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Three-step clinical simulation model: An initiative to guide its implementation

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ABSTRACT

The design and implementation of simulation-based learning is a major institutional challenge. It involves planning the activity and preparing information and resources, as well as accompanying and guiding participants towards the achievement of learning outcomes. There are currently different global recommendations that contribute to a high-quality implementation of simulations.

The objective of this article is to present a simulation model that both integrates these guidelines and serves as a guide for those who are in the early stages of this educational strategy.

Keywords: *patient simulation; simulation training; improved quality.*

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INTRODUCTION

Simulation-based learning allows participants to develop and improve their knowledge, skills, and attitudes, as well as to analyze and respond to realistic situations in a simulation setting.[1] Having the possibility to train technical and non-technical skills in a safe learning environment not only improves professional competence, but also teamwork.[2,3]

However, implementing simulation-based learning (SBL) is always a major institutional challenge. According to the evidence, to achieve learning outcomes through the use of clinical simulation, SBL should be implemented in a structured manner.[4] Currently, there are several global guidelines for the design and use of clinical simulation: the National League for Nursing (NLN) Jeffries Simulation Theory,[5] the International Nursing Association in Clinical Simulation and Learning (INACSL) Healthcare Simulation Standards of Best Practice,[6] the Simulation Setting Model developed by Peter Dieckmann,[7] the Healthcare Simulationist Code of Ethics,[8] the Association for Simulated Practice in Healthcare (ASPiH) standards,[9] and the SimZones approach,[10] among others. However, the combined implementation of these international recommendations may be complex for those in the early stages of simulation-based learning.

The objective of this article is to present a simulation model that integrates available evidence and allows healthcare providers and institutions that are beginning to use clinical simulation to implement this educational strategy in a structured manner and in compliance with international recommendations.

BACKGROUND

The Center for Clinical Simulation of the School of Biomedical Sciences of Universidad Austral was created in 2015. Since its beginnings as a simulation laboratory in 1996, it has developed activities targeted mainly at nursing students, but, as of 2021, its proposals have been broadly offered to the rest of the school's degrees and the Hospital Universitario Austral. Currently, the Center's activities are targeted at undergraduate students of Nursing, Medicine, Nutrition, and Psychology, graduate students of the School of Biomedical Sciences, and healthcare providers from the Hospital Universitario Austral participating in its continuing education programs. In 2023 alone, more than 800 activities were carried out for skills training and clinical scenarios or cases, based on the university's simulation model. In the field of pediatrics, for example, 80 skills workshops were held for undergraduate and graduate students and resident physicians in relation to anthropometry, orotracheal intubation, nasogastric tube placement, lumbar puncture, pediatric cardiopulmonary resuscitation (CPR), and red reflex, among others. Twenty-five interdisciplinary scenarios were also developed to train effective communication, teamwork, pediatric emergency management, baby delivery, among others.

After conducting the activities, anonymous satisfaction surveys were administered; out of a total of 95 participants and with a response rate of 80%, 98% of participants believed that the skills practiced in simulation allowed them to feel more confident, to have an opportunity to better prepare for practice, and to gain confidence in the skill practiced. In addition, 92% of those who participated in clinical scenarios reported feeling empowered in clinical decision-making and having achieved greater confidence in prioritizing interventions, while 98% believed that the simulation helped with their learning.

The significant increase in activities offered by the Center for Clinical Simulation required additional professionals trained in the design and use of this educational strategy. This situation led us to design an institutional simulation model to serve as a guide for all those professionals who were beginning to use clinical simulation in order to systematize the design and implementation of this educational strategy and thus guarantee its quality.

SIMULATION MODEL OF UNIVERSIDAD AUSTRAL

The Simulation Model of Universidad Austral (Modelo de Simulación de la Universidad Austral, MOSUA) is based on the following theoretical foundations: the National League for Nursing (NLN) Jeffries Simulation Theory,[5] the International Nursing Association in Clinical Simulation and Learning (INACSL) Healthcare Simulation Standards of Best Practice,[6] the Healthcare Simulationist Code of Ethics,[8] David Kolb's Experiential Learning cycle,[11] the SimZones approach,[10] the Simulation Setting Model,[7] and the recent Association for Simulated Practice in Healthcare (ASPiH) standards.[9] In addition, the MOSUA not only includes the simulation activity itself, but also considers any potential impact that such experience may have on participants'

daily practice, as suggested by Kirkpatrick's New Model.[12]

David Kolb introduced an experiential learning cycle;[11] Kolb argues that learning occurs following a concrete experience and subsequent reflection that generates abstract concepts which will be applied in similar situations. The NLN Jeffries Simulation Theory[5] reinforces the importance of an adequate learning relationship between facilitators and participants to achieve the expected results, always framed in an environment of respect, trust, and confidentiality. The International Nursing Association in Clinical Simulation and Learning (INACSL) Healthcare Simulation Standards of Best Practice[6] and the Association for Simulated Practice in Healthcare (ASPiH)[9] standards provide evidence for structuring and improving the quality of simulation-based learning. Likewise, the SimZones[10] model is a great help for the organization of simulation programs, favoring the progression of activities and promoting the translational impact of the simulation. The Simulation Setting Model describes the phases to be followed in any simulation-based learning program.[7] Lastly, Kirkpatrick's New Model[12] provides a better understanding of the different levels of simulation outcomes and an approach to assess such achievements.

STRUCTURE

The MOSUA consists of 3 moments: 1) before, 2) during, and 3) after. Each of these moments involves specific activities that are not only related to each other, but are also oriented towards the achievement of the learning objectives. Such close relationship among these moments makes the model greatly cohesive and contributes to the progress of each of the stages of Kolb's learning cycle.

Moreover, any SBL activity should be conducted in a safe learning environment where professional integrity is promoted,[8,13] therefore, the MOSUA also incorporates these aspects (*Figure 1*).

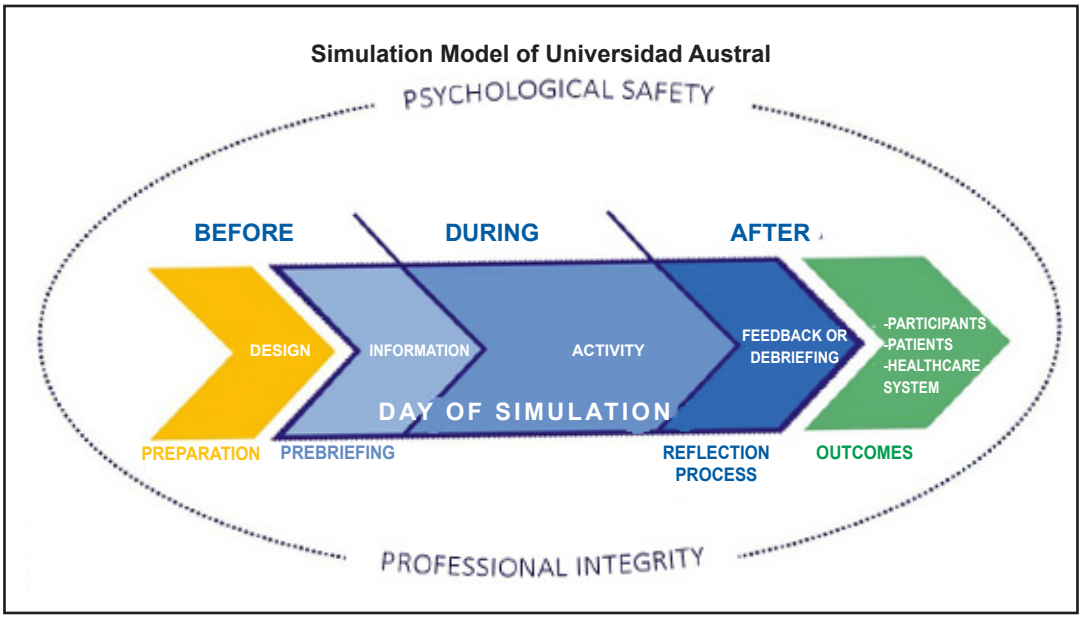
MOMENTS

1. Before

This moment refers to any activity that must be performed before the simulation experience begins. Some authors make a distinction and refer to these tasks conducted prior to the day of the simulation as "preparation," leaving the term "prebriefing" for everything that happens immediately before the simulation activity. In this sense, the MOSUA also differentiates between these 2 phases.

Preparation. It includes everything related to the design of the simulation activity.[9,14] Once the

Figure 1. Simulation Model of Universidad Austral



participants' learning needs have been identified, it is recommended to establish learning objectives and outcomes.[9,15] The learning objectives should always guide the selection of material resources, as well as the necessary realism. All this must be consistent with the simulation modality to be implemented.[9,10,14]

Finally, another important aspect to consider during activity design is to define the type of reflection to be carried out (feedback or debriefing), as suggested by the global recommendations.[9,14]

Prebriefing. It involves everything that happens on the day of the simulation experience and immediately prior to the start of the activity. For the MOSUA, prebriefing consists in the information provided to participants before the simulation experience begins, as also defined by the Healthcare Simulation Dictionary.[1] To develop a quality prebriefing, the recommendation is to follow the evidence suggestions, such as mentioning the learning objectives, the aspects related to psychological safety, the resources involved, the evaluation method, among others.[9,16–18]

This "before" moment seeks to generate a learning environment where psychological safety is a priority, for the purpose of favoring learning.[19,20]

2. During

This moment refers to the simulation experience itself, i.e., to the activities that represent situations and allow participants to develop or improve their knowledge, skills and/or attitudes in a simulation environment.[1,21]

At this point, the dynamic interaction between facilitators and participants should be considered, according to the modality of the activity designed.[5,22] This moment may also be identified with the "concrete experience" phase of Kolb's experiential learning cycle.

3. After

This moment refers to everything that happens after the simulation itself and is divided into two phases: the "reflection process" and the "outcomes."

Reflection process. It is what occurs immediately after the participants finish the simulation experience. The objective of this guided reflection (which may be done through feedback or debriefing) is to contribute to the meaningful learning of participants, as proposed by Kolb's learning cycle.[11]

During this reflection process, facilitators should promote the professional integrity and psychological safety of all those involved, as suggested by the evidence.[23–25] This prevents the potential negative and dynamic power relation between facilitators and participants from damaging and undermining the expected learning outcomes.[13]

Outcomes. These begin after the reflection process and refer to the possible impact of the simulation experience on participants, patients, and the healthcare system as a whole. In this sense, it is difficult to define when this moment ends. Participants are expected to be able to transfer what they have learned through simulation to their daily practice.[5]

This moment relates to the "active experimentation" phase of Kolb's learning cycle and to what Kirkpatrick's New Model calls "behavior" (understood as the direct effect on the patient) and "outcomes" (understood as the effects of such behavior on the quality of care in the healthcare system).[12]

The NLN Jeffries Simulation Theory agrees that simulation-based learning is expected to impact not only the participants, but also the patients and the healthcare system.

CONCLUSION

The Simulation Model of Universidad Austral (MOSUA) aims to contribute to the organization and systematization of the use of simulation-based learning according to existing global guidelines. It consists of 3 moments that involve specific activities, but are integrated into a single experience framed in a safe learning environment. Thus, the model is presented as an initiative to guide facilitators and institutions in the planning and implementation of simulation-based learning.

This institutional approach is similar to what the NLM Jeffries SImulation Theory proposed,[5] but different from the Simulation Setting Model,[7] which describes the phases of any simulation-based learning program from the participant's perspective. Both approaches enrich the simulation-based learning experience.

We believe that the MOSUA is a very useful tool for healthcare providers and simulationists who are just starting out in the world of simulation-based learning and intend to implement it according to the best available international evidence. ■

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