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Biosafety applies to covid-19: Using realistic high-fidelity simulation in times of pandemic

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Abstract

The concept of Biosafety is very simple and fundamental for every student and health professional, especially for those working on the front line of the Pandemic SARS-COV (COVID - 19). Biosafety is a set of rules that aim to reduce risks to workers' health, guiding them to the handling and disposal of products, medicines, substances and much more. The levels of Biosafety to be followed vary according to the function of each one, but all workers, from the attendant to the surgeon must meet their standards. The Biosafety course contains all the necessary information to help in the control and prevention of infections, for this pandemic period the course becomes even more relevant, especially when worked through realistic simulation. The audience involved in this course were students of the technical course in nursing who are in a supervised internship and professionals from the units where these students will provide internships. Considering the current pandemic scenario experienced and the need for prevention and safety at work, the biosafety course sought to update supervised internship students in technical nursing and professionals working in the laboratory environment, promoting the development of technical and preventive attitudes according to occupational class legislation. The results showed that the realistic simulation can be applied together with biosafety and that it represents a methodology accepted by students and professionals, as well as highly innovative.

Keywords: Biosafety; Realistic simulation; Health education

1. Introduction

Conceptually, according to the Ministry of Health [1], biosafety comprises a set of actions aimed at preventing, controlling or eliminating risks inherent to activities that may interfere or compromise quality of life, human health and the environment. In this sense, it is relevant to work on biosafety in all areas that involve quality of life and work. Realistic simulation, on the other hand, has been used as a technological resource in health sciences teaching, as a teaching methodology based on Problem Based Learning (PBL), which allows the student to formative experiences in different clinical situations based on real facts and safe, or simulated and controlled environment, in which the error exposes the patient's safety (simulator) to risks, in addition to allowing the student clinical reasoning, practical performance, acquisition of skills and improved communication between the multidisciplinary team and the patient [2].

In historical terms, it is indisputable that both simulation and biosafety have been debated tirelessly, where biosafety since the 1980s with the International Biosafety Program and the most recent realistic simulation, since the 2000s through the lines of evidence-based learning and active teaching methodologies. In March 2020, the World Health Organization (WHO) announced COVID - 19 as a pandemic, leaving all countries on alert and in many states with a lockdown ratio.

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In this sense, educational institutions saw the need to make their teaching remote, where for nursing students it was no different, but it is a highly practical and evidence-based course. It must be reiterated that educational institutions still play a fundamental role in the training of health professionals.

Therefore, aligning the relevance of the theme, the needs of the community and students due to the pandemic period and the availability of a laboratory structure with mannequins for realistic simulation, it was justified to carry out the biosafety course in times of pandemic to address issues related to the attention and good safety practices in the health work environment, considering the identification and use of equipment and procedures in a way that allows meeting the real needs in intervention, prevention and care in work routines in the health environment. This study aims to report the realization of the extension course in biosafety using realistic high-fidelity simulation for students finalizing the technical course in nursing and frontline professionals of COVID-19.

2. Methodology

This is an experience report regarding the realization of the biosafety course, guided by realistic simulation in times of pandemic. As the course was characterized as an extension course, as it has institutional coverage for finalist students of the technical course in nursing and community coverage, due to encompassing professionals at the front of the pandemic who would receive students in internship environments.

Therefore, the target audience was the final-year students of the technical nursing course and health professionals at the front of the pandemic who would receive these students in the health units. In order for this audience to take the course, sensitizations, orientations and formal invitations were made through letters from health units.

The course was offered in person, in the nursing laboratory of IFAM - Campus São Gabriel da Cachoeira - AM, following all the recommendations of the World Health Organization (WHO) in pandemic times, privileging collaborative learning through debates. The course was also a field for data collection of two PIBIC projects that have realistic simulation as a milestone. It is worth mentioning that the IFAM - CSGC has a nursing laboratory equipped with high-fidelity simulating mannequins, whether in adult or pediatric care.

To assess the quality of the course, debriefing and Likert scales were used, ending with a swot matrix, in order to assess the weaknesses and opportunities that can be created and used in future courses.

3. Results and discussion

Working with realistic simulation and biosafety was something very new, the literature does not have publications referring to these biosafety practices with the use of realistic simulation. In addition to being something new, it was challenging. In order to work with simulation biosafety, 16 practical health care stations were developed with the use of biosafety, either in the use of Personal Protective Equipment [PPE] kit, in the disposal of waste, or in the use of disinfectants or other solutions, or in the identification or isolation of places and people based on the diseases used.

The most used disease in the simulations was COVID - 19 due to the pandemic moment experienced, but other diseases with the same isolation lineage and needing the same PPE and care were used, in addition to other diseases with other behaviors.

The simulated practices were divided into pediatric and adult, on different days. It was necessary to write practices that encompassed other health professionals other than nursing, given that the course had a biologist and nutritionist, this challenge made the course even more complete and dynamic. All simulations related health care to biosafety practices. In all simulated techniques, debriefing and the final Likert scale were performed. During the debriefing, sometimes the course attendants needed to perform the technique in order for the discussion to be even more productive.

For that, realistic simulation has been used as a technological resource in health sciences teaching, as a teaching methodology based on Problem Based Learning (PBL), which allows the student to formative experiences in different clinical situations based on real facts and in a safe, or simulated and controlled environment, in which the error exposes the patient's safety (simulator) to risks, in addition to allowing the student clinical reasoning, practical performance, acquisition of skills and improved communication between the multiprofessional team and the patient ^[2].

It is noteworthy that all course participants performed all the care techniques related to their professional category and the applied biosafety techniques. The course participants had different professional profiles, being present: nursing technicians, biologist, nurses, nutritionist and students of the technical course in nursing, making the discussions even richer and the debriefings even more interesting.

Before starting the course, an evaluation was carried out through a human bingo, where questions were asked among the course participants and they should answer "cartouche or bingo" whoever completed should say "binguei". After people "binging" there was a discussion about the questions and answers contained in bingo, so the course participants were able to better understand the dynamics of the course that lasted a week and 20 hours of workload. It is important to note that the hand hygiene technique and detachment were carried out daily and supervised by the course facilitator.

In the swot or fluffy matrix (table 1), the most reported weaknesses during debriefing were: lack of opportunity to train the techniques and lack of training in the area. The strengths mentioned by the course participants were based on the realization of day-to-day practices during the course and the possibility of repeating other courses with realistic simulation techniques. An opportunity mentioned during the debriefing was to have new courses to train professionals and the biggest threat mentioned was the low use of the simulation laboratory by the community.

Table1 Swot matrix (cute) of the answers referred by the professionals

<p>S Strength Presence of the nursing laboratory at the São Gabriel da Cachoeira Campus; Conducting simulated day-to-day practices.</p>	<p>W Weaknesses Lack of opportunity for training; Absence of training in the area.</p>
<p>O Opportunity New courses with realistic simulation; Great mannequins for the courses.</p>	<p>T Threats Low use of the nursing laboratory by city professionals; Absence of a schedule of simulated courses for health professionals</p>

The briefing was something new for students and professionals, 100% of course participants reported that it is extremely important to perform the "briefing" with other professionals in daily practice and that this technique helps to avoid mistakes and improve basic health care techniques.

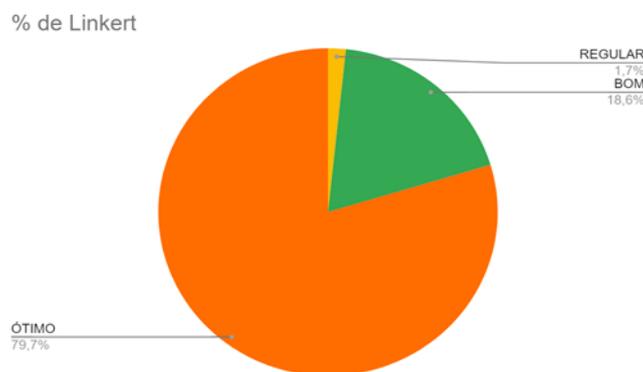


Figure 1 Likert scale of professionals' responses

Regarding the Likert scale, we observed in Figure 1 that 79.7% of the questionnaires showed that the realistic simulation applied to biosafety was excellent, and 18.6% reported it to be good. There were 226 questionnaires collected from the techniques of a total of 16 techniques, 8 of which were applied in pediatrics and 8 of which were applied to adult patients.

However, when it comes to realistic high-fidelity simulation, there are few studies that have evaluated this methodology and resource for teaching medical emergencies in nursing practice. The results show that the high-fidelity simulation is effective in the teaching and learning process for preparing students to handle medical emergencies [3,4].

The result of the most palpable and even more encouraging course for conducting new courses with realistic simulation was the evaluation and self-assessment of students, which when made before the course there were 71.4% of course participants who missed at least 5 of the 10 questions present in bingo human. When evaluated after the simulated techniques, it was observed that only 14.2% missed 2 out of 10 questions, in addition 93% of the course participants rated themselves excellent after performing the simulated techniques.

4. Conclusion

The objectives of the course were achieved with satisfaction and demonstrated that teaching based on the strategy of realistic simulation, is important for the formation of health teams with competence in decision-making, therefore, it is necessary that this professional body is trained. The study reports that it is biosafety or the most elaborate health technique can be simulated, as long as there are conditions, but some techniques can be simulated with light materials and technologies. In this sense, the educational institution that integrates the community is the key point to bring knowledge to the graduating students or to the community or health professionals. The educational institution must seek to be a place of excellence in teaching and even in its practical classes, and the realistic simulation strategy allows it to provide quality education that will shape the professional future, reflecting in a workforce interconnected with quality and patient safety. However, efforts must be made to reach a common denominator, and in this perspective, it cannot be said that it is only implementing the realistic simulation strategy that will give quality to teaching, but rather creating appropriate and courageous solutions, such as avoiding the hourly work regime. , and at the same time create ways to provide the professor with investment in their professional area, which is mainly made possible through research. Professionals trained with realistic simulation tend to provide assistance with more quality and efficiency, in this sense there is a minimization of errors and a assistance free of damage.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors state no conflict of interest.

Statement of informed consent

This study does not involve any information from individuals, being restricted only to the linkert scale or the professionals' satisfaction scale regarding the realization of realistic simulation.

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