

THE PRE-HOSPITAL CARE AND THE PATIENT SAFETY: CONTRIBUTIONS TO THE SAFE PRACTICE

O atendimento pré-hospitalar móvel e a segurança do paciente: contribuições para prática segura

La atención prehospitalaria y la seguridad del paciente: contribuciones para práctica segura

Eric Rosa Pereira¹, Priscilla Valladares Broca², Ronilson Gonçalves Rocha³, Thamires Vieira Máximo⁴, Alexandre Barbosa de Oliveira⁵, Graciele Oroski Paes⁶

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ABSTRACT

Objective: The study's goal has been to identify, through databases, the main scientific evidence and strategies aimed at patient safety in prehospital care. **Methods:** This is an integrative literature review, which was performed in the LILACS and MEDLINE databases via PubMed, CINAHL and Web of Science, using the period from 2013 to 2017. **Results:** A total of 650 articles were obtained and 15 were selected by taking into consideration the eligibility criteria. The following two categories of evidence have arisen: the influence of training as a guarantee for recording and continuity of care with patient safety; ensuring patient safety based on the prehospital care team's expertise. **Conclusion:** It is hoped to broaden discussions addressing patient safety in prehospital care. Consequently, means of guaranteeing a care free of damages can be introduced to those who need extra-hospital health care.

Descriptors: Patient safety; Emergency medical services; Ambulances.

1 Master of nursing through the Nursing School of Anna Nery. Professor in the University Center Uniabeu. Federal University of Rio de Janeiro (UFRJ). Rio de Janeiro (RJ). Brazil. ORCID: 0000-0003-0202-6653

2 PhD of nursing through the Nursing School of Anna Nery- UFRJ. Assistant Professor at fundamental Nursing Department. Federal University of Rio de Janeiro (UFRJ). Rio de Janeiro (RJ). Brazil. ORCID: 0000-0003-3392-910X

3 PhD of nursing. Assistant Professor at fundamental Nursing Department. State University of Rio de Janeiro (UERJ). Rio de Janeiro (RJ). Brazil. ORCID: 0000-0003-4097-8786

4 Nursing student in the Nursing School of Anna Nery. Federal University of Rio de Janeiro (UFRJ). Rio de Janeiro (RJ). Brazil. ORCID: 0000-0003-4577-183X

5 PhD of nursing through the Nursing School of Anna Nery- UFRJ. Assistant Professor at fundamental Nursing Department. Federal University of Rio de Janeiro (UFRJ). Rio de Janeiro (RJ). Brazil. ORCID: 0000-0003-4611-1200

6 PhD of nursing through the Nursing School of Anna Nery- UFRJ. Assistant Professor at fundamental Nursing Department. Federal University of Rio de Janeiro (UFRJ). Rio de Janeiro (RJ). Brazil. ORCID: 0000-0001-8814-5770

RESUMO

Objetivo: Identificar, por meio de bases de dados, as principais evidências científicas e estratégias voltadas para a segurança do paciente no atendimento pré-hospitalar. **Metodologia:** Trata-se de uma revisão integrativa nas bases de dados da *Lilacs* e *Medline* via *PubMed*, *CINAHL* e *Web of Science* que com recorte temporal entre 2013 a 2017. **Resultados:** Captou-se 650 artigos, após critérios de elegibilidade, foram obtidos 15 para análise. Emergiram-se duas categorias de evidências como resultados: a influência do treinamento como garantia de registro e continuidade dos cuidados com segurança ao paciente; a garantia da segurança do paciente baseada na *expertise* da equipe de atendimento pré-hospitalar. **Conclusão:** Espera-se ampliar as discussões sobre a segurança do paciente no atendimento pré-hospitalar. Assim, possa-se lançar meios de garantir um cuidado livre de danos aqueles que necessitam de cuidados em saúde extra-hospitalar.

Descritores: Segurança do paciente; Serviços médicos de emergência; Ambulâncias.

RESUMEN

Objetivo: Identificar, por medio de bases de datos, las principales evidencias científicas y estrategias dirigidas a la seguridad del paciente en la atención prehospitalaria. **Método:** Se trata de una revisión integrativa en las bases de datos de *Lilacs* y *Medline* vía *PubMed*, *CINAHL* y *Web of Science* que con recorte temporal entre 2013 a 2017. **Resultados:** Se captó 650 artículos, después de criterios de elegibilidad, fueron obtenidos 15 para análisis. Se surgieron dos categorías de evidencias como resultados: la influencia del entrenamiento como garantía de registro y continuidad de los cuidados con seguridad al paciente; la garantía de la seguridad del paciente basada en la experiencia del equipo de atención prehospitalaria. **Conclusión:** Se espera ampliar las discusiones sobre la seguridad del paciente en la atención prehospitalaria. Así, se pueda lanzar medios de garantizar un cuidado libre de daños a aquellos que necesitan cuidados en salud extrahospitalaria.

Descriptor: Seguridad del paciente; Servicios médicos de emergencia; Ambulancias.

INTRODUCTION

The first reports of ambulance transport date from the period of the great wars, during the 18th century, known as the Napoleonic period. During such period, soldiers were transported in animal-drawn carts, known as flying ambulances, to be assisted in places outside the war zone by physicians and surgeons.¹ The concern was to get the victim out of the confrontation zone as quickly as possible and take he/her to the field hospital for proper treatment.

The systematic emergency aid provided to victims of critical situations had its foundations during the American civil war, where many lives were lost, mainly of soldiers, due to lack of immediate care.² Bearing the aforesaid in mind, the need to take steps to speed up care services for victims still on the battlefield was then identified.

Only by 2002, the Brazilian Ministry of Health published the Ordinance No. 2048/02, where its first article approves the Technical Regulation of State Urgency and Emergency Systems.³ As a way of organizing the prehospital care service, there were published the Ordinances No. 1863 and 1864, signed on September 18th, 2003.

Based on these publications, the *Política Nacional de Atenção às Urgências (PNAU)* [National Policy for Emergency Care] was then established, which supports the implementation of the *Serviço de Atendimento Móvel de Urgência (SAMU-192)* [Mobile Emergency Care Service] in all federal units, respecting the competencies of the three spheres of public administration.⁴

Therefore, such policy is considered a landmark in the Brazilian prehospital care, because from this Ordinance and Decrees there was a reorganization of the entire system in the federative entities. Its function is to transport victims of a clinical, surgical, obstetric, traumatic or psychiatric nature to a referral service from the *Sistema Único de Saúde (SUS)* [Brazilian Unified Health System] for definitive treatment.⁵

Prehospital care (PHC) has characteristics that conceptually differentiate it from the care provided within the hospital system, since the main function of this care is to stabilize the victims to refer them to more complex and specific care according to their clinical condition.

The World Health Organization (WHO) introduced the World Alliance for Patient Safety in 2004, requesting from member countries, including Brazil, the commitment to develop public policies and practices aimed at patient safety.⁶

In 2005, the Pan American Health Organization (PAHO) created the International Network for Nursing and Patient Safety intending to set trends and priorities in nursing development in the area of Patient Safety, deliberate cooperation and the exchange of information between countries, as well as the need to strengthen nursing care based on scientific evidence.⁷

According to the WHO, patient safety is classified as reducing the risk of unnecessary damage related to health care, aiming an acceptable minimum.⁸ An acceptable minimum refers to the collective notion in the face of current knowledge, available resources and the context in which care was provided as opposed to the risk of non-treatment or other alternative treatment.⁶

It is noteworthy that this subject is not new, because according to a study undertaken in the United States of America (USA) in 2000, the high rate of deaths resulting from errors in care services in the hospital setting, where the number of cases exceeds diseases such as AIDS and Cancer, have already warned about this issue, thus, deserving special attention.⁹ Another study also performed in the USA identified that even using an ambulance equipped with mobile Intensive Care Unit, there were 12.5% of adverse events caused by technical failures.¹⁰

Concerned about patient safety, the Brazilian Ministry of Health launched in 2013 the *Programa Nacional de Segurança do Paciente (PNSP)* [National Patient Safety Program], introduced by the Ordinance No. 529, April 1st, 2013, to meet, among others, the demand for the prevention of adverse events in health services.¹¹ It is worth mentioning that this is a program aimed at actions in hospital facilities.

A Canadian study showed that most errors (78%) were due to human elements, stressing the need to implement specific training on prehospital care protocols.¹² A specific course on communication skills and relationships for the

medical emergency team was carried out aimed at overcoming these educational gaps experienced by PHC professionals.

Concerning the patient safety, it should be created strategies for safe and ideal care as much as possible. The aforesaid supports an investigation that pursues scientific evidence addressing this matter, aiming to provide better thinking and safer care. Hence, this research meant to identify, through databases, the main scientific evidence and strategies aimed at patient safety in prehospital care.

METHODS

This is an integrative literature review, which was implemented according to the following steps: step 1 – identification of the theme and selection of the research question; step 2 – establishment of inclusion and exclusion criteria for the studies, description of the review methodology and database; step 3 – categorization of the studies; step 4 – assessment of the studies included in the integrative review; step 5 – interpretation of results; step 6 – presentation of the review and summary of knowledge.¹³

In January 2018, the search performed in the *Literatura Latino-Americana e do Caribe em Ciências da Saúde (LILACS)* [Latin American and Caribbean Literature on Health Sciences] and Medical Literature Analysis and Retrieval System Online (MEDLINE) databases via PubMed, *CINAHL*, and Web of Science and the following associated descriptors were used both in Portuguese and English: *segurança do paciente/patient*

safety, *serviços médicos de emergência/emergency medical services, ambulâncias/ambulances, and dano ao paciente/patient harm*. The following combinations of descriptors were performed: [patient safety AND emergency medical services], [patient safety AND ambulances], [emergency medical services AND patient harm], [ambulances AND patient harm] and [patient safety AND patient harm AND ambulances AND emergency medical services].

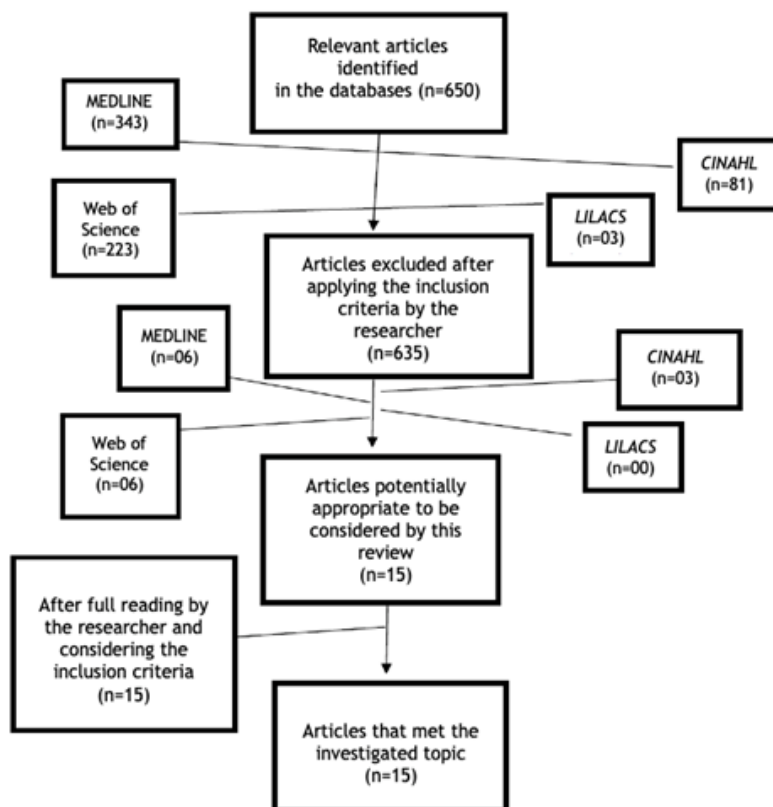
The research question was: How should the care provided by the prehospital care team be established to ensure patient safety? The PICO strategy was adopted to carry out such question, where the health team was the population, the patient safety as a phenomenon of interest, and prehospital care as a context.

The eligibility criteria were as follows: the texts fully available; involving human beings and published over the period from 2013 to 2017, aiming to obtain the most up-to-date articles. Exclusion criteria were as follows: articles having pediatrics and workers' health as their central theme and being duplicated.

RESULTS

A total of 650 articles were obtained and 15 were selected after reading the titles and abstracts, taking into consideration the eligibility criteria. After full reading by the research team and considering the exclusion criteria, a total of 15 articles were preserved for qualitative analysis.

Figure 1 - Study design - flowchart showing the step-by-step data collection procedure according to PRISMA.



Source: Elaborated by the authors, 2018.

After fully reading each article, a stratification was done aiming to identify the title, year, country, journal, the methods and the main results. This set of information was described in a synoptic table for better visualization and understanding of the data. With the completion of the file for each article, aimed at identifying the studies' profile, it was possible to make a simple statistical analysis from the data addressing the publication year, journal, type of research, and country of origin. Such information is addressed in **Table 1**.

Table 1 - Studies' profile.

| | F | F% |
|---|-----------|------------|
| Year | | |
| 2013 | 2 | 13.3 |
| 2014 | 3 | 19.9 |
| 2015 | 4 | 26.6 |
| 2016 | 3 | 19.8 |
| 2017 | 3 | 19.8 |
| Journal | | |
| American Journal of Emergency Medicine | 2 | 13.3 |
| Journal of Health Services Research and Policy | 2 | 13.3 |
| Scandinavian Journal of Trauma | 2 | 13.3 |
| Health Services Research | 1 | 6.6 |
| Canadian Journal of Emergency Medicine | 1 | 6.6 |
| Simulation: Transactions of the Society for Modeling and Simulation International | 1 | 6.6 |
| Medical Informatics and Decision Making | 1 | 6.6 |
| BMC Medical Education | 1 | 6.6 |
| American Journal of Infection Control | 1 | 6.6 |
| American College of Emergency Physicians | 1 | 6.6 |
| Emergency Nurse | 1 | 6.6 |
| BMC Medical Research Methodology | 1 | 6.6 |
| Type of research | | |
| Qualitative | 9 | 59.9 |
| Quantitative | 4 | 26.6 |
| Mixed | 2 | 13.3 |
| Country | | |
| Sweden | 4 | 26.6 |
| England | 2 | 13.3 |
| Canada | 2 | 13.3 |
| Germany | 2 | 13.3 |
| Norway | 1 | 6.6 |
| Australia | 1 | 6.6 |
| China | 1 | 6.6 |
| Italy | 1 | 6.6 |
| United States of America | 1 | 6.6 |
| Total | 15 | 100 |

By analyzing the selected articles that met the inclusion/exclusion criteria, it was found that the number of publications, according to the year, presented the following order: 2015 included four articles (26.6%); 2014, 2016 and 2017 each included three publications (19.9%) 2013 included two other articles (13.3%).

The journals with the highest number of publications were, respectively: American Journal of Emergency Medicine; Journal of Health Services Research and Policy;

Scandinavian Journal of Trauma, each with two published articles. The other journals had one published article, specifically: Health Services Research; Canadian Journal of Emergency Medicine; Simulation: Transactions of the Society for Modeling and Simulation International; Medical Informatics and Decision Making; BMC Medical Education; American Journal of Infection Control; American College of Emergency Physicians; Emergency Nurse and BMC Medical Research Methodology.

When it comes to analyzing the publication origin, in other words, which country produced the publication, it was found that Sweden had four (26.6%) published articles, followed by England, Canada, and Germany with two (13.3%) each; and only one article (6.6%) from Norway, Australia, China, Italy and the United States of America.

After performing the articles' qualitative analysis, the following two categories of evidence have arisen: the influence of training as a guarantee for recording and continuity of care with patient safety; ensuring patient safety based on the prehospital care team's expertise.

DISCUSSION

The patient in transportation, in other words, the patient's displacement from the place where the need for help was identified to his arrival at the hospital; where he is exposed to numerous complications such as the worsening of his clinical condition.

A large study in Canada evaluated 5,144 intensive care transports in land ambulances and, of these, 2,065 (40.1%) required mechanical ventilation; 1,886 (36.7%) were cardiologic emergencies and 382 (7.4%) were victims of trauma,¹⁴ in other words, it is important that the prehospital care team has comprehension about handling the mechanical ventilator, as well as in regard to the current cardiology and trauma protocols.

The prehospital care team' decision-making process directly impacts on the patient safety. It is because sometimes, when taking care of critical patients, they must decide what to do with what they have, and it might not be enough, in addition the context in which the service is provided, which may be unsafe.¹⁵ Such decisions can also be influenced by the aspects and characteristics of the health system and the hierarchy that needs to be followed, in other words, as much as the team knows about that particular hospital, which does not have the appropriate support for providing such care, transportation needs to still proceed due to bureaucratic issues.¹⁶

The factors of demand for care are findings that increase the risks towards patient safety in prehospital care, namely: performance regime and priorities, specific and appropriate treatment options, risk of worsening the patient during transportation, staff training and training, failures in communication between the crew and deficient ambulance resources, such as human resources, condition of vehicles and their equipment.¹⁷

The decision not to transport, in other words, to provide care at the scene and release the patient, can be considered

as risky behavior by the care team. Such a decision, where non-transportation can be an option in care services, needs to be directly related to a cohesive, coherent, well-trained and up-to-date team, as there is a development of their skills, potential competence and the self-confidence of the health team to deal with complex decisions and ensure safe care.¹⁸

There is also the tension between the service demand and the availability of human and material resources that cause stress for the team, such as the lack of an ambulance specific to a certain type of victim, the morbidly obese people. And in some cases, this difficulty is related to basic items for care provision, such as the thermometer, where it is not possible to even check the patient's exact temperature.¹⁷

It was found that the lack of compliance with prehospital care guidelines in countries such as Sweden is high, thus constituting a risk for patient safety.¹⁹ Accordingly, it is important to invest in a clinical and critical reasoning of the team and discuss the best decision to make in prehospital care, considering its different contexts, so that there are no consequences and potential harm to the patient.

It is worth mentioning that it is not only the application of protocols that guarantee the best decision-making process and the safest care for the patient, but rather accept and recognize that nursing care is not only the intervention for an organism reaction, as in the biology conception, but also identify the emotional and psychological that can influence the responses given to the team.

In this respect, the main focus of emergency nursing care goes beyond technical issues, since only the technique does not guarantee the recovery of the body under imbalance, where the view of the man as a whole should prevail. It is shown in the holistic paradigm, where no dissociation between technical information and knowledge focused on human emotions can exist, which at least can guarantee contemplative care to the bio-psycho-spiritual aspects of the human being.¹⁹

Communication between the prehospital emergency medical service and the in-hospital emergency was also seen as an important point of patient safety in PHC. It should contain detailed reports using a "common language" to avoid errors and maintain the effectiveness of patient care based on treatment priority.²⁰

Training with standardized programs such as PreHospital Trauma Life Support (PHTLS) is increasingly integrated into the preparation and adequate education of the prehospital emergency service team.²¹ Training based on this protocol instructs the team to provide primary care for the trauma victim ensuring that other therapeutic measures are assessed later; maintaining security for staff and patients, and team communication with clear instructions and early identification of the receiving hospital, among others.²⁰

The quality of recording the care services, addressing the data and clinical history of the patient, is considered very relevant for maintaining patient safety. It should be emphasized that writing is a form of communication and must be standardized in health services to ensure that information related to the patient is properly recorded, thus, allowing consultations by the team that assists such patient.²²

To verify the impact of parametric training on prehospital trauma care, it was demonstrated that training with PHTLS improves the quality of documentation in this type of healthcare service.²² Such study found that certified students used their training experience in real life, such as the care service documentation, thus suggesting that the PHTLS learning methods are effective vis-à-vis the recording of care services.

Using PHTLS as standard training, it might be possible to achieve significant changes in the patient's record with regard to allergy, medication and medical history, where the score, related to these three items, indicated a significant increase of 37.7% after the courses of the PHTLS and; individual documentation items also increased 27.8% for patient history, 38.1% for medication and 47.2% for notable allergies.²⁴ In this respect, conducting a training based on PHTLS can influence the team to better recording what was done and the patient's clinical condition.

The loss of relevant medical information, such as during transfers, is a well-known issue that concerns not only documentation, but also verbal transfers.²³ Such events can affect the recording of accurate data concerning the physical examination, medical history and kinematics of the accident.

An error analysis based on video and documentation by physicians, after the simulation, showed that 20% of the information was missing and that 22% of the documented information was incorrect.²³ This fact can lead to the care provision discontinuity, since there is a significant loss of information on the patient's health condition, thereby increasing the risks to appropriate care.

Training or tutorials on documentation improve the quality of documentation from 12.5% to 51%. Nonetheless, frequently the amount of information in a given emergency situation can cause message overload, because the information is not properly prioritized and categorized.²⁴ As a result, there is either a loss of information or it is considered unimportant for the patient's health outcome.

A study appraised data from 740 ambulance occurrences, which followed the step-by-step procedure from a Standard Operating Procedure (SOP) to improve both quality and safety of prehospital emergency care in terms of health service recording. Such research has identified that the team did record very relevant information, such as pre-existing diseases (74.3%), medication (68.0%) allergies (27.7%), and diagnostic measures such as oxygen saturation (98.1%) and auscultation (19.9%).²⁵

Correctly recorded cardiorespiratory arrest represents the "keystone" in prehospital emergency care, as it is of great importance to share information for professionals who will establish care after hospitalization, in other words, in treatment definitive to the patient.

Current findings indicate the need for procedures, training, and better tools for documentation of the emergency medical service.²⁵ Therefore, checklists can function as tools for improving documentation regarding the provided care, so there will be a robust documentation on patient care.

In this regard, considering what has been verified in the literature addressing nursing care in emergency situations,

in which there is a need for prehospital care with transportation, there are few studies in this area, especially those undertaken by registered nurses, which has hindered a more theoretical approach on this topic.¹⁹

CONCLUSIONS

Where there is a need for health care, patient safety must be taken into consideration. So, in the prehospital setting, the health professional needs to use all means to maintain and secure the patient safety. Effective written communication can be a key element in maintaining patient safety, as it is possible to use recording instruments, such as checklists, to generate indicators that address failures and successes in care services with a view to improving safe care.

The professional training is fundamental, as they can be facilitators for making clinical decisions consistent with the patients' real needs, in other words, to identify what equipment and procedures the patient needs to maintain the maintenance of his life until the final destination. Furthermore, it can also help the team to identify which is the best destination hospital according to the patient's clinical conditions and within the possibilities offered by the municipality, so that he has the appropriate care for his health condition.

Accordingly, such training needs to be constant, making use of current protocols, in order to guarantee higher-quality care and minimize the incompleteness concerning the records and the loss of important information about patients and the provided care.

Hence, it is suggested the implementation of new researches addressing the frequency and type of incidents, safety culture, error reports, clinical reasoning, continuing education, training effectiveness, protocol, checklist, written communication, and information sharing in the prehospital setting.

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Corresponding author

Eric Rosa Pereira

Address: Rua Honório de Almeida, 77, Irajá

Rio de Janeiro/RJ Brazil

Zip code: 21235-490

Email address: ericosap@yahoo.com.br

Telephone number: +55 (21) 99283-2661

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