

Simulated Training to Train Laypeople to Recognize and Act in Emergencies: Experience Report

Hannah Costa Barbosa, Ana Paula de Freire*, Alessandra Rodrigues de Sousa

Nursing undergraduate student, State University of Pará, Belém - Pará, Brazil

*Correspondence author, hannahcosta@gmail.com

Abstract: *The ability to recognize and act in the face of emergency situations is fundamental to saving lives and minimizing damage in critical moments. The population is often unprepared to deal with emergencies. Given this reality, it is essential to promote simulated training that equips these individuals to identify signs of urgency and perform effective and safe actions. Thus, the aim is to report the development of a simulated training, conducted by nurses, nursing and medical students, to train staff of a private educational institution to recognize and act in emergency situations. This is an experience report study developed at a Private Higher Education Institution (HEI) located in the municipality of Belém, Pará. The development of this study was supported by Berbel's problematization methodology, with 20 employees participating. The training involved teaching proper victim handling techniques in different adverse scenarios, addressing clinical behavior, progression potential, and measures to be adopted according to the victim's clinical condition, based on pre-hospital care protocols. Through the application of a questionnaire before and after the training and realistic simulation, better rates of theoretical and practical development of the participants were observed; they provided feedback at the end of each simulation, highlighting the importance of applicability for the better development of the training. The development of realistic simulation to train laypeople in emergency situations positively influences the acquisition of skills and abilities to act in the face of adverse situations, complementing the actions developed as part of their work routine.*

Keywords: Simulated training; Emergencies; Education; Nursing; Medicine.

1. INTRODUCTION

Emergency situations in the prehospital care (APH) setting require immediate and quality assistance to stabilize the victim until the arrival of Basic Life Support (BLS), in addition to preventing long-term complications. In the Brazilian context, emergencies related to airway obstruction, Cardiopulmonary Arrest (CPA), burns, Stroke (CVA), and other emergencies occur mostly in homes and educational institutions (Correira et al., 2024)

The Mortality Information System (SIM) indicates an incidence of deaths from external causes over the years, with falls, burns, drowning, and accidental submersion being prominent (Brasil, 2024). Regarding non-communicable chronic diseases, 85% of all deaths from Cardiovascular Diseases are due to acute myocardial infarction and Stroke, representing 7.9 million deaths per year (Cavalheiro et al., 2020).

The incidence of emergency cases in the home creates a need to train the population to recognize them early and intervene appropriately until specialized assistance arrives. Thus, first aid (FA) is defined as the first provision of care to an injured or ill person, which can be administered by trained laypeople and/or healthcare professionals, and its main purpose is to alleviate imminent suffering and prevent long-term complications (Wokneh, Mekonen, Ali, 2021).

Approximately 39% of prehospital deaths are potentially preventable through proper victim management. It is emphasized that there is a need to train the population to act in emergencies as a way to reduce the epidemiological scenario of deaths (Benicasa, 2023).

To this end, different methodological approaches are used to promote health education. In this context, active methodologies promote a high level of learning for intervention in realistic situations, considering that training for emergencies involves handling the victim, immediate and quality care (Santos, Souza, Silvino, 2022).

One of the most widely used active methodologies is realistic simulation, which is qualified as an active methodological approach that makes it possible to expand learning levels, with the main bias being multisensory stimuli, which help the brain process and retain information. Practicing in simulations allows participants to

exercise the integration of different skills, such as coordination, communication, and proactivity, which will lead to the development of techniques to be used in specific emergency situations (Girardi, Marcos, 2024).

The development of critical thinking in assessing the scene situation, identifying the problem, and intervening by applying techniques and protocols requires continuous, evidence-based training that relates different scenarios of victim evolution and different maneuvers for providing care. Thus, this teaching modality should include a theoretical introduction to care protocols and simulated practice that includes victim handling techniques in different scenarios and occurrences (Berbel, 2022).

Given the nuances involved in developing this methodological approach, this study aims to report the development of a simulated training, conducted by nurses, nursing and medical students, to train employees of a private educational institution to recognize and act in emergency situations.

2. METHODOLOGY

This is an experience report study developed at a private Higher Education Institution (HEI) located in the municipality of Belém, Pará. The development of this study was supported by the problematization theory based on the Maguerez Arc, which is developed in five stages: I) observation of reality; II) key point; III) theorization; IV) solution hypotheses; and V) application to reality (Ogrinc et al., 2019; Crus et al., 2021).

The first stage took place in August 2023, targeting 20 employees of the aforementioned HEI, including general services assistants, porters, librarians, administrative technicians, IT technicians, and security guards. Regarding the reality observation stage, it made it possible to highlight a deficit in the participants' knowledge on the topic through the application of a structured questionnaire with ten questions about relevant themes for recognizing and acting in an emergency situation.

Thus, in the second stage, which occurred in August 2023, after the initial meetings with the target audience, the key points for discussion were defined, which took place after the application of the questionnaire. After evaluation, the questionnaire revealed the need to explore the topics in which the participants showed greater weakness: CPR, burns, choking situations, electric shock accidents, stroke, convulsive crisis, anxiety crisis, poisoning, heart attack, and falls. The current problem identified was: "the need to train laypeople to recognize and act in emergency situations" and, aiming to outline the scope of the training, the following guiding question was raised: "What is the importance of using simulation training to train laypeople to recognize and act in emergency situations?"

In the third stage, which took place in September 2023, to consolidate the theme and guide the approach strategies, meetings were initiated, organized by nursing and medical students from an extension group called "Training in Emergency Situation Care" (CASUR) developed at the aforementioned HEI, whose objective is to train employees to recognize and act in emergency situations. The meetings enabled the development of theoretical frameworks to support the most effective approach for training the participants.

Lecture-dialogue classes and practical training were held in a simulated scenario, in the HEI's facilities, with professors from the nursing and medicine courses in the emergency disciplines, as well as experts on the topic, invited by the project participants, to support the theorization process of the theme. The selected students were trained and qualified to become instructors over a two-month period, with a weekly workload of 20 hours.

In the fourth stage, which took place in December 2023, simulated training sessions were defined as a solution hypothesis for the theoretical-practical deficit presented by the participants. The choice of the thematic approach with the target audience qualified as a more dynamic and integrated way, promoting a more consolidated learning process through the presentation of a realistic emergency scenario in which the participants approached the victim.

In the fifth and final stage, which took place in January 2024, the students met with the target audience every 15 days, divided into two application moments: the first was the theoretical development with the target audience, lasting approximately 40 minutes on a specific subtopic, and the second was the simulated training itself on the theorized situation, such as: CPR, burns, choking situations, electric shock accidents, stroke, convulsive crisis, anxiety crisis, poisoning, heart attack, and falls. After each simulation, the IES staff were questioned about the presented situation, allowing them to discuss, clarify doubts, and improve practices based on the presented experiences, adapting behaviors, attitudes, and postures.

The observation stage revealed that the target audience had a deficit in theoretical-practical knowledge regarding the recognition and response to emergency situations. Thus, in the second stage, it was decided to use an active methodology approach, consisting of simulated training to better assimilate the content.

In the third stage, the 20 employees contributed to the theorization by demonstrating the importance of simulated training for recognizing and responding to emergency situations, based on observations of real interests expressed in the initial meetings.

The fourth and fifth stages culminated in the development of interactive theoretical classes tailored to the target audience, using a semicircle arrangement, conversation circles, and problem-based learning (PBL) to facilitate understanding and connect with the employees' reality, in addition to simulated training to reinforce the content (Figure 1).



Figure 1: Photographic records of simulated training on SBV
Prepared by the authors.

The training aimed to include simulated training in a didactic manner to facilitate the acquisition and development of skills and abilities by employees, enabling them to act with confidence and safety, allowing for mistakes and the search for measures to avoid them in stressful situations such as emergencies.

The training focused primarily on recognizing and applying appropriate victim management techniques in different emergency scenarios. Aspects such as appropriate clinical behavior, the potential progression of the condition, and the measures to be adopted based on the victim's clinical state, in accordance with pre-hospital care protocols, were addressed.

Participants were trained to identify, through victim assessment, the main aggravating factors of the situation, and then apply first aid techniques. Additionally, a knowledge deficit was identified regarding the appropriate times and institutions to contact during assistance, a topic addressed in theoretical classes and reinforced during realistic simulation.

The simulation allowed for immediate constructive feedback on first aid techniques and maneuvers, in a welcoming environment focused on clarifying doubts and actively listening to participants' needs.

Finally, at the end of each simulation training, the same questionnaire applied in stage 2 was re-administered, covering various topics related to emergency situations, aiming to evaluate the effectiveness of the methodology implementation. It was observed that approximately 80% of the training participants answered the questions correctly, developing critical thinking from clinical assessment to appropriate victim management in emergency situations, thus demonstrating the effectiveness of simulated training and the use of such measures to learn how to learn, acquire, and enhance skills.

Emergency situations are present in the daily lives of the population and represent the highest rate in homes and educational institutions. The number of domestic accidents involving children in Brazil in 2020 and 2021 was 1,616 deaths, with ages between 0 and 14 years. Additionally, approximately 26.3% of emergency care was provided in educational institutions (Ribeiro, Esteves, 2024).

Beyond the need for prevention to resolve the epidemiological situation, health education actions are necessary to

promote training of the population to act in the face of emergencies, given the positive impact on minimizing sequelae and deaths of victims (Santos et al., 2023).

In this context, the use of simulated practice provides those involved with the development of confidence and security to apply techniques when providing assistance to victims, making it possible to make mistakes and outline approaches to solve or mitigate complication scenarios, adopting an active stance in recognizing, preventing, and intervening in adverse events (Heldring et al., 2024). Similarly, another study showed that simulated practice promotes the participant's immersion in the scenario to develop visual and practical learning, which enables the development of confidence (Pereira, Mesquita, Garbuio, 2020).

In this regard, sensory perception, in addition to improved coordination and technique, are elements exercised in simulated training, with repetitive practices guided and coordinated by trained instructors, who seek to mediate the relationship between actions when faced with an emergency scenario and the performance of intervention procedures in the scenario. Another study shows that theoretical knowledge, in an expository-dialogical format, is not effective for application in realistic scenarios, as there is no immediate feedback and correction of errors when applying first aid techniques (Wang et al., 2021).

It is also emphasized that expanding emergency care practices for the population is essential for health promotion. In developed countries, this topic is addressed in an integrated manner in the curriculum of educational institutions, fostering first aid practices from childhood, providing a conducive environment for the development of recognition and intervention techniques through immediate feedback dynamics from instructors responsible for the curricular component (Li et al., 2019).

In Brazil, the Lucas Law changed the status quo in 2018 and strengthened the health education program in schools by making first aid (PS) training mandatory for teachers to enable them to act in emergency situations (Mantovani et al., 2023). In contrast to the Brazilian reality, Ethiopia does not have a program mandating first aid (PS) education in schools, leading to high estimated mortality from injuries in educational institutions by 2030 (Alves et al., 2020).

From this perspective, in an emergency scenario, coordination and communication between individuals involved in providing aid are fundamental, considering exposure to changes in the patient's condition, changes in environmental safety, or the need to prioritize multiple victims. Studies on the benefits of simulated training in developing skills and competencies relate to personal interaction and communication, listing team interaction as an indicator of better patient care (Zonta et al., 2020).

In this way, managing a victim of a specific accident in a realistic scenario involves a conflicting relationship between initial care and the stressors associated with it. Training in realistic simulation makes it possible to integrate and link quick and effective decision-making with stress management, as it promotes training related to behavior and emotions. The American Heart Association (AHA) protocols advocate in situ simulation for conducting CPR training, justified by the positive results in learning and psychological, emotional, and physical control in realistic situations (American Heart Association, 2020).

The satisfaction reported in the literature regarding simulated training is based on the possibility of promoting integration among participants both collectively and individually through exercises involving skills and technical abilities that will be performed in a clinical scenario, providing critical and sensory development to act in emergency situations (Liu et al., 2019; Li et al., 2022; Peng et al., 2022).

Thus, since health education has the primary purpose of changing the paradigms of a current reality considered inadequate or problematic, training should not be offered by professionals in a sporadic and episodic manner. Realistic training actions, which aim to train the community to recognize and intervene in emergency situations, should cover different audiences, in different scenarios, in a coordinated and systematized way to promote changes in the epidemiological scenario, as the health field is understood as fluid and continuous (Hadage et al., 2023).

Among the limitations of the study, the demand for services at the HEI where the simulated training was conducted stands out, as employees could not be absent for long periods from their work activities, which may have compromised the theoretical-practical approach. However, rigorous planning of the stages allowed the training to be implemented in a didactic and focused manner, ensuring that professionals fully achieved the proposed objective.

3. CONCLUSION

It is concluded that the results found make it possible to identify that the development of simulated training to train laypeople in emergency situations positively influences the acquisition of skills and abilities to act in adverse situations compared to the routine work actions.

The initiative to train HEI employees in first aid situations reaffirms the extreme need to establish a survival chain, providing greater security for trained people to make decisions and act correctly in these adverse daily situations that influence the victim's prognosis until they are attended by specialized professionals.

It is emphasized that the use of this strategy as an educational tool can minimize errors and provide a better prognosis for victims, in addition to reducing fears and insecurities in the face of these occurrences, considering that meaningful learning favors learning to learn and a critical-reflective spirit, generating a positive impact on self-efficacy in responding to emergency situations.

REFERENCES

- [1] ALVES, C. O. et al. Experience in Realistic Simulation in Emergency Training. *Rev Ciênc Ext.* v. 16, p. 495-505, 2020.
- [2] American Heart Association. CPR in Schools. 2020. Available at: <https://cpr.heart.org/en/training-programs/community-programs/cpr-in-schools> BERBEL, N. Active methodologies and the promotion of student autonomy. *Semina cienc. biol. Saúde.* V. 32, N. 1, P. 25-40, 2011.
- [3] BRAZIL. Ministry of Justice and Public Security. Deaths from external causes: qualification of unspecific records. Brasília: Ministry of Health, 2024.
- [4] BENICASA, C. P. B. Realistic simulation as a method of meaningful learning in health area courses. *Revista Triângulo.* v. 16, n. 3, 2023.
- [5] CORREIRA, L. F. R. et al. The importance of teaching and learning first aid techniques for laypeople: Integrative review. *R Pesq Cuid Fundam.* v. 16, 2024.
- [6] CAVALHEIRO, C. M. N. et al. Prevalence of death in public places due to acute myocardial infarction in Brazil over 10 years. Importance of knowledge about basic life support. *Revista da Saúde.* v. 11, n. 1, p.55-63, 2020.
- [7] CRUS, K. B. et al. First aid health education interventions in the school environment: an integrative review. *Revista Electrónica Enfermería Actual en Costa Rica.* v. 40, p. 1-20, 2021.
- [8] GIRARDI, T. A. MARCOS, L. Realistic simulation and gamification in first aid for the Physiotherapy course. *Rev. Inter. Educ. Saúde.* v. 8, 2024.
- [9] HELDRING, S. et al. Using High-Fidelity Virtual Reality for Mass-Casualty Incident Training by First Responders - A Systematic Review of the Literature. *Prehosp Disaster Med.* v. 39, n. 1, p. 94-105, 2024.
- [10] HADAGE, R. B. et al. Knowledge of elementary school teachers about first aid. *Texto & Contexto - Enferm.* v. 32, 2023.
- [11] LI, Q. et al. Injuries in children in Ethiopia: a review of the current situation with projections. *Plos One.* v. 13, n. 3, 2019.
- [12] LIU, Y. et al. The impact of SimMan on resident training in emergency skills. *Medicine.* v. 98, n. 2, 2019.
- [13] LI, Y. Y. et al. High-fidelity simulation in undergraduate nursing education: A meta-analysis. *Nurse Educ Today.* v. 111, 2022.
- [14] MANTOVANI, J. L. et al. Evaluation of knowledge about Lucas law and its applicability: pilot survey on public education system from kindergarten to elementary education. *Arq. ciências saúde UNIPAR.* v. 27, n. 4, 2023.
- [15] OGRINC, G. et al. QUIRE-EDU (Standards for Quality Improvement Reporting Excellence in Education): Publication Guidelines for Educational Improvement. *Acad Med.* v. 94, n. 10, p. 1461-1470, 2019.
- [16] PENF, M. et al. Evaluation of teaching effect of first-aid comprehensive simulation-based education in clinical medical students. *Front Public Health.* v. 10, 2022.
- [17] PEREIRA, J. P. MESQUITA, D. D. GARBUIO, D. C. Health education: effectiveness of training for early childhood education staff on airway obstruction by foreign bodies. *Revista Brasileira Multidisciplinar.* v. 23, n. 2, p. 17-25, 2020.
- [18] RIBEIRO, J. V. R. ESTEVES, R. Z. Proposal of a content program on basic life support for teacher training courses. *Contribuciones a Las Ciencias Sociales.* v. 17, n. 5, 2024.

- [19] SANTOS, P. A.F. D. et al. Simulation and interdisciplinary and interinstitutional cooperation: development of nursing students' competencies in disasters. *Escola Anna Nery*. v. 27, 2023.
- [20] SANTOS, I. S. N. SOUZA, C. J. SILVINO, Z. R. Realistic simulation as a care management tool in trauma hemorrhage control. *Conjecturas*. v. 22, n. 11, p. 1-14, 2022.
- [21] WOKNEH, B. S. MEKONEN, E. G. ALI, M. S. Determinants of knowledge, attitude, and practice towards first aid among kindergarten and elementary school teachers in Gondar city, Northwest Ethiopia. *BMC Emergency Medicine*. v. 73, 2021.
- [22] WANG, M. F. et al. Learning effectiveness assessment between primary school students and adults in basic life support education. *Emerg Med Int*. v. 2021, 2021.
- [23] ZONTA, J. B. et al. Self-confidence in managing health incidents at school: contributions of in situ simulation. *Rev. Latino-Am. Enfermagem*. v. 27, 2020.