DOI: 10.1590/0100-6991e-20192163 Original Article

# Multiple victims incident simulation: training professionals and university teaching.

## *Simulação de incidente com múltiplas vítimas: treinando profissionais e ensinando universitários.*

Daniel Souza Lima, ACBC-CE[1]; Izabella Furtado de-Vasconcelos[1]; Erika Feitosa Queiroz[1]; Thaís Aguiar Cunha[1]; Vitória Soares dos-Santos[2]; Francisco Albert Eisntein Lima Arruda[3]; Julyana Gomes Freitas[2]

A B S T R A C T

**Objective:** to describe the teaching strategy based on the Multiple Victims Incident (MVI) simulation, discussing and evaluating the performance of the students involved in the initial care of trauma victims. **Methods:** a cross-sectional, and quantitative study was performed. A realistic MVI simulation involving students, and professionals from nursery and medical schools, as well as a prehospital care team was performed. **Results:** it was possible to notice that the classification according to the START method (Simple Triage and Rapid Treatment) was correct in 94.1% of the time from the analysis of 17 preestablished checklists. Following the primary evaluation with the ABCDE mnemonic, all steps were performed correctly in 70%. However, there was only supply of oxygen in high flow in 64.7% of the examination. The search for visible and hidden bleeding was performed in 70.6% of the examination. The neurological evaluation with the Glasgow coma scale and pupillary evaluation occurred in 70.6% of the victims. The victims exposure was performed in 70.6% of the examination. **Conclusion:** a simulated environment allows the consolidation and improvement of professional skills, especially when we are talking about a poorly trained area during the undergraduate program, such as the MVI. Early training and teamwork encourage clinical thinking, integration and communication, essential abilities when facing chaotic situations.

**Keywords:** Simulation Training. Education. Medical. Mass Casualty Incidents. Emergency Medical Services.

## INTRODUCTION

The World Health Organization (WHO) defines multiple victims incident (MVI) as an event that simultaneously generates a large number of victims so that it compromises the ability to a local response routinely available[1]. In Brazil, the Ministry of Health calls an MVI an incident that involves a number that equals of surpasses five victims[2]. Care within this scenario is dynamic and complex, demanding urgency services, organization, planning, and qualification of professionals[3,4]. This is a big challenge to be met in Brazil, where there is no line of care for trauma implemented, which is needed to face this serious public health issue[1,5]. Such aspect brings together the Brazilian Society of Integrated Care of Trauma Victims (SBAIT) and the Brazilian College of Surgeons (CBC) in the search for joint actions aiming at changing this reality[6].

One of the strategies of MVI care is the prehospital triage process, whose aim is to identify and prioritize patients who need immediate intervention and/or removal[4,7,8]. One of the most widely used methods internationally and widely known in Brazil is the START (Simple Triage And Rapid Treatment). It classifies victims by colors, red meaning immediate priority and the other colors in descending order of priority are yellow, green and black[5,8,9-11].

The systematization of the initial care of trauma, in particular by the ABCDE mnemonic of

*1 - University of Fortaleza (UNIFOR), Health of Science Center, Faculty of Medicine, Fortaleza, CE, Brazil. 2 - University of Fortaleza (UNIFOR), Health of Science Center, Nursing School, Fortaleza, CE, Brazil. 3 - Military Fire Brigade of the State of Ceará, Fortaleza, CE, Brazil.*

primary evaluation, used by the Advanced Trauma Life Support® (ATLS®) and by the Prehospital Trauma Life Support® (PHTLS®), is also applied in cases of MVI. Some studies have shown that previous training of professionals in these educational programs might benefit the response in an MVI[7,12].

It is well established that health professionals need to be properly prepared for a variety of events with multiple victims, through training and exercises. The educational qualification process is essential for adequate care and error reduction, such as the ones that happen in triage[4,13]. Besides, in order to optimize emergency care, it is necessary an early improvement of the professionals, still in the undergraduate environment, mainly integrating students of Medicine and Nursing[14].

The simulation scenario is an educational tool that allows for the reproduction of reality in an interactive way, making it a supervised activity capable of developing technical skills (knowledge and abilities) and non-technical skills (communication, attitude, and teamwork). In this way, it provides the capacity of training in a safe, adequate, and contextualized environment[14-16].

The objective of this study was to describe the teaching strategy to undergraduates by using an MVI simulation, analysing the outcomes regarding the application of the START method and of the initial care by the ABCDE mnemonic.

## METHODS

This is a cross-sectional study that involved performing a realistic MVI simulation, in May, 2017, at the University of Fortaleza (UNIFOR) *campus*. The traumatic event simulated consisted of a bus-car collision, involving 56 victims played out by students of Medicine and Nursing.

Before the simulation, a symposium took place, aiming at training and preparing the participants, which lasted 20 hours. By the day of the simulation, the morning period was used for training the participants who would act in care that would emphasize the triage method used. Preparation of the victims according to their signs and symptoms lasted three hours. After the victims' characterization, and given the guidance about positioning and conduct during the simulation with the fire brigade, aiming at ensuring also the safety of the stakeholders, the simulation started and lasted one hour.

Each victim was instructed about the identification, positioning in the scene, color classification according the START method, diagnosis, vital signs and characterization of the simulated injuries. The victims classified as red and yellow were followed up by "shadow students", the older members of trauma and emergency academic leagues (Figure 1). The students acting as shadows and the victims took part in a course before starting care aiming at preparing them for simulation. The role of the linkers was to convey to the people in charge of care in the scene the information about the signs and symptoms of the victims, and to evaluate the initial approach by applying a checklist (Table 1). This was adapted by professionals and teachers working at the Prehospital Care (PHC) to be used in an MVI, similar to the one used in a practice learning environment during the Objective Structured Clinical Examination (OSCE)[17] of the disciplines.

Other participants of the simulation were professionals of the Urgency Mobile Care Service (SAMU - 192) from Fortaleza and Ceará, of the Rescue and Urgency Group (GSU) of the Military Fire Brigade from Ceará, and of the Integrated Coordination of Aerial Operations from the Public Safety and Social Defense Department.


***Figure 1.*** *MVI simulation environment at the University: 1) shadow student; 2) student under evaluation; 3) victim.*

***Table 1.*** *Objective structured clinical examination of trauma – primary evaluation.*

| Procedure | Yes | No |
|---|---|---|
| Victim was correctly classified according to the START method | | |
| 1. Description of IPE* use/Evaluation of scene safety | | |
| 2. Evaluation of airway and control of the cervical spine | | |
| Performed manual control of cervical spine | | |
| Evaluated the airway permeability/clearing, if necessary (manual maneuver, aspiration, use of orotracheal cannula) | | |
| Evaluated cervical spine and described correct the technique of the cervical collar | | |
| 3. Evaluation of the respiratory pattern | | |
| Checked expansibility and symmetry (inspection) | | |
| Checked deformities, bleedings, hematomas, or other injuries (palpation) | | |
| Checked the breathing quality (superficial or deep; rapid or slow; silent or loud) | | |
| Installed oxygen (15l/min) | | |
| 4. Evaluation of circulation/Signs of bleeding | | |
| Checked the pulse and checked the pulse quality (rapid or slow; full or thin; regular or irregular) | | |
| Performed examination of abdomen, long bones and pelvis searching for signs of bleeding. Adopted containment measures. | | |
| Checked skin characteristics (color, temperature, humidity, CRT**) | | |
| 5. Neurological Evaluation | | |
| Applied the Glasgow coma scale (classified TBI*** correctly) | | |
| Evaluated pupillarity diameter and photoreactivity | | |
| 6. Hypothermia exposure and control | | |
| Checked extremity deformity | | |
| Exposure of victim with block rolling and protection against hypothermia | | |

** IPE: individual Protection equipment; ** CRT: capillary refill time; *** TBI: traumatic brain injury.*

GSU professionals acted in the hot zone, applying vehicle extrication techniques. After firefighters signaled safety in the scene, SAMU 192 professionals acted on the initial approach and the withdrawal of victims, who immediately underwent triage by a team of Medicine and Nursing academicians. A second team of academicians organized the distribution of the victims to colored canvases, and care in the Advanced Medical Station (PMA) (Figure 2). Supervision and evaluation of care at the PMA were performed by SAMU 192 teachers and professionals.

The study was approved in the Research Ethics Committee from UNIFOR (protocol nº 2.505.271).

## RESULTS

The victims were classified into: red 10.7% (n=6), yellow 28.5% (n=16), green 46.4% (n=26) and black 14.2% (n=8). In this way, classification was correct in 94.1% of the cases. Only one victim who presented with parameters to be classified as yellow was considered green.

Stemming from data of 17 checklists correctly filled in from the victims classified as red and yellow (Table 2) it was possible to verify that, when applying the mnemonnic of primary evaluation to ABCDE trauma (A- airway and cervical control, B- ventilation, C- circulation, D- neurological evaluation,

***Figure 2.*** *Canvas used for the victims care according to the START method.*

E- exposure and hypothermia control) there was a manual stabilization of the cervical spine in 88.2% of care in the initial moment of the approach. Cervical evaluation was correctly performed in 76.5% of the cases, with the correct description of the technique of the cervical collar application. Verification and maintenance of the pervious airway occurred in all instances of care performed.

When applying item B, 70.6% of the students performed the inspection examination, and 82.4% searched for information on the quality of ventilation. The oxygen availability in high flow occurred in 64.7% of the cases. Thoracic palpation was performed in 94.1% of care cases.

Regarding the evaluation of circulation, in 82.4% of the cases there was the examination of the peripheral pulse. Perfusion analysis through information such as skin color, humidity, temperature and time of capillary filling, as well as the need for volume replacement were performed in 88.2% of the cases. The search for hidden sources of bleeding, through abdomen verification, long bones and pelvis reached 70.6%.

The Glasgow coma scale was correctly applied in 70.6% of the care, as well as pupillary evaluation. To complete the primary evaluation, in 82.4% of the cases the deformation in the extremities was evaluated, but in 29.4% of the care the victims were not correctly exposed nor protected against hypothermia.

## DISCUSSION

The teaching of medical emergencies, mostly in the subject area of MVI and disasters, is still inefficient to educate health professionals, specially physicians and nurses. As a result, there is a prevalence of hardships in urgency and emergency environments, since 70% of physicians, mainly the ones starting their carriers, have prompt care units as their initial clinical work scenario. The ones in charge of such units, most of the time are not qualified to act in a context which involves MVI, reinforcing the need of teaching in this subject area starting in the undergraduate environment[18,19].

***Table 2.*** *Data from evaluated checklists.*

| | Primary evaluation | Rights | Wrongs |
|---|---|---|---|
| A | Manual control of the cervical spine | 88.20% | 11.80% |
| | Cervical spine evaluation + Cervical collar technique | 76.50% | 23.50% |
| | Evaluation of the pervious airway | 100% | 0% |
| B | Thoracic inspection | 70.60% | 29.40% |
| | Thoracic palpation | 94.10% | 5.90% |
| | Breathing quality | 82.40% | 17.60% |
| | Oxygen in high flow | 64.70% | 35.30% |
| C | Examination of the peripheric pulse | 82.40% | 17.60% |
| | Analysis of perfusion (humidity, skin color, temperature, time for capillary filling, and need for volume replacement) | 88.20% | 11.80% |
| | Research of bleeding sources | 70.60% | 29.40% |
| D | Glasgow coma scale | 70.60% | 29.40% |
| | Pupillary evaluation | 70.60% | 29.40% |
| E | Evaluation of deformation in the extremities | 82.40% | 17.60% |
| | Exposure and protection against hypothermia | 70.60% | 29.40% |

A systematic review on a realistic simulation showed that this educational strategy is efficient and able to contribute to the training of professionals when used as an educational model for a multidisciplinary performance. Therefore, the involvement of students and professionals of the PHC during this developed simulation enhanced the teaching and learning process[20].

Triage is one of the most important pillars in MVI and disasters management. Health professionals education involves training and practice aiming at acting on these environments in a safer way, and at reducing the errors involved in care[7,21]. In this study, the hit rate in triage with the START method was high - over 90%. Similar outcomes were seen in a study by Simões *et al.*, which contemplated a simulation involving 40 victims screened by professionals from SAMU 192 acting in several institutions[5]. The need for an MVI-specific training is reported in some studies, which also recommend their insertion in the schooling matrix, in undergraduate and graduate programs in health[7,22,23]. In a study performed with professionals from the American countryside, around 90% of them identified the need for training in MVI[13]. Dittmar *et al*. showed that triage skills reduce significantly one year after the training, indicating the need for educational programs for the continuous practice by professionals[10].

The performance of a simulation, the object of this study, was an unprecedented initiative in the environment of the university involved, searching to make the academicians and professionals aware of the importance of practicing this subject area. Chaotic situations might surprise prehospital care teams, such as the one that happened in a nightclub called *Kiss*, in the city of *Santa Maria* (RS, Brazil), where hundreds of youngsters were victimized. Thus, our conclusion is that actions of training and prevention in MVI are needed as a permanent teaching subject in health, in order to produce an effective medical response, reducing vulnerability in care teams in such situations[24].

The principles of approach to trauma, based on the systematization of care into priority areas, initially developed by ATLS®, and later applied in the prehospital scenario by PHTLS®, is world-renowned. The use of the ABCDE mnemonic for the identification and treatment of injuries which are life threatening are also applied in MVI care[25].

During data analysis, it became evident the correct application of the ABCDE mnemonic stages in values over 70% of the care performed, a value that is inferior to the one found in a study by Simões *et al.,* which evaluated the performance of experienced professionals in PHC. The stage that presented the largest number of errors in its execution in both studies was "E", responsible for evaluating in an adequate way the exposure of a victim and the hypothermia control, which shows the negligence of initial care when going through this stage[5].

During an analysis of the stages taken separately, we could notice positive aspects that denote assimilation of the contents, such as the maintenance of the pervious airway in all care provided, and the incorrect indication of a definitive airway in only one patient. Intubation in the prehospital scenario remains controversial within the usual context of care, and in multiple victims' scenarios it is an approach even more challenging[26]. A negative aspect was the finding of prescription of oxygen offer in high flow in only 64.7% of the people treated, an evidence that this conduct still needs to be reinforced among the participants.

The oxygen offer is one of the recommendations found in the initial treatment of trauma victims, but care should be taken regarding the harmful effects of hyperoxia[27].

In the simulation proposed by this study, in 70.6% of cared for individuals there was a research of visible and hidden sources of bleeding, an outcome that indicates the need for a larger emphasis to be given to this skill, since hemorrhage is the main cause of death potentially preventable in trauma[11,28,29].

After performing the simulation and the event feedback, it was possible to notice some aspects that interfered in the performance of the simulation, which could be perfected. One of the relevant aspects is victims' preparation. The victims' acting according to performance or non-performance of the conducts demands previous training, evidencing that the contact between the victim and their shadow should be stimulated before, not only on the day of the event. Another aspect that proved confuse during the simulation was the displacement of the victims from the triage area to the canvases for care. The place of collection and the limitation of the material used in the simulation to care for the victims were not well-defined for the participants as well. The definition and detailing of the scene with all the participants, including the special groupings involved, should have been performed before the event, with a clear attribution of the ones in charge for each scene and of the acting areas of the stakeholders, aiming at providing a more organized environment.

The simulation environment described was an unprecedented activity because it integrated multiprotection care with a clinical context of MVI, consisting of an enriching experience that allowed for the performance of work by a health multidisciplinary team and reminded the stakeholders of the need for further training and for an early insertion, whilst still in the undergraduate level, of situations as the one simulated, in order to guarantee the excellence of teaching and of care, focusing on improving the qualification of health professionals.

Therefore, we reached the conclusion that the application of skills to triage and primary evaluation following the ABCDE mnemonic performed by the participants of this study proved satisfactory. However, some aspects that can alter the outcome of the victims in a definitive way, as the evaluation of breathing and circulation, must be stimulated and trained with special emphasis and commitment.

## Acknowledgements

We wish to thank the University of Fortaleza and the Rescue and Urgency Group of the Military Fire Brigade from Ceará for their initiative to perform this event and for the incentive given to the teaching of Medicine and Nursing on the Emergency field.

## R E S U M O

**Objetivo:** *descrever estratégia de ensino a partir da simulação de Incidente de Múltiplas Vítimas (IMV), discutindo e avaliando a atuação dos discentes envolvidos no atendimento inicial às vítimas de trauma.* **Métodos:** *estudo transversal com abordagem quantitativa que contemplou a execução de uma simulação realística de IMV, envolvendo discentes, docentes dos Cursos de Medicina e de Enfermagem, além de profissionais do atendimento pré-hospitalar.* **Resultados:** *a partir da análise de 17 checklists, foi possível perceber que a classificação segundo o método START (Simple Triage And Rapid Treatment) aconteceu de forma correta em 94,1% dos atendimentos. Seguindo a avaliação primária com o mnemônico ABCDE, todas as etapas foram realizadas de forma correta em 70%. Contudo, só houve oferta de oxigênio em alto fluxo em 64,7% dos atendimentos. A pesquisa por fontes de sangramento visíveis e ocultas foi realizada em 70,6% dos atendimentos. A avaliação neurológica com a escala de coma de Glasgow e avaliação pupilar ocorreu em 70,6% das vítimas. A exposição da vítima foi realizada em 70,6% dos atendimentos.* **Conclusão:** *ambientes simulados permitem a consolidação e o aperfeiçoamento de competências e habilidades profissionais, principalmente quando se trata de uma área pouco treinada na graduação, como o IMV. O treinamento precoce e o atendimento em equipe estimulam o raciocínio clínico, a integração e a comunicação, aspectos essenciais diante de situações caóticas.*

**Descritores:** *Treinamento por Simulação. Educação Médica. Incidentes com Feridos em Massa. Serviços Médicos de Emergência.*

## REFERENCES

1. World Health Organization. Mass casualty management systems: strategies and guidelines for building health sector capacity. Geneva: World Health Organization; 2007.
2. Brasil. Ministério da Saúde. Secretaria de Atenção à Saúde. Protocolos de intervenção para o SAMU 192. 2a ed. Brasília: Ministério da Saúde; 2016.
3. Khajehaminian MR, Ardalan A, Keshtkar A, Hosseini Boroujeni SM, Nejati A, Ebadati E OME, et al. A systematic literature review of criteria and models for casualty distribution in trauma related mass casualty incidents. Injury. 2018;49(11):1959-68.
4. Lima DS. Noções em incidentes com múltiplas vítimas. In: Lima DS. Emergência médica: suporte imediato à vida. Fortaleza: Unichristus; 2018. p. 271-84.
5. Simões RL, Duarte Neto C, Maciel GS, Furtado TP, Paulo DN. Atendimento pré-hospitalar à múltiplas vítimas com trauma simulado. Rev Col Bras Cir. 2012;39(3):230-7.
6. Fraga GP, Quintas ML, Abib SCV. Trauma e emergência: o SUS é a solução no Brasil? [editorial]. Rev Col Bras Cir. 2014;41(4):232-3.
7. Lampi M, Junker J, Berggren P, Jonson CO, Vikström T. Pre-hospital triage performance after standardized trauma courses. Scand J Trauma Resusc Emerg Med. [Internet]. 2017 [cited 2019 Jan 5]; 25(1):53. Available from: https://sjtrem.biomedcentral.com/articles/10.1186/s13049-017-0395-8
8. Atendimento Pré-hospitalar ao Traumatizado Básico e Avançado. PHTLS Pré-Hospital Trauma Life Support. Comitê do PHTLS da National Association of Emergency Medical Technicians (NAEMT) em cooperação com o Comitê de Trauma do Colégio Americano de Cirurgiões. 8a ed. Rio de Janeiro: Elsevier; 2017.
9. Bhalla MC, Frey J, Rider C, Nord M, Hegerhorst M. Simple triage algorithm and rapid treatment and sort, assess, lifesaving, interventions, treatment, and transportation mass casualty triage methods for sensitivity, specificity, and predictive values. Am J Emerg Med. 2015;33(11):1687-91.
10. Dittmar MS, Wolf P, Bigalke M, Graf BM, Birkholz T. Primary mass casualty incident triage: evidence for the benefit of yearly brief re-training from a simulation study. Scand J Trauma Resusc Emerg Med. 2018;26(1):35.
11. American College of Surgeons. Advanced Trauma Life Support (ATLS). Student Manual. 10th ed. Chicago, IL: American College of Surgeons; 2018.
12. Intrieri ACU, Barbosa Filho H, Sabino MRLS, Ismail M, Ramos TB, Invenção A, et al. O enfermeiro no APH e o método START: Uma abordagem de autonomia e excelência. Rev UNILUS Ensino e Pesquisa. 2017;14(34):112-28.
13. Wehbi NK, Wani R, Yang Y, Wilson F, Medcalf S, Monaghan B, et al. A needs assessment for simulation-based training of emergency medical providers in Nebraska, USA. Adv Simul (Lond). 2018;3:22.
14. Fernandes CR, Falcão SNRS, Gomes JMA, Colares FB, Maior MMMS, Correa RV, et al. Ensino de emergências na graduação com participação ativa do estudante. Rev Bras Clin Med. 2014;38(2):261-8.
15. Kaneko RMU, Couto TB, Coelho MM, Taneno AK, Barduzzi NN, Barreto JKS, et al. Simulação in Situ, uma metodologia de treinamento multidisciplinar para identificar oportunidades de melhoria na segurança do paciente em uma unidade de alto risco. Rev Bras Educ. Med. 2015;39(2):286-93.
16. Brandão CS, Collares CF, Marin HF. A simulação realística como ferramenta educacional para estudantes de medicina. Sci Med. 2014;24(2):187-92
17. Franco CAGS, Franco RS, Santos VM, Uiema LA, Mendonça NB, Casanova AP, et al. OSCE para competências de comunicação clínica e profissionalismo: Relato de experiência e meta-avaliação. Rev Bras Educ. Med. 2015;39(3):433-41.
18. Sardela Covos J, Covos JF, Scarel Brenga AC. A importância da triagem em acidentes com múltiplas vítimas. Ensaios Cienc., Cienc Biol Agrav Saúde. 2016;20(3):196-201.

19. Fraga GP, Pereira Júnior GA, Fontes CER. A situação do ensino de urgência e emergência nos cursos de graduação de medicina no Brasil e as recomendações para a matriz curricular. In: Lampert JB, Bicudo AM. 10 anos das Diretrizes Curriculares Nacionais do Curso de Graduação em Medicina. Rio de Janeiro: Associação Brasileira de Educação Médica; 2014. p. 41-56.
20. Armenia S, Thangamathesvaran L, Caine AD, King N, Kunac A, Merchant AM. The role of high-fidelity team-based simulation in acute care settings. Surg J (N Y). 2018;4(3):136-51.
21. Pouraghaei M, Sadegh Tabrizi J, Moharamzadeh P, Rajaei Ghafori R, Rahmani F, Najafi Mirfakhraei B. The effect of start triage education on knowledge and practice of emergency medical technicians in disasters. J Caring Sci. 2017;6(2):119-25.
22. Storpirtis S, Nicoletti MA, Aguiar PM. Uso da simulação realística como mediadora do processo ensino-aprendizagem: relato de experiência da farmácia universitária da Universidade de São Paulo. Rev Grad USP. 2016;1(2):45-55.
23. Naser WN, Saleem HB. Emergency and disaster management training; knowledge and attitude of Yemeni health professionals- a cross-sectional study. BMC Emerg Med. 2018;18(1):23.
24. Atiyeh B. Desastre na boate Kiss, Brasil. [editorial]. Rev Bras Cir Plast. 2012;27(4):502.
25. Rodrigues MS, Galvão IM, Santana LF. Utilização do ABCDE no atendimento do traumatizado. Revista de Medicina. 2017;96(4):278-80.
26. Crewdson K, Rehn M, Lockey D. Airway management in pre-hospital critical care: a review of the evidence for a 'top five' research priority. Scand J Trauma Resusc Emerg Med. 2018;26(1):89.
27. Trimmel H, Beywinkler C, Hornung S, Kreutziger J, Voelckel WG. Success rates of pre-hospital difficult airway management: a quality control study evaluating an in-hospital training program. Int J Emerg Med. 2018;11(1):19.
28. Spinella PC, Holcomb JB. Resuscitation and transfusion principles for traumatic hemorrhagic shock. Blood Rev. 2009;23(6):231-40.
29. Geeraedts LM Jr, Pothof LA, Caldwell E, de Lange-de Klerk ES, D'Amours SK. Prehospital fluid resuscitation in hypotensive trauma patients: do we need a tailored approach? Injury. 2015;46(1):4-9.

Received in: 02/22/2019
Accepted for publication: 05/07/2019
Conflict of interest: none.
Source of funding: none.

**Mailing address:**
Daniel Souza Lima.
E-mail: souzadl@hotmail.com
izabella.furtado94@gmail.com



## *Erratum*

In May/June 2019, the Journal of the Brazilian College of Surgeons [Rev Col Bras Cir. 2019;46(3):e20192163] published the original article titled " Multiple victims incident simulation: training professionals and university teaching." (http://dx.doi.org/10.1590/0100-6991e-20192163), by Daniel Souza Lima; Izabella Furtado de-Vasconcelos; Erika Feitosa Queiroz; Thaís Aguiar Cunha; Vitória Soares dos-Santos; Francisco Albert Eisntein Lima Arruda; Julyana Gomes Freitas. The following errors were identified:

Authors:
Reads:
Daniel Souza Lima, ACBC-CE[1]; Izabella Furtado de-Vasconcelos[2]; Erika Feitosa Queiroz[2]; Thaís Aguiar Cunha[2]; Vitória Soares dos-Santos[2]; Francisco Albert Eisntein Lima Arruda[3]; Julyana Gomes Freitas[2].

Should read:
Daniel Souza Lima, ACBC-CE[1]; Izabella Furtado de-Vasconcelos[1]; Erika Feitosa Queiroz[1]; Thaís Aguiar Cunha[1]; Vitória Soares dos-Santos[2]; Francisco Albert Eisntein Lima Arruda[3]; Julyana Gomes Freitas[2].