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# Permanent education in the emergency mobile pre-hospital care service: an integrative review

Fabíola Chaves Fernandes[1], Daniel Laprovita[1], Wagner Luiz Melo Bonin[1], Geilsa Soraia Cavalcanti Valente[1], Elaine Antunes Cortez[1], Marcos Paulo Fonseca Corvino[1]

*1 Federal Fluminense University, RJ, Brazil*

## ABSTRACT

**Objective**: identify how continuing health education has been incorporated into teaching practice in publications about the mobile emergency service. **Method:** integrative review in three databases, with a time cut from 2010 to 2020. **Results:** three selected articles, emerging in two categories: Need for education practice to meet demands in mobile pre-hospital care; and Incorporation of continuing education as a strategy for new practices in mobile emergency care. **Conclusion:** there is a great demand for services in emergency networks, especially in the pre-hospital component. However, the incorporation of continuing education as a strategy for new practices in the service is still unclear, since only three articles have mentioned it. New research is suggested introducing permanent education into the practice of mobile pre-hospital emergency service, since it provides a critical re-reading of work practices and the needs arising from them, thus transforming them.

**Descriptors:** Continuing Education; Emergency Medical Services; Capacity Building in Service.

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## INTRODUCTION

World Health Organization (WHO) estimates a significant increase in mortality rates due to external causes, especially in relation to traffic accidents and violence, in the period 2002-2020[1], strongly impacting the Unified Health System (SUS – *Sistema Único de Saúde*) and society[2]. This table reveals one of the main problems faced by the SUS, which is based on a legal framework based on the federative pact.

SUS legislation recognizes the competence of each sphere of government, delegating to federal, state, and municipal managers the responsibility for the management, financing, and policy of the system. It is an exercise of autonomy for municipalities and states in the editing and implementation of measures, standards and strategies aimed at ensuring the guidelines of universality, equal access and completeness of assistance[3].

In this sense, the National Policy for Emergency Care (PNAU – *Política Nacional de Atenção às Urgências*) proposes the formation of state, regional and municipal emergency care systems, with the objective of fulfilling the guidelines that guide the SUS, prioritizing the implementation of the Mobile Emergency Care Service (SAMU – *Serviço de Atendimento Móvel de Urgência*) – 192 – as the first element of the policy[4].

SAMU, which is a mobile pre-hospital service, consists of Basic Life Support Units (USB – *Unidades de Suporte Básico de Vida*) and Advanced Life Support Units (USA – *Unidades de Suporte Avançado de Vida*), which differ from each other due to the composition of the team that crews the unit and the occurrences that are able to attend[4]. The USA are manned by doctors, nurses and vehicle drivers, while the basic support vehicles are manned by nursing technicians, operating 24 hours a day[2].

The work scenario of health teams consists of situations in which time, associated with precise decision making, is of fundamental importance for a satisfactory outcome for the user.

The professionals who work in the pre-hospital care are called at all times to produce a safe practice and an assistance mediated by specificities that are renewed at each care. The uncertainties that cross the attention of SAMU teams on a public road are constant, since the conditions of assistance are always mediated by various vectors and probabilities, which include, among others: the site of the accident and its surroundings, the distance between the site of the accident and the reference hospital and the victim's conditions. This is a situation that requires the professional, who works in the field of pre-hospital care, a routine of updating and continuing education. To this end, continuing health education (CHE) works with tools that seek critical reflection on practices and is in itself an educational process applied to work. This enables changes in relationships, processes, health acts, and people, and better articulation inside and outside of work[5].

It is worth mentioning that CHE considers significant learning as a prerequisite, that is, from the problems that present themselves in the work environment, one can reflect and discuss in a team the educational needs in order to improve the work process[6].

CHE enables the production of new pacts and new collective agreements in SUS. Its focus

is the work processes, its target is the health teams, and its operation locus is the collective ones, because the other's gaze is fundamental for the possibility of problematization and production of disturbances[7].

In view of the above, this study aimed to identify the knowledge produced and published in national and international literature, regarding how CHE has been incorporated into the teaching practice of SAMU, from 2010 to 2020.

## METHOD

It was decided to develop a study that involves the systematization and publication of the results of a bibliographical research in health. The main objective of the integrative review (IR) is to allow for analyses that go beyond the synthesis of the results of selected studies, since it covers other dimensions of research, presenting potential for the development of new theories and research problems. Thus, IR is a type of review with standardized and systematic methods, ensuring the necessary rigor to scientific research in order to legitimize the evidence, integrating it into professional practice and enabling reflection on a particular phenomenon[8].

In order to systematize the research, the following sequence was adopted for the IR: 1- identification of the theme and selection of the research question; 2- establishment of criteria for inclusion and exclusion of studies; 3- definition of the information to be extracted from the selected studies; 4- evaluation of the studies included/categorization; 5- interpretation of the results; 6- presentation of the review/knowledge synthesis.

IR was able to identify, select, critically evaluate, and synthesize existing knowledge to solve the problem in question, in order to meet the objective of the work.

To this end, the recommendations of the Joanna Briggs Institute[9] were considered, with the result that in the first stage the guiding question for its conduct was obtained, using the PICO method: how is CHE being incorporated as a teaching strategy in SAMU?

Each parameter of the PICO strategy contributed to the selection of studies to be included and corresponds to the following elements: P (population) - SAMU worker; I (intervention) - insertion of CHE in the SAMU teaching practice; C (comparison) - instrument not used; O (outcome) - identify how CHE is being incorporated in the SAMU teaching practice. This strategy has made it possible to limit in a specific and scientific way the issue to be investigated[10].

For the elaboration of the second stage, the research criteria were established, including articles with texts in Portuguese, English or Spanish, that addressed the construction of CHE as a teaching practice in urgent and emergency services, in the mobile prehospital modality. Integrative review articles, monographs, dissertations and theses, and studies describing CHE outside the context of mobile pre-hospital emergency care were excluded. The survey of the articles took place from June 5 to 30, 2020, with the studies published from 2010 to 2020 as a time cut.

The online search was conducted in Latin American and Caribbean Health Sciences Literature (LILACS), the US National Library of Medicine (MEDLINE) and the SciVerse Scopus TopCited database (SCOPUS), consider-

ing the Health Sciences Descriptors (DeCS) for LILACS and MEDLINE, and the Medical Subject Headings (MESH) terms for SCOPUS. The advanced search was used in the respective databases, with the combination of the descriptors previously defined, in the MEDLINE and LILACS databases, via the Virtual Health Library (VHL) portal, and SCOPUS, via the portal of the Coordination for the Improvement of Higher Level Personnel (Capes), with the Boolean operators "AND" and "OR". A total of 447 publications were found, according to Figure 1.

The Evidence-Based Practice (EBS) advocates systems for classifying evidence in a hierarchical manner, depending on the methodological approach adopted, which is based on the design of the study[11]. In this study, the level of evidence was established from the classification used at Oxford University[12], considering the degree of recommendation from the research approach[12,13].

In the third stage of IR, the papers were selected by reading the titles and abstracts and applying the eligibility criteria already mentioned. In this stage, three evaluators selected the papers: two nurses and one dentist, two masters from the Post-Graduation Program in Nursing - Professional Master in Health Teaching: Interdisciplinary teaching formation in the Unified Health System, and one doctoral student from the Academic Program of Sciences in Health Care, both from Fluminense Federal University. This path will be presented from the flowchart shown in Figure 2.

Evaluating the nine publications in terms of origin, it was found that five are from international journals, two are from a national electronic journal, and two are from national printed journals. One publication was written in English (n=5), one international translated into Portuguese (n=3) and one study originally in Portuguese (n=1).

| DESCRIPTORS | DATABASE | PUBLICATIONS FOUND |
|---|---|---|
| "Emergency medical services" OR "samu" AND "continuing education" OR "permanent education" AND "in-service training" OR "in-service training" OR "employee training program". | MEDLINE | 112 |
| | LILACS | 17 |
| "Emergency medical services" OR "Prehospital emergency care" OR "Emergency care" "OR "Emergency health services" AND "Continuing education" OR "Education, nursing, continuing" OR "Education, medical continuing" AND "Training, inservice" OR "Inservice training" OR "Training, inservice". | SCOPUS | 169 |
| | TOTAL: | 298 |

**Figure 1 -** Combination of descriptors and database. Niterói, RJ, Brazil, 2020
Source: Elaborated by the authors, 2020.

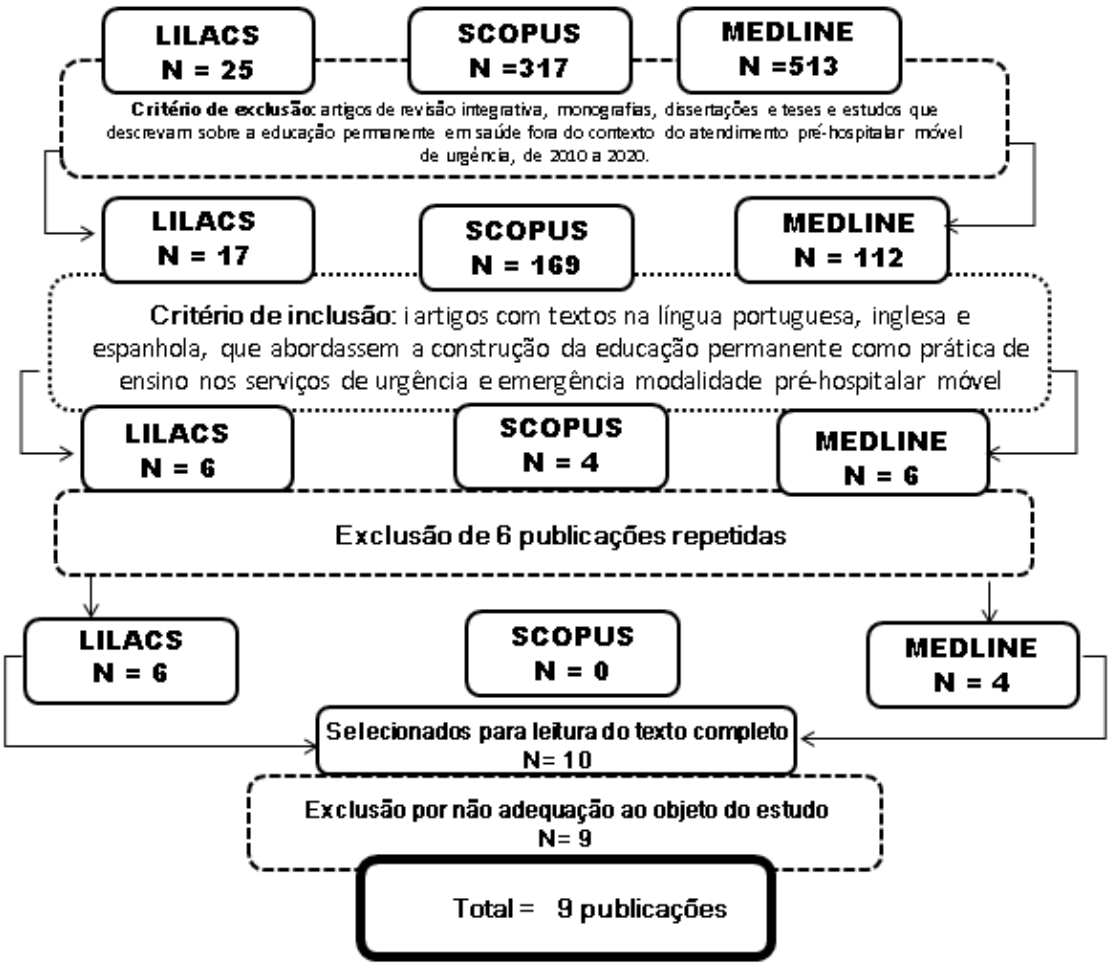


**Figure 2** - Research Flowchart and Results. Niterói, RJ, Brazil, 2020
Source: Elaborated by the authors, 2020.

Only one magazine was not rated in the Qualis/Capes qualification. The others were: a C, a B4, a B3, two B1, an A4, an A3 and an A2. It should be noted that Qualis is the set of procedures used by Capes to stratify the quality of the intellectual production of post-graduate programs[14].

The classification of journals by Capes is carried out by the evaluation areas and goes through the annual updating process. These vehicles are framed in indicative quality strata, and they are A1 (the highest), A2, B1, B2, B3, B4, B5 and C (with zero weight)[14].

The fourth stage of this IR consisted of a critical review of the selected studies, which were read in their entirety by the three evaluators in order to build the fifth stage. This included the interpretation and discussion of the results, highlighting those that emphasize the incorporation of the CHE into teaching practices at SAMU.

The sixth and final stage dealt with the review and synthesis of the studies highlighted in order to respond to the objectives, in which two categories emerged. At that time, three more evaluators were responsible for the correct conception of the categories and their design, and they are all professors of the same professional master's program and academic doctorate.

## RESULTS

The synoptic Figure 3, with the three references found, from IR, is presented according to the type of journal, language and year, the database where the study was collected, title of the work, authors, type of research, thematic considerations, and classification of the study.

With the reading and analysis of the selected articles it was possible to separate the thematic categories to meet the objective of this study, which are: 1) Need for education practice to meet the demands of mobile pre-hospital care; and 2) Incorporation of CHE as a strategy for new practices in SAMU.

Studies[15,17,21,22] that consider the need to maintain an CHE program that uses the demands of the service itself to qualify it have been included in the first category.

The second category brought together studies[16,18-20,23] that directly cite the incorporation of CHE as a possibility for new practices in the work process.

## DISCUSSION

Considering that most trauma deaths could be avoided if there was adequate pre-hospital care in the first hours, a training program for lay rescuers in rural areas was established in India, with the insertion of professionals from various segments[21], together with the native population.

And also considering that the team involved in this assistance has no specific training, according to the study in Sobral/CE, it is suggested to implement a program directed to the process of intersectoral preparation of professionals in the field of disaster medicine, guided by ongoing education[15].

Observing the experience of air medical transport, where blood and plasma transfusion was vitally important in rural medicine, either because of the rapid decision making or because of the low blood supply from hospitals[16], the difficulty of assistance with its discontinuity is resumed, often neglecting pre-hospital records important for the completeness of care[17]. It is suggested that by training the team through educational courses, in the logic of the CHE, their performance will improve[18], since training in emergency simulation increases the quality of service provided[19], confirmed by a validated tool for assessing the quality of assistance[20].

Understanding that mobile pre-hospital care is mostly provided by USB teams, but that there is a shortage of skilled labor in developing countries, the need to train lay rescuers[21], as well as the importance of using distance learning (DL) as a virtual learning space that enables the incorporation of the CHE into the service for USB teams, is evident[22].

Including the use of the DL mode highlights the value of using technological resources to enhance learning[22]. Therefore, in the city of São Paulo, believing that the success in using any educational strategy should depend on the understanding of those involved in it, it was proposed to identify the perception of SAMU professionals about permanent/continued education in teaching practices. With this, the objective is to understand concepts and the workers' perception in terms of the incorporation of permanent education as a teaching practice in the work process[23].

It can be seen that medical professionals and nurses conceive health education as an

| Source | Title | Authors | Journal | Considerations | LE |
|---|---|---|---|---|---|
| LILACS | O conhecimento da aplicação dos métodos de triagem em incidentes com múltiplas vítimas no atendimento pré-hospitalar | Araujo JAM, Gonçalves KG, Sales Filho RF, Silva HKS, Menezes RSP, Matos TA. | Nursing (Säo Paulo). [Internet]. 2019; *22(252): 2887-2890.* | Limitation of participants to attending multiple victims in pre-hospital care. Of the cases elaborated for the study, 50% obtained adequate resolution. Only 17% of participants had specific training. | 4C |
| MEDLINE | Improving Air Medical Transport Education for Emergency Providers | Junod C, Pangan CH. | Air Med J [Internet]. 2019; *38(1):5.* | Experience report highlighting blood and plasma transfusion in pre-hospital care. | 5D |
| LILACS | Implementação da Sistematização da Assistencia de Enfermagem (SAE) no Serviço de Atendimento Movel de Urgência (SAMU) | Nicolau S, Montarroyos JS, Miranda AF, Silva WP, Santana RCF. | Rev Fund Care [Internet]. 2019; 11(esp):417-424. | Research on the difficulty of systematizing nursing care, considering that discontinuity of care is the main reason for lack of records, which leads the unit receiving the patient to have no record of care provided in the pre-hospital. | 4C |
| MEDLINE | Difference in First Aid Activity During Mass Casualty Training Based on Having Taken an Educational Course | Yanagawa Y, Omori K, Ishikawa K, Takeuchi I, Jitsuiki K, Yoshizawa T, et al. | Disaster Med Public Health Prep [Internet]. 2018; 12(4):437-440. | Professionals who received mass life support training performed better in first aid activity. | 4C |
| MEDLINE | Mobile emergency simulation training for rural health providers | Martin D, Bekiaris B, Hansen G | Rural Remote Health [Internet]. 2017; *17(3): 4057.* | Emergency mobile simulation training increased the overall quality of learning by developing clinical reasoning skills and decision making capacity, helping to quickly recognize patient deterioration and enabling self-reflection. | 4C |

| | | | | | |
|---|---|---|---|---|---|
| LILACS | Instrument for assessing the quality of mobile emergency pre-hospital care: content validation | Dantas RN, Torres GV, Salvetti MG, Dantas DV, Mendonça AEO. | Rev. esc. enferm. USP[Internet]. 2015 ;49(3):380-386. | Validation of a mobile pre-hospital care quality assessment instrument. | |
| MEDLINE | Prehospital trauma care education for first responders in India | Aekka A, Abraham R, Hollis M, Boudiab E, Laput G, Purohit H, et al. | J Surg Res [Internet]. 2016 aug; 197(2):331-338, 2016 | Need to train lay rescuers for the difficulty in pre-hospital care in developing countries. | 4C |
| LILACS | Ensino à distância na educação permanente em Urgência e Emergência | Tobase L, Tomazine EAS, Teodoro SV, Piza NRS, Peres HHC. | J Health Inform [Internet]. 2012 Dec;4(esp.):125-9 | Considering the great demand for Mobile Emergency Assistance, the importance of the team's technical training is revealed. | 4C |
| LILACS | Educação permanente /continuada como estratégias de gestão no Serviço de Atendimento Móvel de Urgência | Hetti LBE, Bernardes A, Gabriel CS, Fortuna CM, Maziero VG. | Rev Eletrônica Enferm [internet]. 2013 Dec; 15(4):973-982. | Qualification of basic and advanced life support vehicle teams from the perspective of continuing education. | 4C |

**Figure 3 -** Distribution of selected material according to origin, title, year of publication, author, journal, considerations and level of evidence (LE). Niterói, RJ, Brazil, 2020
Source: Elaborated by the authors, 2020.

objective to be achieved in order to make the population more responsible for their own health, either by promoting health, or by preventing or controlling disease[24]. However, the professionals relate, in their testimonials, quality to the worker's degree of qualification, denoting the need for greater investment in CHE, since this is an important tool to turn professionals into protagonists, empowering them[25]. For health teams, the CHE is essential, especially for emergency care teams, as it provides a critical re-reading of working conditions, established relationships and health needs, taking into account the particularities of each region, users and workers involved[7].

**Category 1 - Need for education practice to meet the demands of the mobile pre-hospital care service**

Studies[21-24] have been verified showing that the demands in the emergency room need to be met, as they overload and weaken health services worldwide. For the Ministry of Health, the urgency and emergency area constitutes an important component of health care[2]. In response, programs have been set up to reduce this impact. In Brazil, SAMU, which follows two international models, the French and the American, was incorporated. The French model is centralized in a communication network based on medical regulation.

All calls are evaluated by a physician, who defines the most efficient response, maximizing available resources. The American model works with paramedics, who are regulated by a medical regulation center[17]. Health services need to be organized to effectively meet public policies and show an immense effort, both nationally and internationally[21-23], to reduce deaths from trauma or incapacitating sequelae through the insertion of programs that aim to organize the flow of care to the demands, contributing to a fast and quality care for victims who suffer aggravation. The importance of improving the professionals working in this service should be highlighted, although an observational study in Switzerland revealed that the implementation of the USB training did not seem to be associated with the reduction of mortality or ability to return to work after motor vehicle traffic injuries[26]. The selected studies show that this gap has been filled by means of professional updating programs[22,23], and in another study[27], this confrontation occurred by means of training of lay rescuers, i.e., not belonging to the health area.

**Category 2 - Incorporation of CHE as a strategy for new practices in SAMU**

In the case of SAMU, the studies[15,17,21,22] show a concern with the development of strategies aimed at producing knowledge from significant learning, that is, when new knowledge finds anchorage points in the structure of existing knowledge and values. However, only two studies[22,23] refer to EPS as a possibility to produce new practices in SAMU. One study[27] points out that, on the occasion of the National Congress of the SAMU Network, in March 2006, promoted by the Ministry of Health with the purpose of enhancing the qualification of workers in urgency, each SAMU was instructed to implement the Continuing Education Center (NEP – *Núcleo de Educação Permanente*). And that this center, in association with the Emergency Education Center (NEU – *Núcleo de Educação em Urgência*), promote the education of professionals in the mobile pre-hospital component, which lacks specific education and differentiated training[16]. Given the routine of professionals working in the pre-hospital mobile emergency component, who are confronted with the reality of various services and situations, the incorporation of the CHE considering significant learning is of utmost importance. The working environment is an excellent space for the incorporation of CHE in work practices[16,17]; however, the worker needs to recognize this educational character. The CHE aims at transforming daily situations into learning, reflexively analyzing the problems of practice and valuing the working process itself in its intrinsic context [22,5]. It should be noted that a study published in 2013[23] describes that the professionals of a SAMU could not distinguish the difference between the term permanent education and continuing education. This indicates that there should be greater clarity and insertion of these professionals in the definition of educational methods at work. One study[23] approaches DL as a tool to incorporate CHE; however, in another study[23], some professionals did not identify a similar educational action as an approach directed to permanent education, including reporting the scarcity of practical classes and the excess of theoretical content.

Authors[15,17,21,22] describe the utilization of several methods for the incorporation of the education process into the work, taking into consideration local epidemiology, regional services and infrastructure. The use of support for the teaching process took place through realistic simulations, video lessons, self-directed learning videos, native language teaching for better understanding, use of virtual space, and lay people simulations based on American Heart Association protocols[22,23].

## CONCLUSION

This review has shown that there is a limitation on the approach to the topic of continuing education in mobile pre-hospital care services, considering the few publications found. Due to the growing demand for treatment of traumas from external causes, it is necessary to adopt methods that value teaching and learning in the daily life of organizations and in social and labor practices, in the real context in which they occur, considering the work environment as a formative process from the construction of collective knowledge.

The various methods described point out strategies for the incorporation of the education process in the service, aiming at the production of knowledge to meet the demands arising from the activities of pre-hospital services, which reinforces the importance of the insertion of CHE in the SAMU, which presents itself as a relevant gateway for users to enter the SUS, allowing them to access the networks of health services in an integral, equal and universal way.

Therefore, new studies are suggested, since this work was not able to fully address the subject due to the absence of research on such a relevant subject.

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