

ORIGINAL ARTICLE

MOBILE PRE-HOSPITAL CARE IN PORTUGAL AND BRAZIL: AN INTEGRATIVE REVIEW*

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ABSTRACT

Objective: To identify the profile and themes of studies found in the literature about the context of mobile pre-hospital care in Portugal and Brazil.

Method: An integrative review of five online databases was conducted in February and March 2017. Full articles in English, Spanish, and Portuguese published between 1981 and 2017 were selected for this review.

Results: Of the 54 studies included, nurses were present in 81.50%; 37% were related to the characteristics of care, 22% to professionals, 20% to occupational risks, 17% to management, and 4% to health education.

Conclusion: The number of articles with nurses as the main authors reached a peak in 2011. Their topics were mostly related to the analysis of care provided by the services, and the knowledge and performance of professionals working in the area of mobile pre-hospital care.

DESCRIPTORS: Emergency Medical Services; Pre-Hospital Services; Ambulances; Review; Nursing.

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PRÉ-HOSPITALAR MÓVEL EM PORTUGAL E BRASIL: REVISÃO INTEGRATIVA

RESUMO

Objetivo: identificar o perfil das publicações e os temas abordados na literatura no contexto pré-hospitalar móvel em Portugal e no Brasil.

Método: revisão integrativa realizada em cinco bases de dados online entre os meses de fevereiro e março de 2017. Foram selecionados artigos completos nos idiomas inglês, espanhol e português entre os anos de 1981 e 2017.

Resultados: dos 54 estudos incluídos, os enfermeiros estiveram presentes em 81,50% deles. Verificou-se que 37% estavam relacionados às características dos atendimentos, 22% aos profissionais, 20% aos riscos ocupacionais, 17% à gestão e 4% à educação em saúde.

Conclusão: as publicações tiveram um pico no ano de 2011 sendo os profissionais enfermeiros os principais autores. Como temática, foram abordados, majoritariamente, a análise dos atendimentos dos serviços e o perfil, conhecimento e atuação dos profissionais atuantes no pré-hospitalar móvel.

DESCRITORES: *Serviços Médicos de Emergência; Serviços Pré-Hospitalares; Ambulâncias; Revisão; Enfermagem.*

ATENCIÓN MÓVIL PREHOSPITALARIA EN PORTUGAL Y BRASIL: REVISIÓN INTEGRATIVA

RESUMEN

Objetivo: Identificar el perfil de las publicaciones y los temas abordados en la literatura sobre atención prehospitalaria móvil en Portugal y Brasil.

Método: Revisión integrativa con búsqueda en cinco bases de datos online, realizada entre febrero y marzo de 2017. Fueron seleccionados artículos completos en inglés, español y portugués desde 1981 hasta 2017.

Resultados: Los enfermeros estuvieron presentes en el 81,50% de los 54 estudios incluidos. Se verificó que 37% hacían referencia a tipos de atención, 22% a profesionales, 20% a riesgos laborales, 17% a gestión y 4% a educación en salud.

Conclusión: Las publicaciones tuvieron un pico en 2011, con los profesionales de enfermería como principales autores. A nivel temático, fueron abordados, mayoritariamente, el análisis de la atención en cada servicio y el perfil, conocimientos y desempeño de los profesionales actuantes en la atención prehospitalaria móvil.

DESCRIPTORES: *Servicios Médicos de Urgencia; Servicios Prehospitalarios; Ambulancias; Revisión; Enfermería.*

INTRODUCTION

The history of mobile pre-hospital care is linked with the military and wars, when many soldiers' lives were lost, especially due to the lack of immediate care. Measures were required to improve the care of these people on the battlefield⁽¹⁾.

Since then, mobile pre-hospital care has developed significantly in order to meet the needs of the population with acute aggravation outside of the hospital environment. These developments include the qualification of professionals and technological advances to restore vital functions, among others⁽¹⁾.

With an increased number of traffic accidents and sudden illnesses resulting mainly from social conditions and population concentration, each country has defined its own care characteristics and models to meet such singularities⁽²⁾.

Currently, specialized teams with different skills and qualifications and equipped with technological devices may reach places minutes after an emergency situation. Areas of intervention include the life process, minor trauma or incidents with multiple victims, people with mental disorders, and oncological patients⁽³⁻⁴⁾. These teams are assisted by an urgent care center and have different names, depending on the context where they operate, all of them with the purpose of assisting with patient screening and treatment⁽⁴⁻⁵⁾.

The team involved in care provision must be structured, trained, and qualified, technically and scientifically, so that excellent care is provided, respecting the ethical concepts of each professional category.

In Brazil, mobile pre-hospital care is provided by the Mobile Emergency Care Service (SAMU 192), the fire department, rescue teams of highway concessionaires, public security agencies, and public and private sanitary transportation agencies⁽⁴⁾.

In Portugal, the Integrated Medical Emergency System (SIEM) was created in 1981, which includes the mobile services of the Public Security Police (PSP), the National Republican Guard (GNR), the National Institute of Medical Emergency (INEM), the fire department, and the Portuguese Red Cross⁽⁵⁾.

Therefore, mobile pre-hospital services have many variants. Therefore, this study was conducted to provide a better understanding of the universe of publications about this topic in Portugal and Brazil. The study question is: What topics are addressed in the scientific literature about the mobile pre-hospital context in Portugal and Brazil?

Considering the constant changes in the health profile of the population, especially in relation to urgent and emergency care, the production of scientific knowledge is critical to understand the profile of these services and care besides the changes over the years. Studies like this one allow a review of a large number of publications on the theme of mobile pre-hospital care in search of the best available evidence and the possibility for further studies in this field.

METHOD

An integrative review was developed to obtain a comprehensive understanding of the topic and identify possible knowledge gaps that must be explored⁽⁶⁻⁸⁾.

The following steps were performed in this review: the definition of objectives and inclusion and exclusion criteria, the definition of information to be extracted from selected articles, and the analysis and discussion of results⁽⁹⁾.

The study question, based on the strategy of PICOT (population, intervention,

control, outcome, and time)⁽¹⁰⁾ was: What topics related to the mobile pre-hospital context in Portugal and Brazil have been addressed in studies since 1981? The definition of a milestone was based on the implementation of SIEM in Portugal.

To answer this question, two independent researchers analyzed the following online databases: Literatura Latino-Americana e do Caribe em Ciências da Saúde (LILACS), the Web of Science, Ebsco (CINAHL, Medline, SciELO, Medical Latina), Repositório Científico de Access Aberto de Portugal (RCAAP), and Google Scholar.

The descriptors used in the search, using Health Sciences Descriptors (DeCS - Descritores em Ciências da Saúde) and Medical Subject Headings (MeSH), were as follows: *serviços médicos de emergência, serviços de atendimento de emergência, serviços de saúde de emergência, atendimento pré-hospitalar, ambulâncias, assistência pré-hospitalar, and serviços pré-hospitalares* (in Portuguese); and emergency medical services, emergency medicine, emergency care, ambulances, paramedic, emergency health services, pre-hospital care, and mobile emergency units (in English). Associations were made with the Boolean operator OR.

The inclusion criteria were as follows: full-text original articles available in these databases in English, Spanish, or Portuguese; and A1 and A2 classification by the Commission for the Improvement of Higher Education Personnel (CAPES 2016). Exclusion criteria were as follows: studies on interhospital transport and fixed pre-hospital services, and other bibliographical, integrative, or systematized reviews; editorials; newspaper articles; end-of-course assignments; dissertations; and theses.

First, the titles of selected articles were read, followed by the abstracts. The articles not related to pre-hospital service in Portugal or Brazil were excluded, and after that, the full texts of the articles were read.

The studies meeting the inclusion criteria were inserted in an instrument developed by the authors in Excel 2010® that included the following variables: the name of the journal, the name and professional category of the authors, the Qualis of the journal according to the CAPES 2016 classification, the year of publication, the country, the study design, and the study topic.

Data collection and analysis were performed in February and March 2017. A reverse search was also performed using the references of the selected articles. The results were compared by the two researchers; disagreements were resolved by consensus.

According to inclusion criteria, 54 studies were selected for analysis. Figure 1 illustrates the selection process in detail.

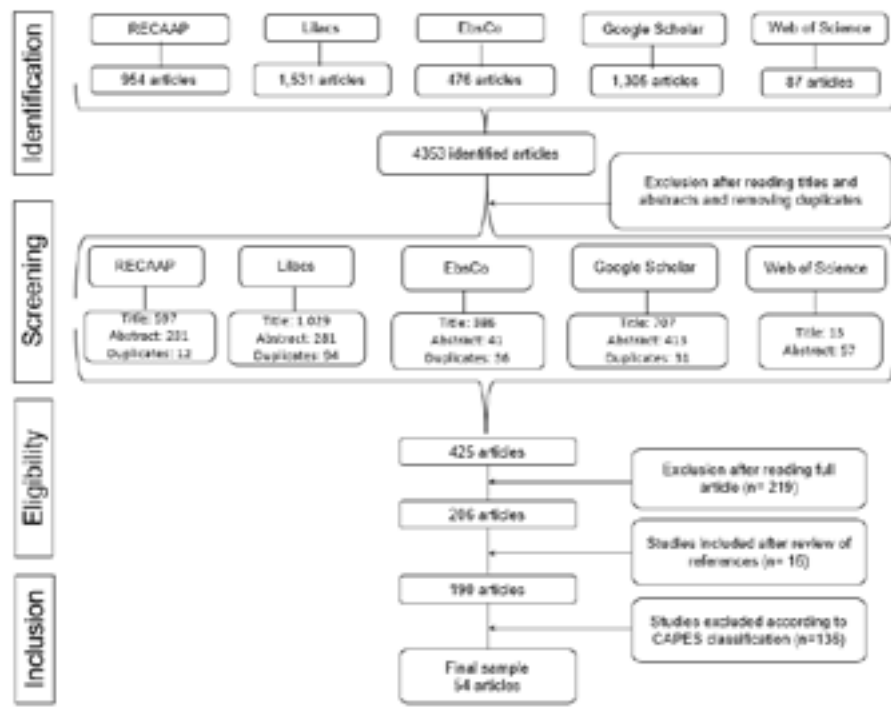


Figure 1 - Flowchart of the search strategy, 1981 to 2017. Lisbon, Portugal, 2017

RESULTS

In total, 54 studies published between 1991 and 2016 were obtained, 52 (96.30%) of which were related to Brazilian services and two (3.70%) to Portuguese services.

An increase was observed in the number of studies between 2008 and 2015, with a peak in 2011. Regarding study design, 30 (55%) adopted a quantitative approach and 24 (45%) had a qualitative design.

Nursing professionals were present in 44 (81.50%) of the articles analyzed, four (7.40%) were developed by medical professionals only, and the remaining studies by psychologists, sociologists, and engineers. Table 1 shows the selected categories after reading and data analysis, and the main topics addressed.

Table 1 - Categorization of topics of selected articles developed from 1991 to 2016. Lisbon, Portugal, 2017

Categories	Topics	%
I. Care characteristics	Clinical topics, trauma, air rescue, gynecology and obstetrics	37
II. Professionals of PHC	Profile, knowledge, and performance of professionals in mobile PHC	22
III. Occupational risks in PHC	Biological and cardiovascular risks	20
IV. Management of PHC	Internal and external aspects of mobile PHC	17
V. Health education	Internal and external environment	4
Total (n=54)		100

Key: PHC = pre-hospital care.

DISCUSSION

Due to an increasing number of traffic accidents and cases of urban violence, in addition to a global demographic and epidemiological transition, an increase in mobile pre-hospital services has been reported to meet population demand, especially in Brazil^(2,4).

SAMU 192 was created in Brazil in 2003, and after the official implementation, the services were structured to improve and qualify the emergency services. These data suggest an increasing number of publications starting in 2008, with a peak in 2011⁽⁴⁾.

The topics of the studies were analyzed, leading to five categories: the characteristics of mobile pre-hospital care; professionals of mobile pre-hospital services; the occupational risks of mobile pre-hospital services; management; and health education^(6,7).

Category I: The characteristics of mobile pre-hospital care

Of all studies, 37% refer to this category, 57.14% of which were published by professional nurses.

Care provided to victims of traffic accidents was the main topic of investigation^(2,11-22); the other studies were related to air rescue services⁽²³⁻²⁶⁾, profiles of clinical occurrences⁽²⁷⁾, and the survival of patients with cardiorespiratory arrest attended to in the pre-hospital environment⁽²⁸⁾; one study addressed the care provided to pregnant women⁽²⁹⁾.

These topics are related to the purpose of the pre-hospital mobile service in Brazil, which is to reduce morbidity and mortality due to external causes, with an emphasis on early care. The articles found in this review address the care of these victims and interventions performed at accident scenes^(12,15,18,20).

One study reported that, despite an increase in traffic accidents, patient lethality decreased, and the technical support team was responsible for most of the care provided^(11,13).

Thus, investments are required in the training and qualification of professionals who are responsible for providing care to specific populations, such as older people⁽¹⁶⁾ and men of an economically active age^(14,19,22) affected by traumatic injuries.

Georeferencing studies in this setting are important for safety and accident-prevention interventions. Fatalities were associated with severe injuries in the abdomen, thorax, and lower limbs⁽²⁾.

Regarding the use of motorcycles and air transport as emergency vehicles, they were considered effective, especially during rush hours. Motorcycles can respond faster than ambulances in terms of getting care to victims⁽¹⁷⁾, and air transport was used by patients who needed a fast transfer to a hospital⁽²⁵⁾.

Regarding the clinical conditions treated by the mobile pre-hospital team, the most frequent were neurological disorders, followed by cardiologic and respiratory disorders⁽²⁷⁾, which are particularly related to comorbidities and risk factors affecting the population worldwide. Cardiopulmonary resuscitation in this context was presented as a determinant of survival when performed early⁽²⁸⁾.

Also in this context, one study addressed obstetrical care: the authors identified a high demand of this population sent to a hospital service unnecessarily. Therefore, risk classification protocols should be implemented for the proper care and flow of pregnant women⁽²⁹⁾.

Category II: Professionals of mobile pre-hospital services

Twenty-two percent of the studies were related to the profile, knowledge and performance of professionals in mobile pre-hospital services. All articles in this category were produced in Brazil.

Studies on the performance and qualification of nursing professionals in this context show that they need to develop specific skills in order to provide quality care to the population⁽³⁰⁻³²⁾, and as administrators in the process of implementation of mobile pre-hospital services^(30-31,33).

The first article selected for this review was related to this topic. The author highlighted pre-hospital emergency services as a new challenge for nursing professionals⁽³⁴⁾. Ten years after this publication, this care model still presents a challenging scenario. The author reports dispute over institutional power in pre-hospital care and that regulations should be implemented in partnership with different actors involved in health care⁽³⁵⁾.

The professionals' knowledge about how to act in cases of facial trauma with tooth loss was an important factor that may compromise the subsequent tooth replantation process of these patients⁽³⁶⁾.

Representation of care in this scenario⁽³⁷⁾, job satisfaction⁽³⁸⁾, and feelings about the possibility of saving lives were also topics analyzed in the studies, which had a prevalence of words like urgency, emergency, responsibility, knowledge, agility, ability, death, and dedication^(31,37).

Environmental factors such as rain and cold, and other organizational factors, such as work schedules and conflicts during the service of care and with other institutions that provide mobile pre-hospital services, were considered negative factors⁽³⁸⁻⁴¹⁾.

Learning about the characteristics and the profile of the professionals that work in this environment allows the development of strategies for the maintenance and promotion of the mental and physical health of these professionals.

Category III: The occupational risks of mobile pre-hospital services

Studies related to the occupational risks to which the professionals are exposed accounted for 20% of all articles and were all conducted in Brazil.

The first study in this category was published in 2006 and addressed the identification of occupational risks to which the professionals were exposed, particularly biological risks, moral aggressions, car accidents, and physical aggression from patients and the community⁽⁴²⁾.

Later studies were mainly about exposure to biological risks and actions after the accident. These studies showed an incidence of 19.8% to 41.2% of accidents involving biological materials; more than 80% of the cases remained underreported, and 50% of the professionals who were affected had no serological follow-up⁽⁴³⁻⁴⁵⁾.

In the health service, reporting an accident is still directly linked to suffering punitive measures, so the importance and consequence of these measures should be clarified.

Most accidents involved blood, saliva, pleural fluid, and gastric secretions, with the lack of personal protective equipment, interventions during ambulance movement, and limited space being reported as the main reasons for these occurrences⁽⁴⁵⁾.

Along these lines, adherence to standard precautions was also analyzed, indicating poor knowledge by these professionals. Nurses and drivers were the professionals with good and poor knowledge about precautions, respectively. However, one of the analyses showed that none of the professional categories (physicians, nurses, nursing technicians/assistants, and drivers) reached the desirable adequacy percentage ($\geq 75\%$) for the use

of a face mask and safety goggles during care⁽⁴⁶⁾. Therefore, the authors concluded that the knowledge of professionals about the use of standard precautions was not enough to promote attitudes to reduce occupational accidents⁽⁴⁷⁻⁴⁸⁾.

Two studies addressed the cardiovascular risks of professionals, with an emphasis on arterial hypertension. In these studies, the prevalence of hypertension was 33%, and it was associated with improper lifestyles and habits, as well as work conditions. These data are important for the development of prevention strategies for this population⁽⁴⁹⁻⁵⁰⁾.

In addition, one study identified that the management of waste generated by this service did not meet the requirements of current regulations on segregation, storage, packaging, identification, and transportation, which may have implications for the safety of the team, patient, and community, as well as possible environmental damage⁽⁵¹⁾.

Category IV: The management of pre-hospital care

This category includes articles about the quality of the management of care, public policies, and the implementation of this service in Brazil and Portugal. The management and strategic positioning of ambulances were also included in this discussion; they accounted for 17% of the findings.

The role of a nurse as a nursing manager was characterized as an advisor, a professional who guides the team and provides clarifications about the activities performed. This professional may use quality assessment instruments for care to indicate weaknesses and restructure the work process. On the other hand, the distance of this managing professional from the other members of the team was also discussed, a situation that changes the meaning of teamwork⁽⁵²⁻⁵³⁾.

Regarding the implementation process of pre-hospital services, challenges were observed while reorganizing the current care model to provide education to the population, train professionals, and provide human and material resources to respond with quality care and resolution to service complexity⁽⁵⁴⁾. The public policies that guided this implementation strengthened care continuity and the provision of service in an articulated network of communication and care⁽⁵⁴⁻⁵⁸⁾.

The hypercube queuing model, which addresses strategies for the distribution of ambulances according to availability and the priority of emergency calls, proved to be effective even on roads with heavy traffic. Mobile pre-hospital emergency services were also studied by researchers from areas other than health care⁽⁵⁹⁻⁶⁰⁾.

Category V: Health education

Two articles (4%) addressed health education in the pre-hospital context in Brazil.

The training offered to nursing professionals to improve the entry of records forms, the information recorded on paper, and the way it is conveyed by telephone to the medical staff of the urgent care center, and the signs of patient severity was better observed by these professionals, leading to proper actions⁽⁶¹⁾.

Topics such as fainting, seizure, cardiorespiratory arrest, and airway obstruction by a foreign body, among others, were suggested by SAMU 192 professionals, for the development of educational booklets⁽⁶²⁾.

One limitation of this study refers is that it was conducted with CAPES A1 and A2 databases only; other classifications may address topics related to mobile pre-hospital services not discussed here.

CONCLUSION

The number of articles about mobile pre-hospital services increased in 2008, with a peak in 2011. The main study design was a quantitative approach, and nurses were the most frequent authors of the publications.

This study concluded that the main themes studied in this context were the profile of care, especially those related to trauma events; the performance of nursing professionals in an emergency scenario; occupational risks, particularly biological risks; service assessment by administrators; and health education.

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