Implementation of good practices in clinical simulation in nursing education

Implementação de boas práticas em simulação clínica no ensino em enfermagem

Implementación de buenas prácticas de simulación clínica en la enseñanza de enfermería

Janaina Gomes Perbone Nunes[1] https://orcid.org/0000-0001-6909-6264
Patrícia de Freitas[1] https://orcid.org/0000-0002-6049-1732
Ellen Cristina Bergamasco[2] https://orcid.org/0000-0003-3761-8835
Diná Almeida Lopes Monteiro da Cruz[1] https://orcid.org/0000-0003-1373-409X

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Corresponding author
Janaina Gomes Perbone Nunes
E-mail: janaina.perbone@usp.br

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Edvane Birelo Lopes De Domenico
(https://orcid.org/0000-0001-7455-1727)
Escola Paulista de Enfermagem, Universidade Federal de São Paulo, SP, Brazil

Abstract

Objective: To identify the needs, advantages, facilitating factors, and barriers for implementation of best practices in clinical simulation (CS) design, proposed by the International Nursing Association of Clinical and Simulation Learning (INACSL).

Methods: This was a qualitative case study method based on Rogers' Diffusion of Innovation (DOI) Theory. Data collection was conducted in a public educational institution, by observations of CS activities and semi-structured interviews, recorded, with 18 people involved in these activities, and submitted to content analysis.

Results: Good practices were considered necessary, because they contribute to the systematization of the CS design; they were also considered advantageous, as they can positively impact the quality of care provided by the student to the patient in the clinical training field. The institutional interest in improving CS was a facilitator. However, the lack of methodological knowledge regarding CS strategy, insufficient human resources to use new teaching practices, and the team's lack of time to include changes in its usual practices were considered barriers to the implementation of good practices.

Conclusion: The implementation of good practices in CS design is necessary for the potential benefits of the strategy to be appreciated. Knowledge about the need, advantage, facilitators, and barriers contributes to the design of actions supported by consistent data for the effective implementation of the innovation.

Resumo

Objetivo: Identificar as necessidades, vantagens, fatores facilitadores e barreiras para a implementação das boas práticas no delineamento da simulação clínica (SC) propostas pela *International Nursing Association Clinical Simulation & Learning (INACSL).*

Métodos: Utilizou-se o método qualitativo de estudo de caso, fundamentado no Modelo de Difusão de Inovações de Rogers. A coleta de dados foi realizada em uma instituição pública de ensino, por meio de observações de atividades de SC e entrevistas semiestruturadas gravadas com 18 pessoas envolvidas nessas atividades, submetidas à análise de conteúdo.

Resultados: As boas práticas foram consideradas necessárias, pois contribuem para a sistematização do delineamento da SC, ainda, foram consideradas vantajosas, pois podem impactar positivamente na qualidade do cuidado fornecido pelo estudante ao paciente em campo de estágio. O interesse institucional em aprimorar a SC foi considerado um facilitador. No entanto, a ausência de formação metodológica em relação à estratégia de SC, recursos humanos insuficientes para utilizar práticas de ensino novas e indisponibilidade de tempo da equipe para incluir mudanças em suas práticas habituais foram consideradas barreiras para a implementação das boas práticas.

[1]Escola de Enfermagem, Universidade de São Paulo, São Paulo, SP, Brazil.
[2]Faculdade Israelita de Ciências da Saúde Albert Einstein, Hospital Israelita Albert Einstein, São Paulo, SP, Brazil.
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Conclusão: A implementação de boas práticas no delineamento da SC é necessária para que os potenciais benefícios da estratégia sejam usufruídos. O conhecimento sobre a necessidade, vantagem, facilitadores e barreiras contribui para a elaboração de ações baseadas em dados consistentes para a implementação de inovação com efetividade.

Resumen

Objetivo: Identificar las necesidades, ventajas, factores facilitadores y barreras para la implementación de las buenas prácticas en el diseño de la simulación clínica (SC) propuestas por la *International Nursing Association Clinical Simulation & Learning (INACSL).*

Métodos: Se utilizó el método cualitativo de estudio de caso, fundamentado en el Modelo de Difusión de Innovaciones de Rogers. La recopilación de los datos se realizó en una institución pública de enseñanza, por medio de la observación de actividades de SC y de entrevistas semiestructuradas grabadas con 18 personas involucradas en esas actividades, sujetas al análisis de contenido.

Resultados: Las buenas prácticas fueron consideradas necesarias, ya que contribuyen con la sistematización del diseño de la SC. Además, se consideraron beneficiosas ya que pueden impactar positivamente en la calidad del cuidado brindado por el estudiante al paciente en el ámbito de la pasantía. El interés institucional en perfeccionar la SC fue considerado un facilitador. Sin embargo, la ausencia de formación metodológica en lo referente a la estrategia de SC, los recursos humanos insuficientes para utilizar prácticas de enseñanza nuevas y la falta de disponibilidad de tiempo del equipo para incluir cambios en sus prácticas habituales fueron consideradas barreras para la implementación de las buenas prácticas.

Conclusión: La implementación de buenas prácticas en el diseño de la SC es necesaria para poder usufructuar los potenciales beneficios de la estrategia. El conocimiento sobre la necesidad, las ventajas, los facilitadores y las barreras contribuye para la elaboración de acciones basadas en datos consistentes para la implementación de innovación con efectividad.

Introduction

One of the teaching strategies that has been generating interest among nursing educators is clinical simulation (CS), which promotes learning by means of the lived experience in the clinical scenarios, and encourages reflections during debriefing sessions.[1,2] A growing development of scientific evidence related to the design, implementation, and management of CS in teaching programs, constitute a challenge for maintaining competency of educators, because of the rapid advancement of available knowledge.

Good CS practices gather scientific evidence in guidelines to facilitate achievement of better learning outcomes in nursing students, with educators competently performing activities, leading to high performance and quality use of CS.[3,4]

The adoption of good practices, such as those for CS, may correspond to the implementation of innovations. During the process of implementing an innovation, it is necessary to understand the characteristics of the context in which it is intended to be implemented, because the probability of successful implementation of evidence will depend on identification of barriers and facilitators that involve the process.[5] Obtaining this mapping enables the development of strategies that ensure greater implementation effectiveness.[5]

The Rogers' Diffusion of Innovation (DOI) Theory[6] encompasses aspects involved in the implementation of an innovation. For Rogers,[6] implementation is a process by which innovation is communicated over time among members of a social system, and such a theory proposes measures to facilitate implementation, which include that members of the social system know about the innovation and are clear about the needs and advantages of implementing it, as well as the facilitators and barriers.[6]

The International Nursing Association of Clinical and Simulation Learning (INACSL)[7] has released a set of best practice guidelines to support the quality of CS teaching in nursing. These include best practices for design,[8,9] objectives and outcomes,[10] facilitation methods,[11] conduct of debriefing,[12] evaluating the the participant,[13] ensuring professional integrity,[14] implementing CS with different professions,[15] and finally, guidelines to operationalize the infrastructure surrounding CS.[16] The implementation of these guidelines may facilitate the organization of CS activities in teaching programs.

Among the multiple activities involved in CS, design is an essential activity to ensure the intended outcomes of the strategy.[8,9] It includes the definition of the activity's learning objective, preparation of the clinical case with the clues that will guide the participant to achieve the objective, preparation of the questions that will guide the debriefing in order to direct the participant's reasoning to reach

the learning objectives, organization of the content pertinent to the prebriefing, among other things (Chart 1).[8,9]

Chart 1. Good practice criteria for clinical simulation design

Simulations should be designed in consultation with content and simulation leaders with expertise in best practices in education, pedagogy, and simulation practice.
Perform a needs assessment to provide foundational evidence for design of the simulations.
Develop measurable objectives.
Structure the simulation to align the modality with the learning objectives.
Design a scenario or case to provide the context of the simulation.
Use various types of fidelity to create the required perception of realism.
Prepare a facilitative approach that is participant-centered and driven by the participant's objectives, knowledge, or experience level, and expected outcomes.
Prepare a pre-briefing that includes presentation of the materials and a briefing to guide the participant toward a successful experience.
Plan the debriefing and/or feedback session as a reflection exercise.
Develop a method of evaluating the participants and the simulation.
Conduct a pilot test with the target participants before implementing the simulation.

Source: Adapted from Healthcare Simulation Standards of Best Practice™.[8,9]

In a recent research study, a good practice guide for the management of CS in nursing education was developed, which provided support for practice, resources and data. It also showed the use of technology and the training of professionals were the most important aspects to be taken into account to minimize the main barriers identified.[17] However, literature has not yet described evidence on the implementation of good practices for the delineation of the CS.

In the present study, the object of interest is the implementation of good practices in the design of clinical simulation proposed by INACSL[8,9] in undergraduate nursing education. The educational institution selected for the research context does not adopt the described guidelines Considering CS as an effective strategy for nursing education[18,19] nd the importance of knowing the conditions of a context for the establishment of prior actions for a successful implementation of an innovation, this study explored the needs, advantages, facilitators and barriers to the implementation of good practices in the design of CS.

Methods

This was a single case study,[20] of exploratory approach on designing CS considering the best practice guidelines.[8,9] Rogers' (DOI) Theory was used to structure this case. According to this, when implementing an innovation it is necessary to verify that the members of the social system in question are clear about the needs and advantages of its implementation.[6] The Consolidated Criteria for Reporting Qualitative Research (COREQ) criteria were used for reporting this research.[21]

The establishment of propositions leads to something that should be examined within the scope of the research.[20] The propositions for this research were: 1) identification by educators that the implementation of good practices in the CS design contributes to the development and achievement of learning objectives; and, 2) the use of good practices in CS design may facilitate the systematization of CS practice, and enable the evaluation of the strategy's effectiveness in reaching the learning objectives.

The study was conducted in a public institution, which has a building with four large laboratories and other smaller structures, with plenty of materials and equipment for practical teaching activities. All participants in the study used the same laboratories and shared the same structure.

The data collection was conducted by means of interviews with professors, researchers, employees, and nursing students involved in CS activities, and participant observation with field diary development based on a script about needs, advantages, facilitators, and barriers to implement good practices.

The inclusion of students was motivated by the interest in apprehending the perspective of those for whom CS is designed and offered. The researcher who conducted the interviews and observations was one of the authors of the study, a doctor with experience in CS practice and research, who was engaged in the context of the field of study in undergraduate teaching activities. The interviewees were informed about the objectives and procedures of the study and the use of audio recording of the interviews. Those who agreed to participate signed the Terms of Free and Informed Consent Form. The interviews were previously scheduled and conducted at a time and place convenient for the participant, preceded by a presentation and explanation of the 11 best practice criteria,[8,9] or outlining CS centered on the following proposition: "Recall a simulation you

participated in and comment in a free form on the 11 good practice criteria".

Based on the content obtained from the interviews, some questions were formulated to understand conditions for implementing the chosen guidelines, including: In your opinion, why would the implementation of good practices related to CS design be necessary or advantageous for undergraduate nursing education? What would be the facilitating factors for the implementation of good practice criteria in CS design? Why would such factors contribute to the implementation of good practice for CS design activities? What would be the barriers to implement good practice criteria for CS design? Why would such barriers create difficulties for the implementation of good practice in CS design? What would be the modifiable barriers? What would be the critical barriers?

The interviews were conducted as a guided, open conversation,[21,22] so that the responses provided data on the themes arising from good practice. Data from direct observation of laboratory activities were recorded according to needs, advantages, facilitators, and barriers to implementing the 11 best practice criteria.[8,9]

Eleven CS activities of the undergraduate course were observed, ten were clinical nursing activities involving implementation of the nursing process in problem management and clinical reasoning, and one was a mental health activity involving communication.

The interviews were transcribed, and the direct observations were analyzed using Bardin's Content Analysis technique (1977)[23] from four pre-established analytical categories: needs, advantages, facilitators, and barriers in implementing good practices in the CS design to identify the empirical categories. After the analysis according to the first two steps of Rogers' DOI theory, triangulation was completed between the data from the interviews and the data recorded in the field diary. The Web Qualitative Data Analysis (webQDA®) software[24] was used in this process as a support platform for data management and analysis.

Three researchers (one of them in post-doctoral internship in the institution, a doctoral student with experience in CS from a different institution from the study site, and a retired researcher from the institution itself, who does not develop activities in undergraduate education), independently performed the three stages of content analysis, online and simultaneously, in the software itself. Initially, the data from 18 interviews, which totaled 9 hours and 35 minutes of recordings, and 11 observed activities, were transferred to the webQDA® software[24] by means of the "internal sources" tool, totaling 29 data sources. The nuclei of meaning were identified and highlighted by means of the "coding" functionality, in different colors for each researcher. A definition was inserted for each pre-established analytical category, and for the empirical categories identified to align the interpretive analyses among the three researchers. The researchers also used the "Logbook" feature to report their impressions and reflections on the analyses. Such actions facilitated the verification of independent interpretations that were subsequently discussed by the three researchers to achieve consensus in cases of disagreement. The three researchers discussed each excerpt with a disagreement until consensus was reached on the identification of the nuclei of meaning, categorizations, and interpretative subcategorizations.

After exhaustive data reading and analysis, 329 excerpts of statements and observations constituted the study's cores of meaning, identified in one of four pre-established analytical categories, and organized into tree codes. After a new analysis of the tree codes, 14 empirical categories were identified in tree subcodes, represented in figure 1.

The project was approved by the Research Ethics Committee under CAAE: 74766517.0.0000.5392, and identified by the opinion number: 2,340,002.

Results

The social structure of the institution involved with the CS includes the following personnel: laboratory specialists assigned to the development of practical teaching activities; professors, who are primarily responsible for designing and developing the CS activities; technical-administrative person-

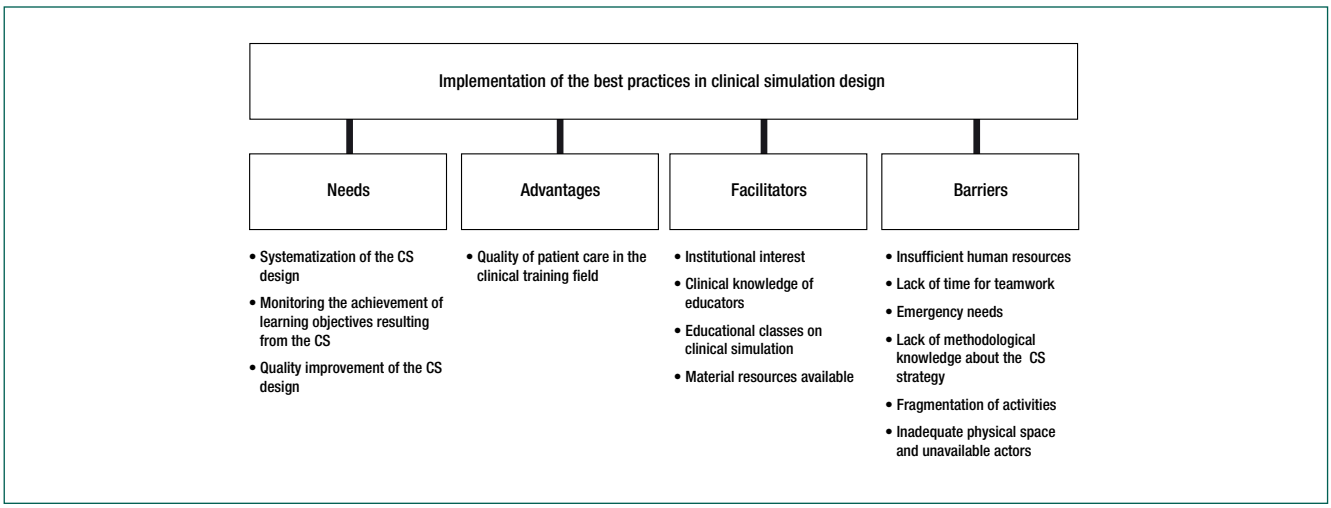

Figure 1. Analytic and empirical categories related to the implementation of good practices

nel in charge of the organization, storage, maintenance of materials/equipment, and management of the physical space; the researchers: postdoctoral fellows, collaborators in the CS design and execution; graduate students who collaboratorate in the CS design and implementation; and finally, undergraduate students, who are the final consumers of the activity.

The total number of professionals involved in the CS activities in this institution is not consistent, as there are changes according to the disciplines taught throughout the year, and according to the distribution of the faculty/researchers/graduate students in the disciplines that use this teaching strategy. In this study, the group of professionals involved in designing and conducting the CS were referred to as the "team of educators".

Researchers and graduate students cooperate in the design and development of CS activities, because in their activity programs, participation in teaching practices is part of the assignments. Undergraduate nursing students engage in CS throughout all years of the school program, but the activities are more concentrated in the second and third years of the program. All study participants act in the same social context in CS-related activities, and are characterized in table 1.

The interviews showed that some of the interviewees were not aware of good practices in CS design and expressed positive appreciation for them, as exemplified in the following statements:

Table 1. Characteristics of study participants

Position / Activity	nº	Time working at the institution (mean)	Age (mean)	Sex		Classes on clinical simulation n(%)
				Female	Male	
Professor	8	9 years	43 years	8	-	3(38)
Laboratory specialist	5	10 years	39 years	5		5(100)
Technical-administrative staff	1	*	*	-	1	-
Postdoctoral fellow	2	3 years	39 years	2	-	-
Undergraduate student	2	-	20 years	1	1	-
Total	18					

*Data not disclosed to ensure anonymity

> *"Well, I'll be honest, I didn't know the text you told me about, I also didn't know about these good practices, I liked hearing these good practices from you..." (Interviewee 11).*

Needs

Systematization of the CS design

It was identified that the use of good practices in the design of the CS provides guidelines in standardized language that can facilitate teamwork; it can help the design to be conducted in a systematic format and ensure the inclusion of relevant elements for effective implementation. Such needs were made apparent in the following statements: :

> *"Advantageous it is, and also necessary [to implement good practices], I think that creating this structure, where all the laboratories - whether low, medium, or eventually high fidelity - have a similar structure, and that everyone knows that this*

is shared and all the processes that are going to be developed in the laboratory come from this [the good practices]. I believe that we can create more reasonable, stronger processes."(Interviewee 1)

....It helps to focus, to analyze and also to implement simulation in a more systematic form, so that it is not something like, "I'm going to do what I think..." you know what I mean?" (Interviewee 3)

Follow-up of the achievement of the learning objectives resulting from the CS

This subcategory deals with the implementation of best practices as a resource to facilitate the evaluation of the learning objectives achieved as a result of the design strategy. The following statement exemplifies such a finding:

"[simulation without evaluation] It loses the meaning of the objective that we intend with the student. I'm going to do the simulation, but suddenly we don't even know if the objective was reached." (Interviewee 3)

Improvement of the quality of the CS design

The development of teaching practice based on evidence, by using good practices, has been a demand of the social organization of the educational institution that aims to improve its practices, as shown in the following statements:

"So we have to be serious enough to say, 'I do simulation following this and this criterion', based on what has been studied as best practices, what has already been tested in other institutions, and test here if it works, and if it did not work, disseminate it and say, 'no, here it worked in a different way', and we do it in another way. But there is no specific attention to the strategy itself, to teaching. We don't have a group that studies this and that can maybe improve on the design of each class". (Interviewee 5)

In the recently published good practices, it is recommended that debriefing be conducted in a comfortable environment for the effectiveness of the reflection. Such a need to implement good practices is apparent in this student's statement:

"I found the room configuration a little boring, you know. Because some parts of the room didn't allow you to see the teacher. And you are paying attention, but you cannot see her" ... "I noticed that sometimes I lost focus because I was more listening to the voice than looking directly at the person [teacher]" (Interviewee 15)

Advantage

Quality of care provided to the patient in the clinical training setting

One manifestation of an advantage in implementing good practices was the potential positive impact on quality of care provided by the student to the patient in the field during the internship, as noted in the statement:

"I think the main advantage is that I reap the benefits, there, with the student being better prepared. We are involved in the internships with the students...so at the bedside with patients, they show many difficulties.. I believe that if we had a simulated teaching like that, with this care in preparing the strategy, we wouldn't have so much difficulty with the student at the patient's bedside, and even more, the patient himself would benefit..."(Interviewee 5).

Facilitators

Institutional interest

This subcategory refers to the interest of the institution in using simulation in the most effective manner; good practices provide support to accomplish this purpose, as exemplified in the following statement:

".... Because, for example, we see that today people want to implement it, in fact, our department is having a program of actions, simulation..." (Interviewee 3)

Clinical knowledge of educators

Recognition of the importance of the objective for scenario development and the educators' significant

clinical experience are considered facilitators for implementing best practices. The clear objectives will influence the success of the activity, and the quality of the clinical information will impact on the conceptual fidelity recommended.

> *"I think having a clear objective for the scenario facilitates a lot, and the experience to bring clinical data as well, to be able to reflect that in a simulation environment." (Interviewee 5)*

> *".... I had experience in emergency, another one in ICU, and another one in a surgical center. I think this is a facilitator, and from there we can exchange experiences, not only for the theoretical part of what we are studying, but also to put it into practice and be able to apply it as faithfully as possible." (Interviewee 3)*

Educational classes on clinical simulation

Experiences in CS design by simulation courses are facilitators, because they promote the understanding of the need to structure several aspects, such as the use of actors and the preparation of the scenario, facilitating the implementation of CS design criteria, as mentioned below:

> *"So, the course was very interesting, because we discussed many different cases and many groups running these cases, seeing things that went wrong and everything, we were able to contemplate a large number of factors that were poorly predicted, poorly placed. This helped me a lot when it came time to define the [real] case" (Interviewee 11)*

Material resources available

The availability of equipment and materials is a facilitator for the preparation of scenarios, as it offers a range of options and contributes to physical fidelity, as exemplified in the statements below:

> *"... the school has already obtained a lot of resources from ...., so the group of equipment that we have of mannequins is extremely large. It is not a small thing that the school has already put in the lab, has already invested in this lab..." (Interviewee 11)*

Barriers

Insufficient human resources

The reduced number of professors makes it difficult to implement new practices in the work process, as is represented in the following statement:

> *"We have a consistent loss of faculty members, probably the unit with the highest loss in the entire University [Name of University], without any replacement and with no opportunity for replacement. So we are suffering to maintain minimum functions and to create new ones. Even if they are not new, even if we have these initiatives, maybe we suffer a little bit..." (Interviewee 1)*

Also, the insufficient number of professionals limits the use of all of the good practice criteria in CS design.

> *"...so human resources for us is very difficult, because we could do much better simulations if we had more people, but as we don't, sometimes it is too hard for just one person to think about everything and then we just do whatever we can..." (Interviewee 10)*

Lack of time for teamwork

The teaching team is involved in many activities, which leads to difficulty in the professionals having the availability to work in conjunction with one another, generating a barrier, because it is not always possible to count on the availability of people and services to perform the activity.

> *" ...I believe that things begin to get difficult when we have to share a series of things with a team that is involved in a lot of other things..." (Interviewee 1)*

Another barrier is the insufficient time to include the process of validating clinical information in the CS design. Often, this procedure is performed, but not formally included in the design or documented. The following statement highlights this finding:

> *"We don't always get to validate what we have planned, and here, we don't get to improve. This*

happens frequently, because we really don't have time". (Interviewee 3).

Emergency needs

The difficulty in implementing an innovation was also noted, because emergency needs often demand action.

"... performing a simulation as we learned, we have been thinking for a long time about it, even designing it, implementing it, and many times it is left aside, because we are always putting out fires..." (Interviewee 3)

It is important to remember that the lack of time and te emergency needs are barriers that can be considered facets of "insufficient human resources". In this study, these were considered as independent barriers because it is believed that even with a sufficient number of educators, one can have a work process with emergency demands and lack of time to implement innovations. However, studies are needed to verify how these barriers are associated.

Lack of methodological knowledge about the strategy

This topic constitutes a barrier to implementing good practices, as knowledge about the learning theories that underlie the CS is essential to give meaning to the adherence to good practices.

"...I never took a course on this [clinical simulation], I was learning with people who were already doing it or had some knowledge, you know? So, I think that this also needs to be improved." (Interviewee 14)

"...this [theory and structure of CS] is not very clear to us, we follow more intuitive paths, with some theoretical knowledge, however I think it's very superficial." (Interviewee 14)

"... And more and more training. I think those barriers are knowledge and human resources, really, I think." (Interviewee 9)

Fragmentation of activities

In the context studied, CS is used to complement disciplinary content. A discipline is presented by several professors, who provide theoretical classes, and when there is a need for practical content, laboratory specialists prepare and conduct the CS. Frequently, the content of these two components are not well articulated. Such fragmentation can be considered a barrier when the design of the learning objectives are connected to the content delivered by different strategies. The following statement demonstrates such an assertion:

"Not because what was prepared could be, because it is the same theme, but it is not something developed together, saying that this strategy begins with didactic material, a theoretical class and it concludes in a clinical simulation. ...So, there is a disconnection, sometimes between these three things which are to happen. So what should be a group with the same learning objective, actually results in fragmented things" (Interviewee 5).

Inadequate physical space and unavailable personel

Although material resources are considered facilitators, some manifestations indicated the absence of appropriate physical facilities as a barrier to the implementation of good practices in CS design.

The absence of professional actors constitutes a barrier to the implementation of good practices, as the supply of resources for the preparation of scenarios is limited, reducing the possibilities of expanding scenarios, and demotivating professors. The use of actors can bring even greater quality to the reliability of the scenario, as represented in the following statement:

"...I think it does make it difficult, several things, I think getting the actors is a difficulty..." (Interviewee 11)

"...And the structure of the laboratory, too, is not very easy for us, because that's what it is. It simulates more of a hospital environment, it's not the context we work with [the mental health context], so we try to adapt with what we have." (Interviewee 13)

Discussion

The study confirmed the proposition that educators consider the implementation of best practices in the CS design necessary for the development and monitoring of learning objectives. The data indicated that some of the participants were not aware of these good practices. It seems that not all of those involved in the practice of CS are able to be updated on the subject. Strategies that allow continuous updating of those involved in the CS design need to be considered in the management of teaching programs.

For students, good practices may contribute to debriefing in a friendly environment, which may facilitate the reflection process.

The need for good practices for systematization, standardization of practice, design of clearly defined learning objectives, and inclusion of assessment methods were identified in the present study. An American case report[25] also considered good practice guidelines as a framework to provide standardized terminology. Additionally, experts in CS reported that the delineation of learning objectives will be guiding "tools" for the achievement of outcomes[8,9] Other studies[13,25] also discussed the need to include assessment methods in the activity design. The Simulation Effectiveness Tool-Modified (SET-M), is an instrument that is currently available to measure the effectiveness of CS.[26,27]

A survey technique used to investigate the knowledge and implementation of good practices in CS by 68 individuals from 30 different states in the United States of America, where 80% were academic educators and the remaining were CS technicians, indicated that most subjects (85%) had some knowledge about the good practices, 75% read about it, and 58.2% adopted it as a framework for teaching simulation in their institutions. [28] However, 20% of the professionals who reported consistent knowledge about good practices do not use them in practice. According to the author, this is because they are not integrated into the institutions' policies and procedures manuals.[28]

In a literature review that identified barriers related to teaching quality faced by academic professors,[29] lack of time was a recurrent theme and refers to concurrent demands of teaching and research, leaving little time for reflection, innovation, and interaction. Academic workload allocations limit time for developing effective use of institutional innovations, such as technology-enhanced learning strategies.[29,30] In this study, lack of time among the team of educators was also identified as a barrier to implementation of best practices, because acceptance and implementation of an innovation in work practice presupposes availability of time to consider, reflect on the innovation, and to develop new knowledge and skills necessary for its incorporation.

Study on simulation innovation brought together fifteen experts who emphasized that the goal of simulation-based education is not to introduce the latest technology in training, but to develop professionals ready to lead experiential learning.[31] Study on simulation innovation brought together fifteen experts who emphasized that the goal of simulation-based education is not to introduce the latest technology in training, but to develop professionals ready to lead experiential learning. Knowledge on the theories and methods that support the CS as an experiential learning strategy is essential for educators, to develop arguments and attitudes favorable to the implementation of good practices in CS. This is considered a modifiable barrier, just as the "fragmentation of activities" barrier is. The other barriers, in the authors' opinion, were considered non-modifiable in the short and medium term: insufficient human resources, unavailability of time, emergency needs and inadequate physical space, and unavailable actors.

The perception of needs, advantages, facilitators, and barriers to the adoption of innovations is influenced by contextual factors that may not be shared by different locations. For this reason, one of the limitations of this study is that the transferability of the findings to other institutions requires caution. Another limitation to consider is that that the interviewer/observer of the study, who was embedded in the institution, may have influenced the data analysis and interpretation. However, we sought to control this limitation by means of data analysis by

two other independent researchers, who accessed only the transcripts of the unidentified interviews.

Conclusion

This study identified that the implementation of good practices in CS design is perceived by professors, technicians, and students involved, such as necessary to systematize and improve the strategy, as well as to monitor the achievement of learning objectives established for the CS. The advantages of adopting these good practices include the possibility of promoting the quality of care offered to patients by students in the clinical training fields.

Structural issues were indicated as barriers to the implementation of good practices in the CS design, such as: the shortage of human resources and limitations of physical space; managerial issues, such as fragmentation of activities; and insufficient methodological knowledge of the strategy. On the other hand, institutional interest, solid clinical knowledge of educators, available material resources, and the completion of courses on simulation by educators were perceived to be facilitators to the implementation of good practices in CS.

Clinical simulation is a promising teaching strategy for learning and continuing education of health professionals; the adoption of good practices for planning, development, and assessment requires the involvement of all those who are involved in CS in any way. Knowing the conceptions that these participants have about good practices provides references for decisions in the process of implementing good practices in the use of CS in nursing education programs.

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Collaborations

Nunes JGP, Freitas P, Bergamasco EC & Cruz DALM contributed to the study design, data analysis and interpretation, article writing, relevant critical review of the intellectual content, and approval of the final version to be published.

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