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Perceived contributions of nursing and medical students on clinical simulation: a qualitative study

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Abstract. The aim of study was analyze the contributions perceived by nursing and medical students regarding clinical simulation as a teaching method, based on Paulo Freire's Pedagogy of Autonomy. Method: a descriptive, qualitative study conducted with twelve (12) students who participated in the research project of the Advanced Research Center in Clinical Simulation at the Federal University of Mato Grosso, Sinop Campus. Data were collected through a conversation circle, transcribed, and analyzed using Laurence Bardin's content analysis technique, in light of Freire's theoretical postulates. Results: analysis of the statements and records identified three categories: apprehension of reality, dialogicity, and affectivity, aligned with the theoretical concepts of the reference author. Conclusion: The students' perceptions demonstrate correspondence with Freire's thought, reinforcing the pedagogical potential of clinical simulation in training autonomous, critical, and reflective professionals capable of understanding reality and establishing dialogic and humanized teaching.
Keywords: Simulation Training; Teaching; Learning; Medical Students; Nursing Students.

Introduction

Conceptions regarding the role of education in professional training demand from both teacher and learner the ability to recognize the teaching-learning process as a dynamic path, beyond the mere transmission of knowledge. In the current context of constant and rapid changes in the world, Riveros-Perez and Rodriguez-Diaz[1] (2018) denote the need for this process to be capable of enabling students to develop skills and attitudes that prepare them to face the unknown.

In the scope of health education, this premise gains strength, as healthcare professionals are required to possess sharp critical and reflective capacity to solve complex problems, ensuring the best possible patient care[2]. In the same vein, Negri et al.[3] (2017) emphasize that decision-making ability is fundamental for health professionals, requiring not only technical-scientific knowledge but also critical reasoning, effective communication, self-confidence, creativity, autonomy, and flexibility in the face of a multiplicity of challenges inherent to the health field. To achieve this goal of training professionals capable of dealing with these challenges, health courses have increasingly adopted active teaching-learning methodologies. Active learning can provide students with a deeper level of knowledge, as it consists not only of developing the competence to perform a task or solve a problem but also of reflecting on the imposed challenge. The same author also notes that passive learning methods do not necessarily need to be abandoned, as they also hold relevance, but active methodologies are notably more adequate in establishing an effective connection between students and the knowledge and skills they need[4].

In this context, the use of clinical simulation (CS) as an active learning methodology has gained prominence, especially in medical schools[5] and nursing programs[2]. Clinical simulation, as an educational strategy conducted in a safe environment, enables the experience of situations

that reproduce the complexity of the real professional context, promoting the development of technical, behavioral, and clinical reasoning skills[6].

It is noteworthy that the use of CS has broad educational potential, ranging from the use of role-playing in clinical situations, through simulated actors and standardized patients, to the use of technologically advanced simulators, also including the incorporation of environments that replicate a real patient situation with varying degrees of fidelity. Furthermore, it is worth highlighting that both the technological level and the degree of fidelity can vary according to the learning objective, the students' level of instruction, and available resources, making CS a flexible resource applicable to diverse contexts[3].

Having underlined the characteristics and potentialities of CS as an active teaching methodology for the training of health professionals, the need to analyze this instrument against a pedagogical backdrop cannot be dismissed, to avoid emptying its meaning as an educational resource. The aforementioned characteristics of this educational method, such as the development of autonomy and the capacity for reflection on practice, were exhaustively debated by the Brazilian philosopher, writer, and educator Paulo Freire[7] in works such as Pedagogy of Autonomy. Freire[8] (2011) notes, in the aforementioned work, that teaching is "creating the possibilities for the production or construction of knowledge" by the student themselves as a subject who dialogues with the teacher and with the world during the learn-teach process. The proposal to train health professionals with autonomy both in professional practice and in the learning process is clearly correlated with the qualities and potentialities of CS as an educational resource, thus allowing its analysis in the light of Freire's work.
Thus, the present study seeks to describe the contributions perceived by nursing and medical students participating in the NuPASC project (Advanced Research Center in Clinical Simulation - a study of interprofessional education for students in the health field) regarding the use of Clinical Simulation as an educational resource, drawing a parallel with the assumptions evidenced by Paulo Freire in his work Pedagogy of Autonomy.

Methods

This is a descriptive study with a qualitative approach, developed within the scope of the NuPASC Project - Advanced Research Center in Clinical Simulation - a study of interprofessional education for students in the health field, whose data collection occurred in the second half of 2022, at the Clinical Simulation Laboratory of the Federal University of Mato Grosso (UFMT) - Sinop Campus. The study was preceded by ethical approval from the Research Ethics Committee, and all participants signed an Informed Consent Form (ICF), guaranteeing confidentiality and privacy through anonymity and data coding, in accordance with Resolution 466/12 of the National Research Ethics Committee[9]. The sample included students from the nursing and medicine courses at UFMT - Sinop who, during the academic semesters of 2021/2 and 2022/1, received theoretical and practical training within the scope of CS, which included: historical knowledge and theoretical assumptions of CS, methods, different applications, knowledge of the best practice guidelines of the International Nursing Association for Clinical Simulation and Learning, the process of scenario construction and validation, and its application in the educational context. Furthermore, the students were trained to act as standardized patients and other simulated actors, performed artistic makeup, acted as evaluators through OSCE (Objective Structured Clinical Examination), participated in setting up the scenarios, and took part in all moments of the CS, from pre-briefing to debriefing.
The scenarios applied by the project's students and faculty involved participants from the seventh and ninth semesters of the nursing course and included: Cardiopulmonary Resuscitation (CPR) in adults in Basic Life Support (BLS) using an Automated External Defibrillator (AED) in a hospital setting, developed and validated by Alves and colleagues[10]; The nurse's role in sepsis management, validated and developed by Carvalho and colleagues[11]; Nursing care in the assessment of Pressure Injury in hospitalized patients, validated and developed by Rocha and colleagues[12]; and the scenario of the nurse's role in a multiple casualty incident (START), constructed and in the validation phase by the NuPASC research group.
Twelve (12) students who were members of the NuPASC research project were invited to participate in the study, with whom data collection was previously scheduled, characterizing a non-probabilistic convenience sample.
Data collection occurred using the conversation circle technique, employing three guiding questions throughout the process about the different experiences lived within the scope of CS. The participants' statements were audio-recorded after their assent and consent, upon signing the Informed Consent Form, and later transcribed in full. During collection, data triangulation was adopted, using the field diaries of the researcher and the non-participant observer, as well as audio recording.
Data organization was performed using the content analysis technique, as proposed by Bardin[13] (2016). Participants were identified by the letter P (participant), followed by a number referring to the order of their statements during the meeting. Data were read and re-read, similarities between notes and statements were identified, and the theme was chosen as the recording unit. Thus, thematic categories emerged from the data, in line with the author selected for analysis. The findings were analyzed against the theoretical assumptions of the author Paulo Freire, present in his literary work – Pedagogy of Autonomy[8].

Results

During the conducted conversation circle, upon analyzing the statements and the writings recorded in the field diaries of the researcher and observer, three thematic categories were identified, congruent with the theoretical concepts of the author Paulo Freire[8] (2011), namely: teaching requires apprehension of reality; dialogicity; and affectivity.

Teaching requires apprehension of reality

The capacity of human beings to apprehend suggests our ability to identify or capture the essential qualities (substantivities) of the objects of study[8]. As the focus of the study objects are the patients, families, and populations served by future professionals, these substantivities can also be understood as their subjectivities.

The statements related to this category are listed below:

> "*And the issue of the skills involved in this process, they concern not only technical knowledge, but also the ability to bring that theoretical knowledge you acquired into practice, so bringing it into the practical context and making it something useful in the educational process."* (P1)

> *"It's also interesting because, studying these points, when we go to participate (in the simulation), even due to this improvisation issue, we always have to be attentive to the cues, right, so, for us, that issue of paying attention to details, sometimes in the real situation we will also have to pay attention to those details." (P2)*

> *"I also felt that it brought a lot more knowledge, beyond that of the simulation, beyond the content itself being worked on. For example, the 'START' method, which is one of the most complete, most elaborate simulations, we end up having to pay attention to many details and I think this adds so much to our knowledge, not only specific knowledge, which would be the technique, the simulation issue, the content issue, but also in the details, it ends up expanding our vision as a person, consequently, as a professional too. We start to develop this style of paying more attention to what is around us. So, observing... Ah, that explosion, what it needed to have, we start thinking about many other things." (P3)*

> *"There are different types of knowledge we manage to absorb in this process, right. There's the content issue itself, where we have theoretical, content-based knowledge that we acquire in this process. Another knowledge we have is in professional practice." (P2)*

> *"You learn by paying attention to details." (P4)*

Dialogicity

Dialogue is fundamental for human relationships, and it is through dialogue that human beings constitute themselves. In the educational context, teaching cannot be presumed without dialogue. This dialogue is related to the establishment of a welcoming environment, in which teacher and student can exchange knowledge and wisdom openly[8]. The statements related to this category are described below.

> *"One thing we always reinforced, in all simulations we reinforced this: talk to the patient, let them speak, seek their history. So, it's a very common mistake, especially for those who are students, newly graduated. We focus so much on the procedure, on following the protocol, that we forget the patient. We don't listen to them."* (P2)

> *"I wasn't the patient, I was the doctor actually, right, it was good for me, I have a lot of difficulty, like, loosening up, doing things. I think this helped me." (P8)*

> *"I found it very interesting because, even as a patient I was learning, like, before I didn't know what sepsis was and then later, I took the sepsis simulation test, so if you ask me what sepsis is, I'll explain it [...] I can explain it quite well now, what it is, so, even as a patient we learn a lot." (P4)*

> *"You will have more confidence when talking to the patient, you will be more attentive to details that you might otherwise miss in the process." (P2)*

> *"And a third point would be personal, personal knowledge we acquire. We learn, we improve our orality." (P2)*

> *"It repeats a little bit, but whoever sees the theoretical-practical knowledge, the issue of confidence, communication skill." (P1) [speaking about the perceived gains from participating in the simulation group]*

Affectivity

According to the theoretical framework adopted for analyzing the corpus of this research, the teacher must have genuine care (well-wishing) for their students. Affectivity for Freire would be the combination of several factors, including well-wishing for the students and commitment to their teaching[8]. The statements for this recording unit are presented below.

> *"I agree with everything everyone said, but I really want to mention the issue of it being a friendly group, a group where we are not*

afraid to participate and go to classes, meetings, because in medicine we come from a learning style that is aggressive. Sometimes we think... I'll miss this class, because if I fail I'll be humiliated, the teacher will humiliate me in front of everyone. And here, no, here we can come, I'll come because I will learn, it's friendly and welcoming." (P5)

"We learn and learn without pressure. Not that there's no pressure because it's not serious, but there isn't that kind of pressure." (P4)

"I think a point is missing, complementing what the colleagues said. The issue involving the security that the professors give us in class. They have always given us a lot of confidence. They discussed scenarios with us, where we can change, where we can modify things. The debriefing issue, which I find very relevant." (P10)

"I felt that my stability, my confidence was much greater, and this is due to the research center, to NUPASC, because I knew how to act, I knew the mistakes I could make." (P7)

"In the primary care unit (UBS) where I was, a case of pressure injury appeared and I knew how to handle it, precisely because I had looked into this subject. So, since we approach subjects here in a lighter way, without judgment, without pressure, at the end of the semester there won't be a test for us to study for, it's literally driven by our curiosity about the subject and the desire to do the scenario better." (P2)

Discussion

In the Health Sciences field, it is known that the study object is the patient[14], thus requiring students in these courses to be able to observe, listen to, and capture the objectivities and subjectivities of the human being under study during consultations and procedures[15].

Cognitively, many of us tend to reduce study objects to a "size" or dimension that is necessary for knowing this object or solving its problems, which, in this case, would be the patients' health problems. However, for the author, humans should not be reduced, and all their particularities must be evaluated[8].

It is important for teachers to encourage this perspective in their students, since knowledge and practice should not be treated in isolation. Epistemological and ontological knowledge must complement each other, so that all dimensions of the individuals receiving care are understood[8]. Simulation, as a teaching strategy, demonstrates various potentialities, mainly by allowing gains related to multiple learning domains. Learning objectives identified during the use of clinical simulation strategy include gains in cognitive, psychomotor, and affective aspects. Among the affective gains, improvements in interpersonal relationships, teamwork, dialogue, and attentive listening to the needs of others can be identified[16].

A study conducted in Brazil that adopted the clinical simulation strategy similarly identified gains in cognitive aspects, with increased knowledge levels on the topic in the study's intervention group, with a statistically significant difference ($p = 0.031$)[17]. Furthermore, a systematic review conducted by Negri et al., involving over 53 studies, demonstrated broad possibilities for using clinical simulation with role-playing in the education of both students and different health fields, with gains in levels of "satisfaction, self-confidence, knowledge, empathy, realism, decreased anxiety level, comfort, communication, motivation, capacity for reflection and critical thinking, as well as teamwork"[3].

Other studies have also demonstrated improvements in other aspects of health professional training using different CS approaches, notably: del Pino et al.[18] (2022) showed greater comfort and confidence when dealing with patients from different cultural backgrounds among nursing students when using high-fidelity CS as an educational resource; Feldman et al.[19] (2021), on the other hand, argue that CS can also contribute to the formation of professional identity; Reyes et al.[20] researched the potential of CS as a resource for interprofessional education among nursing and medical students, and perceived that interprofessional dialogicity resulted in a higher level of student awareness regarding the complementarity of their roles in patient care.

The education proposed by Freire has dialogue as one of its central pillars. Dialogue, permeated through conversation and the exchange of knowledge and doubts, should be stimulated in the classroom environment, as well as in all environments that permeate the learning process. It is through open dialogue that restlessness and curiosity are established, which are fundamental for the student's pursuit of deepening content[8].

Through dialogue, critical thinking and problematization are also stimulated. Human beings construct and share their worldview through their speech. Another important fact related to dialogue identified in the author's work concerns the teacher's openness to this conversation, mainly allowing students to know which topics the teacher still needs to deepen, thus allowing the teacher to demonstrate, through their "living example", ignorance about a certain subject, demonstrating in practice the teacher's incompleteness as a being, as well as the infinity of knowledge present in today's world.

In this sense, CS can constitute an ideal environment for establishing constructive dialogue among peers, as it provides opportunities for both the application of knowledge, postures, and thoughts, as well as a process of self-criticism of these same aspects, shared with other students

and/or professionals. The contribution of dialogue in the context of CS is so significant that it is the subject of study as a method for resolving interparty conflicts in the professional sphere, contributing to improving the ability to manage them, resulting in higher quality of care and team cohesion[21]. Furthermore, it is worth reinforcing that, within the scope of simulation, dialogue is of paramount importance for the adequate construction and implementation of the developed scenario. Dialogue is established in various situations, from the moment the scenario begins to be conceived and developed by teachers and students, during the simulation execution itself, through the briefing, and after, through the debriefing. It is noteworthy that, for participants in a clinical simulation, one of the moments when adjustments are made after the experience of the scenario itself is the debriefing[22].

The debriefing, in fact, is an essential stage of CS, as it involves a critical and reflective analysis of the entire process - from the construction to the application of the scenario - promoted by the participants both as a group and individually. The time for its realization is after the application of the simulated scenario, during which simulation participants should be encouraged to report affective aspects (feelings, doubts, uncertainties), psychomotor aspects (ability to act, attitudes), and cognitive aspects (theoretical knowledge, communication, clinical reasoning, problem-solving ability) perceived during the learning process. It is a moment for CS participants to revisit what they effectively learned throughout the process, to reflect on their own errors and successes, as well as what they were able to assimilate from the postures and experiences of other participants[23].

Bortolato-Major et al.[23] (2019) further state that the debriefing process involves the facilitator: a qualified individual, both pedagogically and technically, responsible for conducting the debriefing using learner-centered educational approaches. During the simulation, the facilitator should focus their attention on the learners' performance and attitudes, and use the observation process to provide necessary information for, at the time of debriefing, promoting the stimulation of critical and reflective thinking in the participants about their own attitudes, expectations, thoughts, and performance as central figures in the learning process[24].

However, it is worth noting that the facilitator's role is not restricted to observing the simulation and the debriefing moment. In this regard, the best practice guidelines for healthcare simulation from INACSL (International Nursing Association for Clinical Simulation and Learning) highlight the importance of facilitation from the pre-briefing onward, and that it is the facilitator's responsibility to structure the CS to promote team cohesion, understanding of the simulation's objectives, and guide the path to achieving them.

Furthermore, five necessary criteria for effective facilitation can be highlighted: the facilitator must have knowledge and skill in simulation pedagogy; the facilitative approach must consider the participants' knowledge level; facilitation must prepare participants before the simulation (pre-briefing and necessary prior knowledge); during the simulation, the facilitator must include cues that guide participants toward the CS objective; facilitation does not end with the simulation, and must include debriefing and, if necessary, extend beyond it[6]. Such assumptions are congruent with Freire's thought[8] (2011), which highlights the educator as a subject capable of combining technical-scientific knowledge, respect for the student's knowledge, stimulation of critical thinking, and reflection on practice, in order to encourage and enable the learner to be the subject of their own thinking.

The sample size (12 individuals) from a single higher education institution are limiting factors for the study. It is noteworthy, however, that the students were previously trained and participated in different simulated scenarios, playing various roles in the simulations, from scenario conception to debriefing, which contributed to their having a broad view of CS and enriched the discussion of the topic.

Final considerations

Clinical simulation is an active learning methodology aimed at students and professionals in the health field, capable of articulating different knowledge and skills, aiming at the development and/or improvement of clinical reasoning, problem-solving ability, and teamwork, and can be adjusted for different levels of knowledge, complexity, and fidelity to the real world according to educational objectives.

The present study showed a correspondence between the perceptions of nursing and medical students regarding the experience of using clinical simulation as an educational resource and the thought of Paulo Freire. From the qualitative analysis of the data, it is inferred that there is agreement with the aspects of apprehension of reality, affectivity, and dialogicity, highlighted by the author in Pedagogy of Autonomy.

The consonance of clinical simulation with Freire's assumptions reinforces its pedagogical potential as a resource for training autonomous, critical, and reflective health professionals, both for learning and for providing better patient care. Further research addressing the impact of using clinical simulation, categorized according to the level of simulation fidelity and/or according to the academic period, could contribute to the discussion on the relevance of its implementation in undergraduate health courses.

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