TEXTO & CONTEXTO ENFERMAGEM
TEXT & CONTEXT NURSING TEXTO & CONTEXTO ENFERMERÍA

CONSTRUCTION AND VALIDITY OF A SIMULATED SCENARIO-CHECKLIST FOR THE ASSESSMENT AND IDENTIFICATION OF SHOCKABLE ARRHYTHMIAS: A METHODOLOGICAL STUDY

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ABSTRACT

Objective: to construct and validate a simulated scenario and checklist for the assessment and identification of shockable arrhythmias by nurses in adults hospitalized in an Intensive Care Unit.
Method: this is a methodological study for the construction of a simulated scenario and checklist, validated by experts, with the application of a pilot test on 36 nursing students between April and September 2021, at a public university in Minas Gerais. The construction stage took place by surveying evidence in the literature. The validity stage was based on instrument assessment by 13 experts, from all over Brazil, being interpreted by calculating the Content Validity Coefficient by a cut-off point equal to 0.8 or 80.0%. To assess internal consistency, Cronbach's alpha was calculated. Subsequently, a pilot test and the Student Satisfaction and Self-Confidence in Learning Scale were applied.
Results: after building the simulated scenario, three rounds were performed to assess the script (21 items) and two for the checklist (six items), reaching an overall Content Validity Coefficient of 0.98 and 0.95, respectively. A Cronbach's alpha of 0.79 was obtained at the end of assessment. In the pilot test, the scenario was considered adequate, with high scores of satisfaction and self-confidence in learning, confirming its usability.
Conclusion: the instrument developed by nurses to assess shockable arrhythmias in adult patients admitted to an Intensive Care Unit is valid in terms of content and has good internal consistency.

DESCRIPTORS: Nursing. Nursing education. Simulation training. Patient simulation. Arrhythmias, cardiac. Intensive care units. Methods.

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CONSTRUÇÃO E VALIDAÇÃO DE CENÁRIO SIMULADO-CHECKLIST PARA AVALIAÇÃO E IDENTIFICAÇÃO DE ARRITMIAS CHOCÁVEIS: ESTUDO METODOLÓGICO

RESUMO

Objetivo: construir e validar um cenário simulado e *checklist* para avaliação e identificação de arritmias chocáveis pela enfermagem em adultos internados em unidade de terapia intensiva.
Método: estudo metodológico para construção de cenário simulado e *checklist*, validado por especialistas, com aplicação de teste piloto em 36 estudantes de enfermagem entre abril e setembro de 2021, em uma Universidade Pública de Minas Gerais. A etapa de construção ocorreu por levantamento de evidências na literatura. A etapa de validação se deu a partir da avaliação dos instrumentos por 13 especialistas, provenientes de todo o território brasileiro, sendo interpretados pelo cálculo do Coeficiente de Validade de Conteúdo por ponto de corte igual a 0,8 ou 80,0%. Para avaliar a consistência interna, foi calculado o alpha de Cronbach. Posteriormente, foram realizados o teste piloto e a aplicação da Escala de Satisfação dos estudantes e autoconfiança na aprendizagem.
Resultados: após a construção do cenário simulado, foram realizadas três rodadas para avaliação do roteiro (21 itens) e duas para o *checklist* (seis itens), alcançando Coeficiente de Validade de Conteúdo global de 0,98 e 0,95 respectivamente. Um alfa de Cronbach de 0,79 foi obtido ao final da avaliação. No teste piloto, o cenário foi considerado adequado, com elevados escores de satisfação e autoconfiança na aprendizagem, confirmando a sua usabilidade.
Conclusão: o instrumento desenvolvido para avaliação de arritmias chocáveis em pacientes adultos internados em Unidade de Terapia Intensiva pela enfermagem é válido em seu conteúdo e possui boa consistência interna.

DESCRITORES: Enfermagem. Educação em enfermagem. Treinamento por simulação. Simulação de pacientes. Arritmias cardíacas. Unidades de terapia intensiva. Métodos.

CONSTRUCCIÓN Y VALIDACIÓN DE UN ESCENARIO-CHECKLIST SIMULADO PARA LA EVALUACIÓN E IDENTIFICACIÓN DE ARRITMIAS DESFIBRILABLES: UN ESTUDIO METODOLÓGICO

RESUMEN

Objetivo: construir y validar un escenario simulado y un checklist para la evaluación e identificación de enfermería de arritmias desfibrilables en adultos hospitalizados en una Unidad de Cuidados Intensivos.
Método: estudio metodológico para la construcción de un escenario simulado y lista de verificación, validado por especialistas, con la aplicación de una prueba piloto en 36 estudiantes de enfermería entre abril y septiembre de 2021 en una universidad pública de Minas Gerais. La etapa de construcción se llevó a cabo mediante el levantamiento de evidencias en la literatura. La etapa de validación ocurrió a partir de la evaluación de los instrumentos por 13 especialistas, de todo el territorio brasileño, siendo interpretados por el cálculo del Coeficiente de Validez de Contenido por punto de corte igual a 0,8 o 80,0%. Para evaluar la consistencia interna se calculó el alfa de Cronbach. Posteriormente, se realizó una prueba piloto y la aplicación de la Escala de Satisfacción y Autoconfianza del Estudiante en el Aprendizaje.
Resultados: luego de construir el escenario simulado, se realizaron tres rondas para evaluar el guión (21 ítems) y dos para la lista de verificación (seis ítems), alcanzándose un Coeficiente de Validez de Contenido global de 0,98 y 0,95 respectivamente. Se obtuvo un alfa de Cronbach de 0,79 al final de la evaluación. En la prueba piloto, el escenario se consideró adecuado, con puntuaciones altas de satisfacción y confianza en el aprendizaje, lo que confirma su usabilidad.
Conclusión: el instrumento desarrollado por enfermeros para evaluar arritmias desfibrilables en pacientes adultos internados en una Unidad de Cuidados Intensivos es válido en cuanto al contenido y tiene buena consistencia interna.

DESCRIPTORES: Enfermería. Educación en enfermería. Entrenamiento de simulación. Simulación de paciente. Arritmia cardíaca. Unidades de cuidados intensivos. Métodos.

INTRODUCTION

Health education has traditionally been marked by the transmission of theoretical content, often out of context with practical activities. This disengagement reflects on the training of undergraduate students who, not infrequently, have difficulties in clinical reasoning and making appropriate decisions for health care[1–2]. Allied to this, in recent decades, rapid transformations and innovations in the context of the health system have led to curricular revisions, consistent with social needs and care demands[3].

In this regard, in Brazil, the curricular guidelines for undergraduate nursing courses established the profile of undergraduate students based on essential skills to recognize health problems, understand the population's epidemiological profile, in order to intervene in the determinants in a critical way and reflective[4]. The competency profile can be built from a participatory education, which fosters knowledge, skills and attitudes about health issues, in the various life cycles, linking theory and practice[1–2,4]. For this, teaching-learning methodologies that intentionally involve students in the construction of knowledge, in order to encourage critical thinking, clinical reasoning and decision making, show good results in nursing education[2,5–6].

In the context of teaching-learning methodologies, clinical simulation is considered a pedagogical strategy that enables students to acquire skills, anticipating clinical practice in a safe environment, without exposing patients[7]. However, for good results to be achieved, it is recommended that the construction process follow standards of good practices and references that support the content and guide the simulated clinical scenario's validity to realistic practice[8–9].

In this way, it is a diligent and complex process that involves resources such as simulators and/or mannequins/actors that are adapted to specific situations of clinical practice, emulating reality, according to the degree of complexity related to what is intended to be taught/assessed[8]. The entire process is mediated by tutors who provide clues for solving a clinical case, based on best practices and scientific evidence[7–8]. Studies[10–11] that compared the effectiveness of clinical simulation in relation to traditional laboratory practice identified better performance in nursing students who learned through simulation.

A study[12] assessed the clinical performance of 36 nursing interns, dividing students into control (practical clinical training) and experimental groups (simultaneous exposure to high-fidelity simulation together with practical clinical training). In the general assessment of competencies, the experimental group performed significantly better than the control group ($p < 0.001$), leading the authors to conclude that simultaneous exposure to simulation along with practical training promoted a greater level of safety and competency. In this direction, researches[13–14] have shown that traditional theoretical-practical teaching has been insufficient for nursing students to feel confident and establish appropriate conducts in shockable arrhythmias. These, classified as ventricular fibrillation (VF) or pulseless ventricular tachycardia (PVT), are classified as cardiorespiratory arrest (CRA) and require recognition in order to proceed with immediate electrical defibrillation[15].

A study carried out in nine Intensive Care Units (ICU) of a university hospital in São Paulo identified an incidence of 3.6% of CRA in the first 24 hours of hospitalization of patients in this environment[16]. However, information on the incidence of CRA and its forms of presentation are still scarce in the national and international literature[17]. In order to fill part of this lack of data, the American Hearth Association (AHA)[15] reported in its latest update that, in an out-of-hospital environment, approximately 80.0% of CRA are shockable rhythms, whereas, in an in-hospital environment, approximately 20.0% of cases require defibrillation. In this context, the AHA[15] has highlighted simulation-mediated training as an appropriate methodology for students and health professionals to learn how to safely intervene in CRA.

Considering the above, this study is justified, which was conducted by the following guiding question: will the construction and validity of a simulated scenario and checklist allow the identification of shockable arrhythmias by nurses in adults admitted to the ICU?

It is believed that the study may contribute as a training tool for students and professionals, mobilizing specific skills for the assessment and identification of shockable arrhythmias in the ICU. Therefore, the study aims to build and validate a simulated scenario and checklist for the assessment and identification of shockable arrhythmias by nurses in adults admitted to the ICU.

METHOD

This is a methodological study with the construction and content validity of a simulated scenario developed at a public university in the state of Minas Gerais between April 2020 and September 2021. To develop the study, three sequential steps were used: scenario and checklist (based on the literature, models and instruments) construction;[15,18–22,23] scenario and checklist validity by experts and pilot test with nursing students (Figure 1).

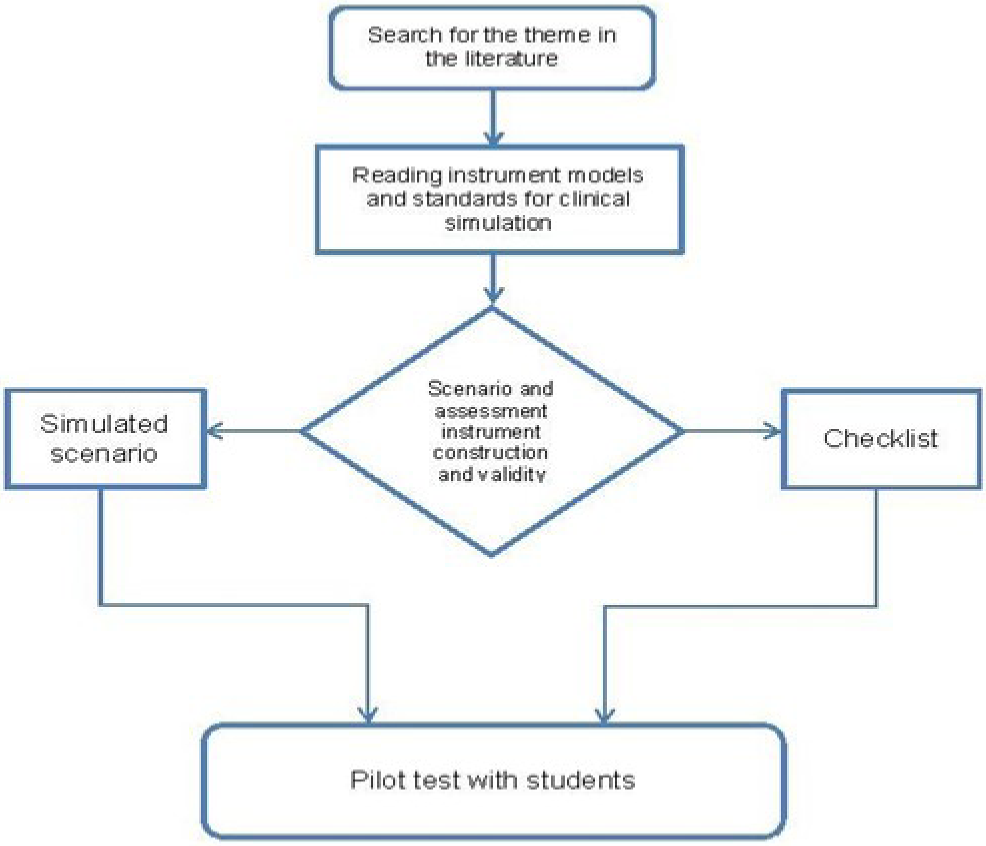

Figure 1 - Flowchart of construction stages and validity of the simulated scenario and checklist for nursing assessment and identification of shockable arrhythmias in adults hospitalized in an Intensive Care Unit. Minas Gerais. MG, Brazil, 2021.

The construction stage was based on the main recommendations of the national and international literature on the subject[15,18–24]. In addition to the theoretical content, the International Nursing Association for Clinical Simulation and Learning (INACSL)[18] and model for clinical simulation recommendations were followed[19–20].

In the content construction and validity stage, experts were initially selected, with non-random convenience sampling, using the adapted Fehring scale[19]. The scale[19] totals 24 points and contains as criteria completion of a *Lato Sensu* graduate degree (five points), completion of a *Stricto Sensu* graduate degree (four points), experience with simulation (five points), experience with critically ill patients (five points) and production scientific (five points). For analysis, the curricula were assessed, via the Lattes Platform, regarding professional history, training, experience and bibliographical production on the subject of research and/or clinical simulation. The minimum score for the inclusion of experts was five points.

From the initial assessment, 46 experts met the established inclusion criteria[19]. These were contacted via electronic mail (e-mail) obtained from the curriculum or published scientific article. Exclusion criteria were experts who did not respond to emails after four attempts (28) within a period of 60 days, or those who initially agreed to participate but did not respond to the second round of assessment. In this regard, 28 experts were excluded for not responding to emails and five did not respond to the second round of assessment, the sample consisting of 13 experts from different regions of Brazil: eight from the southeast region, three from the northeast region and two from the south region. It is noteworthy that, for the effectiveness of validity, the literature recommends that the instrument be assessed at least by five to six experts[21].

To facilitate analysis and validity, an electronic form was prepared via Google Forms, with four sections referring respectively to the Informed Consent Form (ICF), sociodemographic questionnaire, scenario script and checklist, based on Pasquali recommendations[22]. For each scenario and checklist item, content pertinence, relevance and clarity were verified, in addition to the possibility of comments and suggestions from experts. The assessment of experts' opinions was used the Delphi technique[25]. Thus, they assessed, via an electronic form, the domains as follows: previous scenario components; scenario preparation; script/instructions for students; and final scenario components; skills checklist.

After validity by experts, the pilot test stage was carried out with 36 nursing students from the beginning of the fourth year of graduation (eighth semester), who were willing to participate in the activity. It should be noted that students had not yet attended the discipline in which CRA and high-complexity cardiopulmonary resuscitation (CPR) content is taught. The course on screen is completed in five years or ten semesters.

The pilot test of the elaborated simulated scenario was carried out in three days, with classes lasting four hours. On the first day, a dialogued lecture was held, with the provision of theoretical content on shockable arrhythmias in adult patients in the ICU. On the second day, theoretical-practical training was carried out in the simulation laboratory and. On the third day, application of the simulated scenario and assessment through the checklist were carried out.

After full assessment in the simulated scenario, all students were gathered in a room where the debriefing took place, for about 20 minutes, conducted by the first author, who used the notes in the checklist. At that moment, immediately after all students completed the activity, the strengths, weaknesses and improvements for patient care were highlighted. In the end, students responded to the Student Satisfaction and Self-Confidence in Learning Scale (ESEAA)[26]. This instrument[26] has 13 items and is subdivided into a satisfaction subscale, with five items, and a self-confidence subscale, with eight items. The ESEAA items are assessed using a five-point Likert-type scale, ranging from "strongly disagree with the statement" to "strongly agree with the statement."

For data analysis, the information was typed in Microsoft Excel® 2010 and later transferred to Stata® version 15.0. Data analysis was performed with the description of sociodemographic characteristics and experience in clinical simulation reported by experts as well as the score provided by them in each item and domain of the assessed instrument. For this purpose, the absolute and relative frequencies of qualitative variables and measures of central tendency and dispersion for quantitative variables were calculated, calculating the mean and standard deviation.

Regarding the Content Validity Coefficient (CVC), it was calculated to verify the similarity of experts' agreement in the answers for each item of the instrument and the total item. For that, in relation to possible answers, a four-point Likert-type scale was used: 1 - strongly disagree; 2 - partially disagree; 3 - partially agree; and 4 - totally agree[10].

The CVC is obtained through the sum of "3" or "4" responses, divided by the total number of responses. It should be noted that each instrument item is only considered valid if it reaches a score greater than or equal to 0.80[10]. For the calculation of the assessed CVC, the sum of the individual CVC was performed, divided by the number of items assessed individually. In order to verify whether the instrument developed had satisfactory internal consistency based on the response given by the evaluators, Cronbach's alpha was calculated for the domains and the respective confidence interval. It was considered as a score for Cronbach's alpha: $\alpha \leq 0.30$ - Very low; $0.30 < \alpha \leq 0.60$ - Low; $0.60 < \alpha \leq 0.75$ - Moderate; $0.75 < \alpha \leq 0.90$ - High; and $\alpha > 0.90$ - Very high. The ESEAA[26], with a minimum score of 1 and a maximum score of 5 for each item, was analyzed by overall scope, calculating mean, standard deviation (SD), median, minimum and maximum.

The research followed the ethical precepts of Resolution 466/2012 of the Brazilian National Health Council, and was only started after approval by the Research Ethics Committee. Data collection only started after the signature of ICF by all experts and students.

RESULTS

Among the 46 experts considered eligible, 13 responded to the form with information on sociodemographic data, scenario script assessment and checklist. All 13 experts participating in the study were nurses, predominantly female (76.92%), with a mean age of 37.69 (SD=6.03) years, mean time of professional experience of 14.15 (SD 6.06) years. With regard to academic degrees, eight experts had a doctoral degree as their highest degree (61.54%), three had a master's degree (23.08%) and two had specialization in intensive care (15.38%). As for experts' experience, only one (7.69%) had no experience with clinical simulation.

With regard to content validity of the 21 items in the simulated scenario, three rounds of assessment were carried out in order to adapt the content to all the recommendations made by experts. In the first round, of the 21 items assessed by experts, only one (guidance for students) did not obtain a CVC >0.80. With the second round, a CVC value > 0.87 was obtained for all items, but there were still considerations expressed by experts. These were accepted by the researchers, who adjusted them to proceed with a third round. Therefore, content validity of the simulated scenario was achieved with a CVC above 0.94 in all 21 items and an overall CVC of 0.97 (Table 1).

Table 1 - Content Validity Coefficient of items and full scenario in the three rounds. Minas Gerais, MG, Brazil, 2021.

Items	Content Validity Coefficient		
	First round	Second round	Third round
Scenario theme	0.897	0.923	0.974
Learners' prior knowledge	0.897	0.974	0.974
Learning objectives	0.897	1.00	1.00
Theoretical foundation	0.897	0.974	0.974
Scenario complexity	0.948	0.948	0.948
Expected interventions	0.897	1.00	1.00
Expected results	0.846	0.923	0.974
Fidelity	0.897	0.948	1.00
Case description for instructor	0.820	0.871	0.974
Reason for hospitalization	0.974	1.00	1.00
Doctor's prescription	1.00	1.00	0.974
Description case for students	0.846	0.948	1.00
Student guidance	0.794	0.871	0.974
Material resources	0.897	0.871	0.948
Physical space	1.00	0.897	1.00
Human resources	0.923	1.00	0.948
Scenario time	0.974	0.923	1.00
Scenario development	0.923	1.00	0.948
Debriefing	0.871	0.948	0.974
Assessment	0.948	0.923	0.948
Students' perception	0.948	0.948	0.948
Full scenario	0.909	0.945	0.975

As for the checklist content validity, of the eight items, all obtained a CVC >0.80 in the first assessment, however, considering experts' considerations, two items were removed, as they were not directly related to the scenario's objective: "verifies monitoring cables" and "communicates the next conducts." On the other hand, in compliance with the recommendations in the literature, it was suggested to add "assesses central pulse" and "identifies as a shockable rhythm." The items "identifies as a shockable rhythm" and "communicates to the multidisciplinary team that patient is in cardiorespiratory arrest" were adjusted in their content. Thus, after adjustments, the six-item checklist was reassessed, obtaining a CVC ≥0.88 for all items and an overall CVC of 0.95 (Table 2).

Instrument internal consistency in each assessment round as well as their respective confidence intervals were calculated (Table 3).

The simulated scenario's full script in its final version presents its items arranged in: previous scenario components; scenario preparation; script/instructions for students; and final scenario components (Chart 1).

About the final version of the checklist for assessing students in the simulated scenario, presented in Chart 2, it is highlighted that the six items that constitute it are assessed as "performed correctly", "performed partially" and "did not perform".

Table 2 - Content Validity Coefficient of items, dimensions and instrument in the checklist's first round. Minas Gerais, MG, Brazil, 2021.

First round items	CVC first round
Assesses patient	0.840
Recognizes changes in vital signs	0.931
Checks monitoring cables	0.909
Recognizes shockable heart rhythm	0.909
Communicates the team	0.931
Requests emergency trolley	0.954
Starts compressions	0.931
Communicates the next steps	0.931
Full instrument	0.917
Second round items	**CVC second round**
Recognizes changes in vital signs	0.931
Assesses patient	0.886
Assesses central pulse	0.977
Recognize heart rate on the monitor	0.954
Identify as shockable rhythm	1.00
Communicates to the multidisciplinary team that patient is in cardiac arrest	0.977
Full instrument	0.954

Table 3 - Instrument internal consistency in the three rounds. Minas Gerais, MG, Brazil, 2021.

Round	Cronbach's alpha	95.0%CI*
First round	0.84	0.74 - 0.97
Second round	0.73	0.69 - 0.77
Third round	0.79	0.61 - 0.89

*95.0% Confidence Interval.

After validity with experts, a pilot test was carried out with the target population, to verify whether or not there was a need for adjustments and to ensure that the simulated scenario was in line with the intended objective. In this way, it was possible to verify its suitability for application in teaching and training.

The pilot test of the simulated scenario was applied to 36 nursing students who were invited and who agreed to participate in the research. Most of them were female (80.0%), with a mean age of 24.31 (±2.47), and all were in their fourth year of graduation (beginning of eighth semester). Regarding previous experience with clinical simulation and knowledge of content, 26 (72.0%) reported not having experienced the simulation as well as the content until that moment.

With regard to performance in the simulated scenario, assessed by the six items of the checklist, only four students (11.0%) had an achievement below 70.0%. Regarding the questionnaire, all students considered the theoretical class, the simulated scenario and patients/mannequins suitable for teaching-learning. However, two (33.3%) participants suggested that the estimated scenario time could be longer than stipulated.

ESEAA was also applied. It was obtained as an overall result: mean 4.55 (±0.29), median 4.61(±0.29), minimum 1, maximum 5, p=0.600.

Chart 1 - Final script of the simulated scenario for identifying shockable arrhythmias in adult ICU patients, Minas Gerais, MG, Brazil, 2021.

Previous scenario components	
Learners' prior knowledge	General knowledge on topics from the undergraduate nursing course, such as clinical medicine, anatomy and physiology of the heart, heart disease, electrocardiogram, causes of cardiorespiratory arrest and basic and advanced life support. Participation in the discipline to obtain skills and abilities to carry out the proposed scenario.
Learning objectives	Primary: - Recognize heart rhythms. Secondary: - Perform physical examination directed to the cardiovascular system. - Identify and describe the heart rhythm found. - Identify the rhythm as shockable or non-shockable.
Theoretical foundation	Dialogued lectures will be held, systematized content delivered previously and theoretical-practical training in the laboratory will be made available. References: American Heart Association[14] and Brazilian Society of Cardiology guidelines[15].
Scenario preparation	
Theme	Identification of shockable arrhythmias in adults in the ICU
Final elaboration date	September 2021.
Name of person responsible for the scenario	Facilitators.
Scenario complexity	Medium complexity clinical simulation scenario.
Expected interventions	Students are expected to: - Recognize heart rhythms. - Perform a physical examination directed at the cardiovascular system and assess clinical signs and symptoms of possible hemodynamic changes. - Identify and describe the heart rhythm found. - Identify the rhythm as shockable or non-shockable.
Expected results	Students are expected to be able to exercise clinical competency in the assessment and recognition of shockable rhythms in the adult patient in the ICU.
Fidelity	Hybrid model, with medium fidelity simulators.
Check list	Chart 2

Chart 1 - Cont.

Scenario preparation	
Description of the proposed case for the instructor	- Patient (mannequin), JAL, 60 years old, coming from the emergency service two days ago, after CPA reversed by electrical defibrillation. With vital signs controlled by a multiparameter monitor, sedated, intubated with mechanical ventilation assisted breathing. Patient's past history: hypertensive, diabetic, smoker for 40 years. - Assessed two hours ago, he had a closed nasoenteric catheter (NEC) and suspended diet. Central Venous Catheter in the left subclavian vein, with administration of noradrenaline in an infusion pump at 7 ml/h, sedation (Ramsay: 6) with fentanyl in an infusion pump 5 ml/h and with midazolam in an infusion pump 3 ml/h. He presented with miotic and photoreactive isochoric pupils, pale, afebrile, intense sweating and cold skin. Cardiovascular auscultation (CVA): normophonetic heart sounds (NHS), tachycardia. Respiratory auscultation (RA): breath sounds present (VM+), with wheezing in the right base, bilateral lung expansion. Acyanotic and with edema in the extremities (+++/++++). Urine present, yellowish in indwelling bladder catheter, inadequate urinary volume with 50 ml per hour on average. Absent intestinal elimination for two days. - Vital signs: blood pressure (BP): 90/50 mmHg, heart rate (HR): 138 bpm, axillary temperature (Axt): 35.0ºC, non-invasive arterial oxyhemoglobin saturation (SpO2): 92.0%, blood glucose capillary: 140 mg/dl. Mechanical ventilation: controlled ventilation mode, positive end-expiratory pressure (PEEP): 8 cmH2O, respiratory rate (RR): 18 bpm, fraction of inspired oxygen (FIO2): 100.0%; tidal volume (TV): 6 ml/kg. - The monitor starts to sound the alarm. You are the nurse responsible for a patient and you have been called by a nursing technician. Carry out nursing care/assistance. - Nurse notices change in patient's vital parameters (decrease in SpO2 to 80.0%, increase in HR and change in heart rate on the monitor, RR: 18rpm). - Checks that the vital signs shown (parameters shown on the monitor) are: BP: imperceptible, HR: 200 bpm, SpO2: 80.0%, Axt: 34.5ºC. - Assesses patient's central pulse (absence of pulse in the carotid artery). - Recognizes that the electrocardiographic tracing on the monitor is compatible with a shockable heart rhythm, defined as ventricular fibrillation (VF). - Requests help from the multidisciplinary team and informs that patient is in CRA, with a shockable rhythm: ventricular fibrillation.
Vital parameters	- BP: inaudible; HR: 200bpm; SpO2: 80.0%; RF: 18 irpm, Axt: 34.5ºC. VM: ventilation mode: controlled, PEEP: 8 cmH2O, RR: 18 bpm, FIO2: 100.0%; CV: 6 ml/kg.

Chart 1 - Cont.

Script/instructions for students	
Reason for hospitalization	Post-CRA reversed in the emergency sector.
Doctor's prescription	Enteral diet - suspended, noradrenaline – 7 ml/h, fentanyl – 5 ml/h. Medications registered in advanced life support, 2nd cycle: epinephrine 1 mg intravenous or intraosseous (IV/IO), every 3-5 min 3rd cycle: amiodarone (300mg) or lidocaine (1-1.5 mg/kg) IV/IO.
Case description for students	- Patient, JAL, 60 years old, from the emergency department, after cardiac arrest reversed by electrical defibrillation. He was admitted to the ICU two days ago, his vital signs are monitored by a multiparametric monitor, he is sedated, intubated with mechanical ventilation assisted breathing. HPP: hypertensive, diabetic, smoker for 40 years. - Assessed two hours ago, the following data evolved in the medical record: (Note: provide the evolution in medical records in the scenario for students) NEC with suspended diet. Central Venous Catheter in the left subclavian with administration of noradrenaline in an infusion pump at 7 ml/h, sedated patient (Ramsay: 6) with fentanyl in an infusion pump 5 ml/h, midazolam in an infusion pump 3 ml/h. Presented with miotic and photoreactive isochoric pupils, pale, afebrile, intense sweating and cold skin. CVA: NHS, tachycardia. AR: VM+, with wheezing in the right base, bilateral lung expansion. Acyanotic and with edema in the extremities (+++/++++). Urine present, yellowish in indwelling bladder catheter, inadequate urinary volume with 50 ml of diuresis per hour, on average. Absent intestinal elimination for two days. - Vital signs: BP: 90/50mmHg, HR: 138 bpm, Axt: 35.0ºC, SpO2: 92.0%, blood glucose: 140 mg/dl. VM: ventilation mode: controlled, PEEP: 8 cmH2O, Rate: 18 rpm, FIO2: 100.0%; CV: 6 ml/kg. - The monitor starts to sound the alarm. You are the nurse responsible for a patient and you have been called by a nursing technician. Carry out nursing care/assistance.

Chart 1 - Cont.

<table>
<tr><th colspan="2">Script/instructions for students</th></tr>
<tr><td>Instructions for academics (put on the door of the simulation room)</td><td>Heart rhythm recognition/nurse assignments
Initial assessment
Simulation time:
Participants:
Clinical case:
Case description for students: patient (mannequin), JAL, 60 years old, from the emergency department, after cardiac arrest reversed by electrical defibrillation. Was admitted to the ICU two days ago, his vital signs are monitored by a multiparametric monitor, he is sedated, intubated with mechanical ventilation assisted breathing. HPP: hypertensive, diabetic, smoker for 40 years.

- Assessed two hours ago, the following data evolved in the medical record:
(Note: provide the evolution in medical records in the scenario for students)

NEC with suspended diet. Central Venous Catheter in the left subclavian with administration of noradrenaline in an infusion pump at 7 ml/h, patient sedated (Ramsay: 6) with fentanyl in an infusion pump 5 ml/h, midazolam in an infusion pump 3 ml/h. Presented with miotic and photoreactive isochoric pupils, pale, afebrile, intense sweating and cold skin. CVA: NHS, tachycardia. RA: VM+, with wheezing in the right base, bilateral lung expansion. Acyanotic and with edema in the extremities (+++/++++). Urine present, yellowish in indwelling bladder catheter, inadequate urinary volume with 50 ml of diuresis on average per hour. Absent intestinal elimination for two days.
- Vital signs: BP: 90/50 mmHg, HR: 138 bpm, Axt: 35.0ºC, SpO2: 92.0%, blood glucose: 140 mg/dl. VM: ventilation mode: controlled, PEEP: 8 cmH2O, Rate: 18 rpm, FIO2: 100.0%; CV: 6 ml/kg.

- The monitor starts to sound the alarm. You are the nurse responsible for a patient and you have been called by a nursing technician. Carry out nursing care/assistance.

Scenario objectives:
1- Recognize changes in patient’s vital parameters.
2- Perform physical examination directed to the cardiovascular system.
3- Identify and describe the heart rhythm found.
4- Identify the rhythm as shockable or not.</td></tr>
</table>

Chart 1 - Cont.

Script/instructions for students	
Material resources	Will be used to compose the scene: hospital bed, bed identification, ICU identification, identification bracelet, gas ruler on the wall, hospital linen, pillow, medication support, infusion pump, mechanical ventilator, orotracheal tube, tube fixator, tray, screen, sink, 70.0% alcohol dispenser, liquid soap dispenser, nursing station (bench/ table, sink, cabinet, chair), multiparameter cardiac monitor, vacuum cleaner, emergency car, manual defibrillator/ cardioverter, full body simulator mannequin, medications, stethoscope, pulse oximeter, sphygmomanometer, electrodes, cables, bag -mask valve, compression board, bed ladder, central venous access, macrodrops equipment, photosensitive equipment, bottle of saline solution, glucose solution, identification for medications, dnula/three-way. - Materials needed for participants' performance: procedure glove, stethoscope, cap, mask, disposable apron.
Physical space	Clinical skills laboratory.
Human resources	Target audience: nursing undergraduate students between the sixth and eighth period. Scene participants: a student and a nursing technician. Scenario organization: researcher, teacher. Facilitator: researcher, teacher. Assessment: individual, by checklist.
Estimated scenario time	10 minutes.
Scenario's final components	
Scenario development	- Situation evolution: patient assessment, recognition of the shockable rhythm, indication of subsequent procedures. The end of the scenario will be after the end of the scenario time or when the learning objectives are achieved. - Scenario's critical factor: after students carry out the initial assessment of patients, they must identify the severity and perform the initial care in order to stabilize patient. - Students are expected to identify the arrhythmia presented, make the decision quickly, considering the urgency of the clinical condition presented.
Debriefing	Review of care through the assessment checklist, noting strengths, weaknesses and improvements. It will occur after the simulated scenario. The estimated duration of the session will be 20 minutes. Conducting the debriefing regarding reflection and analysis. - Debriefing method: Gather–Analyze–Summarize.[21]
Satisfaction and self-confidence scale assessment and application	Assessment: verification of theoretical knowledge is done through multiple-choice pre-lecture and post-simulated scenario questions.[22] Practical knowledge is analyzed using the checklist (Chart 2). Students' perception of the activity is analyzed using the satisfaction and self-confidence scale[26].

Chart 2 - Final checklist for student assessment in the simulated scenario on shockable arrhythmias in adult ICU patients. Minas Gerais, MG, Brazil, 2021.

Scenario: Patient assessment and shockable heart rhythm recognition			
Students:			
Date:	**Beginning:**	**End:**	
During simulation, students:	**Performed correctly**	**Performed partially**	**Did not perform**
Recognize changes in monitored vital signs (available on the monitor): (BP, HR, RR, Axt, SpO_2, electro tracing).			
Assess patients: identifies changes in breathing and circulation.			
Assess central pulse.			
Recognize the heart rhythm on the monitor (shockable VF or PVT).			
Identify as shockable rhythm.			
Recognize that the rhythm is CRA and informs the multidisciplinary team.			

DISCUSSION

In the health area, more specifically in nursing education, proposals for the construction and validity of simulated scenarios have been promoted in order to allow a prior experience of clinical practicethrough scenarios that allow students to mobilize knowledge, in addition to encouraging metacognitive skills such as critical thinking and clinical judgment[3,7,18]. This will reflect on accurate decision-making in similar care situations[2,7].

Therefore, the assessment and identification of shockable arrhythmias in the validated clinical scenario have the purpose of mobilizing skills for safe and quick action in real situations of nurses' professional practice[5,15]. Studies[15,17,27] point out that the recognition and agile conduct in shockable CRAs are directly related to the positive clinical outcome. Thus, a qualified team is expected in the ICU for the recognition and treatment of cardiac arrest, with attention to potentially reversible causes[15,27].

Thus, a study used high-fidelity simulation to train and assess nurses' skills in identifying VF and conduct. It was identified from this teaching strategy, the improvement of skills and ability to assess the absence of a pulse, recognize VF and the immediate use of a defibrillator[28].

However, to achieve reliable results in a simulated clinical scenario, the construct needs to be assessed and validated in its content[22]. In the present study, the simulated scenario and the checklist were assessed by experts, reaching a CVC >0.8 in all items, configuring their validity. It should be noted that finding a CVC ≥ 0.8 reflects the rigor in planning, construction, case/scenario description and construct clues that were ratified by experts in the area, based on judgments and suggestions for improvement[19,22].

In this regard, the validity of this simulated scenario's content as well as the checklist that complements it, aims at scientific rigor, with increased confidence in its use in teaching[3]. In this way, experts' suggestions, in each assessment round, were accepted, as long as they are in line with the most recent evidence, in order to create conditions that enable learning, with coherence of resources and safety for patients[2,8,15]. Furthermore, Cronbach's alpha equal to or greater than 0.7, achieved in the three assessment rounds, demonstrated the internal consistency of the simulated scenario's content. This result allows indicating the correlation between each scenario item and the construct as a whole[22].

In order to improve the simulated scenario and meet the real needs of nursing students, a pilot test was carried out which, according to the literature, must be carried out before implementing the clinical simulation itself so that some unforeseen situations are evidenced and adjusted[29]. In the present study, the pilot test of the clinical scenario attested to its good suitability as a mediator of knowledge and skills, with only an increase in the stipulated time being suggested. It is considered that, for scenario application, depending on the objective, the time can be extended. However, in a real situation, the time between the identification of a shockable arrhythmia and the establishment of the first shock should occur as soon as possible[15].

It should be noted that, in the context of good practices in clinical simulation, it is recommended to carry out the prebriefing, a moment reserved for objective guidance on the clinical case, mannequins, equipment and the proposed time of the simulated environment[18]. After simulation, a debriefing was carried out, at which time feedback on performance is provided and students are encouraged to report on facilities and difficulties, encouraging critical thinking[18]. In this regard, it was possible to detect that in prebriefing, most academics reported having good expectations with learning; however, they were insecure about not knowing how to act at the right time. In debriefing, most reports were of satisfaction, greater security and the need to deepen the study of the theme.

As for the result of ESEAA, applied at the end of debriefing, students reported being mostly satisfied and self-confident with the learning process. In the same direction, a study[30] found high scores of satisfaction and confidence in nursing students after simulation CRA training. The data led the authors to conclude that pre-simulation concern was replaced by post-simulation satisfaction[30].

Therefore, it is believed that satisfaction with the simulation may favor knowledge retention, acquisition of skills and self-confidence to proceed with the assessment and identification of shockable cardiac arrhythmias in ICU patients[30]. Allied to this, self-confident nursing students are better able to articulate theoretical and practical knowledge to make decisions and provide safe care to critically ill patients[7,26].

Considering the findings, it is inferred that the simulated scenario and respective checklist constructed and validated may help in the development of specific skills and in decision-making based on the assessment and identification of situations involving shockable arrhythmias in the ICU. As a limitation of this research, it is worth mentioning the performance of validity and pilot test only in the context of nursing and in the ICU, in addition to the establishment of convenience sampling for the pilot test, not allowing generalizations.

CONCLUSION

The instrument developed to assess shockable arrhythmias in adult patients hospitalized in the ICU is valid in its content and has good internal consistency. For this, the simulated scenario and the checklist were adjusted according to experts' suggestions and, in order to improve it to meet the target audience's needs, a pilot test was carried out. The scenario and the checklist constructed and validated for teaching nursing have, respectively, 21 and six items.

It is noteworthy that the present simulated scenario may contribute to graduation and continuing education in adult intensive care as well as subsidize future studies, in order to increase the quality of care for cardiorespiratory arrests and patient care.

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NOTES

ORIGIN OF THE ARTICLE

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CONTRIBUTION OF AUTHORITY

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