Cogitare Enfermagem

EXPERIENCE REPORT

TELESIMULATION AS A REMOTE TEACHING METHOD FOR CARDIOPULMONARY RESUSCITATION: EXPERIENCE REPORT

HIGHLIGHTS

1. Telesimulation: innovation in Cardiopulmonary Resuscitation training.
2. Telesimulation as a learning enhancing method for health professionals.
3. Telesimulation: it increases the number of correct answers between the pre- and post-tests.

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ABSTRACT

Objective: to describe the experience in the elaboration and implementation of a remote course on Cardiopulmonary Resuscitation for health professionals by means of Telesimulation. **Development:** an experience report about a course for Cardiopulmonary Resuscitation training, developed remotely and synchronously with 227 health professionals between June and July 2021 in the state of Rio de Janeiro - Brazil. The course was taught for 35 groups of students by applying the following: pre-test, video class and post-test 1; and Telesimulation and post-test 2 with perception assessment. In the assessment, Telesimulation stood out as a motivation strategy for improved learning about the topic, evidenced by the increase in the number of correct answers between the tests. **Conclusion:** the participants showed interest in the course, which proved to be a learning strategy, also considered as an innovation possibility for permanent education in health.

DESCRIPTORS: Simulation-based Training: Patient Simulation; Training with High-Fidelity Simulation; Education in Health.

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INTRODUCTION

During the COVID-19 (acronym for *Coronavirus Disease* 2019) pandemic, applying Telesimulation represented a technically viable and effective strategy to ensure the teaching-learning process. Studies that adopted this technique reported that the strategy was well received by participants who underwent training sessions, acknowledging its positive effect and expressing satisfaction with the learning experience[1-2].

In this context, and considered a remote education strategy, Telesimulation is defined as follows: "the process through which telecommunication and simulation resources are used to provide education, training and/or evaluation to students in an external locus"[3:133]. It is a method capable of leveraging remote technology to allow access to Realistic Simulation in Health (RSH), preserving the characteristic of a controlled and safe environment[4]. Furthermore, the following benefits are pointed out: democratization of Permanent Education in Health (PEH); expansion of teaching expertise in using the method, as the physical distance barriers are removed; and time and cost savings, when compared to the in-person modality[5-6].

The possibility of using this strategy to train technical and practical skills that present limitations due to lack of opportunities to obtain an active tactile practice stands out among the benefits related to Telesimulation. However, the results of its learning are based on the following: the participants' engagement in situations very close to the actual health care context; synchronous participant-instructor interaction, and development of communication and teamwork competencies; in addition to the possibility for self-reflection during the Debriefing session[1-2].

To such end, proposals for course using Telesimulation need to be applied and analyzed in terms of the participants' learning improvements, aiming to support it as a teaching strategy. Based on the above, the objective of this study was to describe the experience in the elaboration and implementation of a remote course on Cardiopulmonary Resuscitation (CPR) for health professionals by means of Telesimulation.

DEVELOPMENT

This is an experience report about the elaboration and implementation of a course associated with a university extension project entitled: "Update of the CPR Guidelines by means of Telesimulation". A course was developed with the objective of addressing the research problem about the analysis of Telesimulation as a learning enhancer for health professionals. Choice of the topic was due to its clinical importance in health services.

The topic addressed was the update in the CPR guidelines according to the latest manual published in 2020 by the *American Heart Association*[7]. The event took place between June and July 2021 in a virtual environment via the *Google Meet*® Videoconference Platform, in the remote and synchronous modality. Application of Telesimulation followed the good practices in realistic simulation in health proposed by the *International Nursing Association for Clinical Simulation and Learning*[8]. Due to its association with the research, there was ethical appreciation with registration in *Plataforma Brasil* under CAAE No.: 40485020.1.3002.5258 and approval opinion No.: 4.945.123/2021.

Production and implementation of the course

The course was developed in two phases: Production Phase and Implementation Phase. Each phase included three stages, which are described in Figure 1. The entire

course lasted approximately two hours, including application of Telesimulation, with nearly 30 minutes between scenarios and Debriefing.

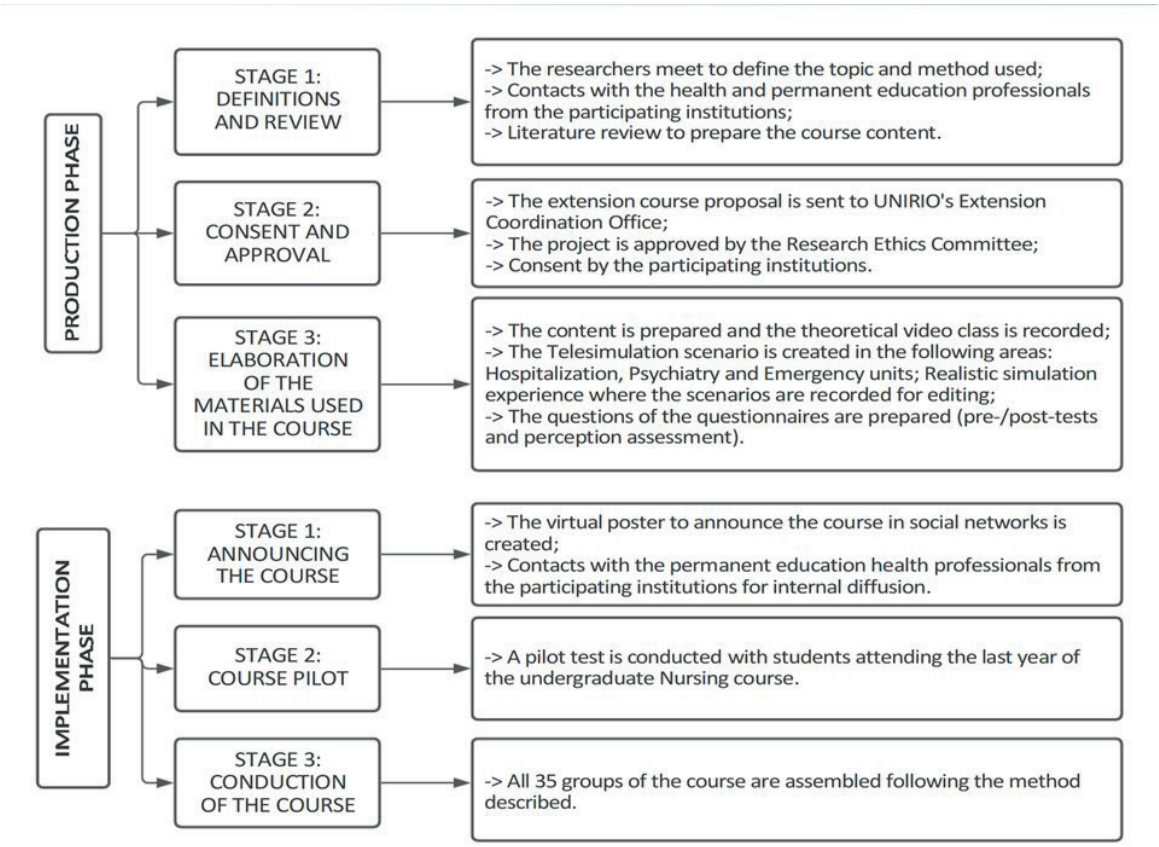

Figure 1 – Production and Implementation stages for the Remote course on Cardiopulmonary Resuscitation for health professionals by means of Telesimulation. Rio de Janeiro, RJ, Brazil, 2021

Source: The authors (2021).

Regarding the production phase, the participation of professionals and students from the undergraduate and graduate course in Nursing of the proposing institution in recording of the telesimulated scenarios stands out. The participants considered standardized were those who developed the actions established by the script of the telesimulated scenario; and the volunteer participants were those who underwent the decisions as health professionals[9].

The telesimulated scenarios were recorded in a Realistic Simulation Center of a private hospital located in a municipality of Rio de Janeiro (RJ), Brazil (BR). The recordings were made using images from three video recorders: one focusing on the multiparameter monitor; another focusing on the patient's bed headboard; and the third taking a panoramic view of the scenario. The devices used to compose the scenario were the following: *MegaCode Kelly Laerdal*® simulator; multiparameter monitor; emergency trolley containing representations of standardized medications; and common devices in health units, such as infusion pump, medical gas pipeline, ventilation system, equipment sets, venous catheters, and auxiliary ladder.

The recordings occurred on three different days, and three different scenarios were created according to care provision contexts, namely: Scenario 1 - Hospitalization Unit;

Scenario 2 - Psychiatry in the context of Psychosocial Care Centers (*Centros de Atenção Psicossocial*, CAPS); and Scenario 3 - Hospital Emergency Unit. It is noted that, in all three scenarios, the simulated clinical case referred to a patient in Cardiopulmonary Arrest (CPA).

Both the standardized and volunteer professionals who took part in recording of the scenarios received and signed an Image Rights Consent Form. The telesimulated scenarios lasted a mean of eight minutes and were edited using the *Openshot*® free video editing software, through which the images from all three film recorders were grouped, thus providing a more appropriate view.

Regarding the course implementation phase, announcing ease via a virtual poster and its publication in social networks through the researchers' participation groups stands out. The announcing poster included a link that allowed access to the *Google Forms*® electronic form, where it was possible to enroll in the course.

It was decided to conduct a pilot course that enabled to make the required adjustments at each moment, reducing or removing unforeseen events at the time of its conduction, analyzing the participants' time and response, as well as the maximum number of people per class. The pilot course was held in two days and involved 30 Nursing undergraduate students, divided into two classes of 15 participants each, maintaining the development of all execution stages for the course.

In this sense, with the pilot course as starting point, changes were made in relation to the increase in the time established for the participants to answer the questionnaires (Pre- and Post-tests). A video was also created as a screensaver to be transmitted while participants answered the questionnaires. This video contained diverse information such as: chronometer, indicating the time remaining to complete the questionnaires; references used to design the course, and a QR Code directing to a playlist on the *Spotify*® music streaming platform.

A total of 698 people interested in taking the course enrolled in all three scenarios and 35 groups with a total of 338 professionals were assembled; of these, 88 professionals did not participate in the entire course, failing to answer one of the three tests applied, and 23 subjects did not agree to take part in the research by answering negatively to the Informed Consent Form (ICF). The final sample included 227 professionals, as follows: 110 (49%) nurses; 59 (26%) nursing technicians; 14 (6%) physiotherapists; 14 (6%) physicians; and 30 (13%) from other professional categories. Regarding age, 151 (67%) of the participants belonged to the age group between 21 and 40 years old; and 192 (85%) were female. Referring to the field of professional performance, health care prevailed with 193 (85%). With regard to their professional workplaces, the participants were distributed as follows: public hospitals, 114 (50%); private hospitals, 27 (12%); primary health care units, 54 (24%); emergency care units, 10 (4%); home care, seven (3%); and others, 13 (6%).

Divided into five stages, the course was conducted in the sequence shown in Figure 2.

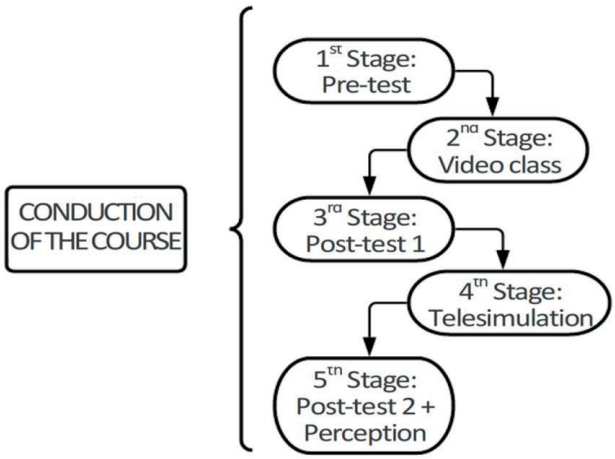

Figure 2 - Execution Process stages for the Remote course on Cardiopulmonary Resuscitation for health professionals by means of Telesimulation. Rio de Janeiro, RJ, Brazil, 2021

Source: The authors (2021).

First stage - Pre-test structured in *Google Forms*®, consisting of 10 multiple-choice questions and presented to the participants via a link included in the part regarding the chat on the *Google Meet*® video conference platform, to be answered in 10 minutes.

Second stage – Presentation of the video class taught by an MSc student from the proposing institution that is also one of the study researchers. The video class was previously recorded and included the following topics: Concepts on CPA; Survival chain; Recognition of heart rhythms; Medications used in CPA; Algorithm for Ventricular Fibrillation/Tachycardia without a Pulse; Algorithm for Electrical Activity without a Pulse/Asystole; Reversible causes of CPA and Post-CPA Care. The entire video class lasted 26 minutes.

Third stage - Post-test 1, performed in 10 minutes and with the same questions presented in the Pre-test, in order to compare the number of correct answers given by the participants after attending the theoretical video class.

Fourth stage - Presentation of the telesimulated scenario, followed by a Debriefing session, an RSH stage involving a facilitated discussion encouraging the participants to reflect on their own perceived performance during simulation[10].

In Telesimulation, some researchers call it Teledebriefing, as it maintains a safe environment of guided interactive discussion that allows for reflective self-discovery of skills performance by combining the telecommunication mechanisms used to develop the scenario[11]. For this stage, a structured Debriefing session[12] was used, in which the participants expressed their initial perceptions regarding the telesimulated scenario and then are encouraged to synthesize the main challenges and problems identified.

The Teledebriefing session was initiated by inviting the participants to access their cameras and microphones and, in this way, join the discussion about the telesimulated scenario. In addition to the course participants, at least two of the standardized professionals and the volunteer professional were synchronously present, who recorded the simulated scenarios, collaborating to the discussion and, subsequently, to analysis of the scenario, with sharing of "solutions" for the problems.

The summary phase took place after the Teledebriefing session, with the participants condensing the items discussed, minimally referring to the following: Immediate identification and CPR; Efficacy of the CPR maneuvers; Leadership actions during CPR; Algorithms for

shockable and non-shockable rhythms; and Post-CPR Care. The Teledebriefing session was guided by the main researcher and lasted a mean of 20 minutes in each group.

Fifth stage - Application of Post-test 2 and Assessment of the Perception about the course. Post-test 2 aimed at comparing the participants' number of correct answers between the test applied after the theoretical video class and the one following Telesimulation, developed after the Teledebriefing session.

It is noted that, in addition to maintaining the questions from the previous tests, Post-test 2 presented some others referring to the participants' perception about their participation in the course. To that end, a semi-structured instrument with four open-ended questions was designed, with the purpose of knowing the perception of the professionals who took the remote course in relation the Telesimulation method. A total of 20 minutes was established for Post-test 2.

At the end of the course, descriptive analyses of the tests applied were performed and a progressive increase in the results of the questions was observed. Figure 3 presents the arithmetic mean of the results from all three tests obtained in each of the telesimulated scenarios, as well as the overall one.

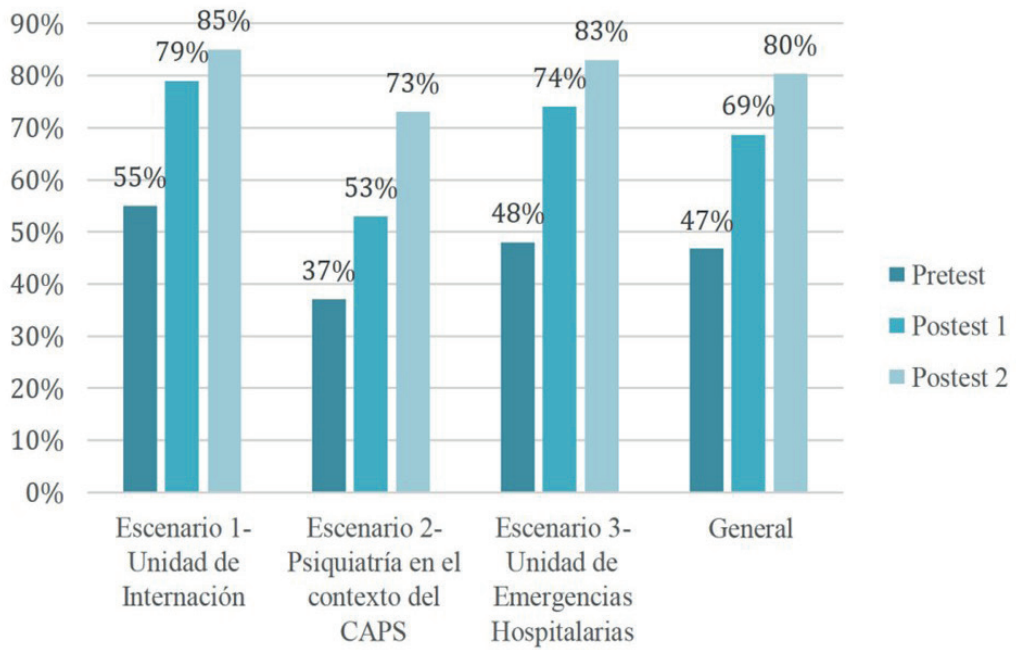

Figure 3 – Mean of correct answers in the tests applied during the Remote course on Cardiopulmonary Resuscitation for health professionals by means of Telesimulation. Rio de Janeiro, RJ, Brazil, 2021

Source: The authors (2021).

Once the course had ended, technical leverage reports were prepared for the institutions that contributed to encouraging participation of their professionals. The report established the commitment to maintain, for all data, secrecy with regard to any information capable of identifying the participants.

The difficulties developing the course were related to the following: the need to design a telesimulated scenario in a multiprofessional way; the limitation with regard to

the short time to apply considerably complex content; and difficulties regarding Internet connection instability or low quality of the participants' audio systems.

FINAL CONSIDERATIONS

Design and implementation of the remote course led to successful results and caught participants' interest. Telesimulation proved to be a powerful learning method due to the increase in the number of correct answers and questions to assess perception, thus being an innovation possibility in PEH.

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Role of Authors:
Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work - **Azeredo GO, Silva RFA da, Ferreira CSX, Corrêa V de AF**; Drafting the work or revising it critically for important intellectual content - **Azeredo GO, Silva RFA da, Nunciaroni AT, Corrêa V de AF**; Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved - **Azeredo GO, Corrêa V de AF**. All authors approved the final version of the text.

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