowledge transfer in a dynamic and interactive manner, promoting reflection and behavioral change among professionals when facing such situations in clinical practice. This type of training also fosters cognitive, psychomotor, and affective experiences, facilitating the incorporation of knowledge into routine care.[18]

Healthcare professionals play a fundamental role in the prevention, identification, and treatment of RF. Therefore, the systematization of simulated scenarios is essential for training these professionals, assisting them in the early identification of the signs and symptoms of RF.[9] Furthermore, such training promotes the acquisition of knowledge and critical skills, potentially contributing to the reduction of pediatric morbidity and mortality and improving care provided in pediatric emergency services.[19]

The presence of a detailed script for the simulated scenario facilitates its implementation by professionals who were not involved in its development.[20] This

Chart 1. Checklist of expected skills and knowledge for nurses

Checklist of expected skills and knowledge for nurses
PRESENTATION AND INITIAL CONDUCTS
Introduced themselves to the patient and caregiver ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
Asked the caregiver what the patient was experiencing ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
Explained to the caregiver the interventions that would be performed ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
Performed hand hygiene using 70% alcohol gel ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
Called the physician ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
PHYSICAL EXAMINATION
Assessed the child using the ABCDE mnemonic (Airway, Breathing, Circulation, Disability, and Exposure) ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
Performed a physical examination ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
Monitored the child ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
Measured vital signs ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
Associated tachydyspnea, tachycardia, and decreased oxygen saturation with respiratory failure ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
Called the radiology team to perform the chest X-ray ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
NURSING PROCEDURES
Performed nasal irrigation ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
Suctioned the airways ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
Placed a positioning pad under the child's shoulders ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
Repositioned the patient in bed ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
Assessed the need for supplemental O_2 ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
Applied a nasal cannula according to the medical prescription and/or institutional protocol ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
Increased the oxygen flow delivered to the child according to clinical need and the medical prescription ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
Applied a non-rebreather mask ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
Prepared materials for preoxygenation (latex gloves, bag-valve-mask device with an age-appropriate mask connected to the oxygen source) ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
MEDICATION
Administered an antipyretic according to the medical prescription ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
MONITORING
Identified changes in vital parameters ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
Monitored clinical condition ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate
NURSING PROCESS
Documented nursing progress notes ( ) Not performed ( ) Inadequate ( ) Partially Adequate ( ) Adequate

script also benefits those with less experience in simulation, allowing the scenario to be replicated in different healthcare institutions where this approach is still not widely used.[18]

The development of this scenario was an enriching experience for the research team, enabling the creation of a model aligned with national and international guidelines. Among the facilitating factors,

Chart 2. Simulation scenario storyboard

Simulation scenario storyboard		
Scene	**Events***	**Nurses' actions:**
Scene 1		
Initial state	**Expected conduct**	**Response from simulator/caregiver**
Child in a crib accompanied by a caregiver. Simulator with: - Intense subcostal retraction - Wheezing at the apex; - Obstructed upper airways. Cue 2: Monitor parameters: SpO2: 89%, T: 38.5°, HR: 145 bpm, RR: 48 bpm, BP: 100x75 mmHg	- Introduce oneself to the child and caregiver; - Perform hand hygiene with 70% alcohol gel and put on procedure gloves; - Perform ABCDE assessment of the child; - Monitor the child; - Assess the need for oxygen supplementation; - Explain that you will perform nasal irrigation with 0.9% saline solution; - Suction the airways; - Explain that you will insert a nasal cannula; - Suspend oral feeding; - Place a cushion under the shoulders and reposition the child in bed; - Inform the caregiver that an antipyretic will be administered; - Administer antipyretic.	Caregiver complaints (suggested dialogue): - Nurse, my child is very quiet, weak, and pale; Simulator: - Reposition in the crib; - Cushion under the shoulders - Insert nasal cannula, with the goal of gradually lowering the parameters until reaching: SpO2 94% RR: 30 ipm RR: 120 bpm
Scene 2		
Worsening condition - Monitor alarm goes off Simulator with: - Intense subcostal retraction; - Intense nasal flaring; - Apex wheezing; - Tachypnea; - Tachycardia; - Altered chest expansion Cue 3: Monitor parameters: SpO2 88-89%, T: 38.7°, HR: 151 bpm, RR: 50 bpm	- Increase oxygen flow from the nasal cannula to 4 L/min to maintain SpO2 between 93 and 97%; - Call the physician; - If SpO2 does not improve, apply a mask with a full reservoir, at 8 to 10 L/min; - Check SpO2 after applying the non-rebreather mask; - Observe skin color and appendages; - Keep neck hyperextended; - Monitor vital signs and respiratory pattern; - Request assistance at the scene; - Check and ensure airway patency (check head position, elevate head to 30-45°, check for nasal obstruction and the need to aspirate the nostrils again); - Provide support to the caregiver.	The caregiver shows concern and starts to cry, and asks for help. - Oh my God! - Nurse! - What is this? - When he breathes, the skin on his neck sinks in. His mouth is turning purple. Simulator: - Put on a rebreathing mask with a reservoir in order to gradually lower the parameters until you reach the desired level: SpO2 94% RR: 30 ipm RR: 120 bpm
Scene 3		
Slight improvement in monitor parameters: Simulator with: - Moderate subcostal retraction; - Mild nasal flaring; - Apex wheezing; - Tachypnea; - Tachycardia; - Altered chest expansion Cue 4: SpO2 90-93%, HR: 148 bpm, RR: 48 bpm, T: 38.2	- Reposition the child in bed; - Make nursing notes; - Provide support to the caregiver Note: The slight improvement in parameters in scene 3 is contingent upon the expected interventions from scene 2. If these do not occur, it is necessary to address the continued trend of worsening clinical condition.	- The caregiver expresses gratitude for their son's rapid improvement. - Thank you, God! And begins to pray. Simulator: - Repositioning in bed.
Scene 4		
Worsening of respiratory failure Simulator with: - Intense subcostal retraction; - Intense nasal flaring; - Apex wheezing; - Tachypnea; - Tachycardia; - Altered chest expansion; - Marked respiratory distress. Monitor parameters: Cue 5: SpO2: 79-82%, HR: 174 bpm, RR: 72 ipm, T: 37.8	- Start ventilation with a bag-valve-mask (Ambu bag) connected to O_2 at 10-15 L/min; - Check the effectiveness of ventilation and verify the change in parameters; - Obtain/prepare the high-flow system; - Ventilation will be performed correctly until the physician arrives.	Child continues to worsen and develops gasping symptoms. Caregiver: expresses concern and begins to cry and ask for help: - Nurse, why is he getting worse? - His mouth is turning purple again. Simulator: - Place the bag-valve-mask device, gradually lowering the parameters until reaching: SpO2 94% RR: 30 ipm RR: 120 bpm
Scene 5		
Cue 6: Monitor ceases alarm: SpO2: 94-95% / HR: 155 bpm / RR – 60 ipm -Simulator with: Mild nasal flaring, wheezing at the apex Tachypnea, tachycardia, altered chest expansion. Available materials: non-rebreather mask with reservoir and nasal cannula.	- Reassess the patient; - Check vital signs; - Observe improvement in hemodynamic parameters; - Identify improvement in clinical conditions; - Observe respiratory pattern; - Apply a non-rebreather mask with a reservoir; reassure the caregiver; - Perform nursing progression.	The caregiver cries and expresses gratitude for the rapid improvement in their son's condition: - Thank you nurses, thank you God! - I don't even know how to thank you! Simulator: - Repositioning in bed.

the interdisciplinary collaboration between nurses and physicians stands out, ensuring a realistic clinical case, as well as the availability of theoretical and methodological references. Among the challenges, the integration of the scenario elements and their adaptation to different institutional contexts should be highlighted. It is expected that the implementation of this scenario will contribute to the improvement of clinical reasoning, decision-making, and teamwork. As future steps, validity of the scenario and the conduct of a clinical study to verify its effectiveness are proposed.

The limitations of this study are related to the scarcity of publications addressing the development of *in situ* simulation scenarios, as well as studies concerning RF management in pediatric emergency services. Consequently, there was difficulty in comparing the findings with studies similar to the present one.

It is expected that this study will contribute to a transformative and stimulating teaching-learning method in professional education, enabling facilitators to use simulated scenarios as resources for training nursing teams within the hospital setting. Simulation has the potential to reproduce real-life events in a controlled environment, thereby contributing to meaningful, critical, and reflective learning regarding clinical practice.

It is believed that, following its validity, the simulation will promote improvements in professionals' knowledge and skills, in addition to enabling the identification of the signs and symptoms of this condition, fostering accurate decision-making and ensuring patient safety and effective care. Furthermore, it will allow healthcare institutions to identify latent processes and issues related to patient safety.

Conclusion

The development of an *in situ* simulation scenario for RF management in pediatrics, which was the objective of this study, enabled the creation of a structured instrument for training nurses in emergency services. The process, grounded in theoretical frameworks and organized into different domains, supported the systematization of the scenario and its applicability within the healthcare context, contributing to the integration of theory and practice and supporting professionals' clinical reasoning and decision-making.

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