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Quality of Care Indicators of a Pre-Hospital Mobile Emergency

REVIEW

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Abstract

Objective: To identify the quality of care indicators in pre-hospital mobile emergency services.

Methods and Results: This study is a systematic review conducted in December/2015 in eight databases using the keywords: quality indicators in health care; pre-hospital care; and quality, access, and evaluation of the health care. Seventeen studies were selected and the following indicators were identified: conservation of the ambulances; physical structure; comfort in the ambulance; material resources; safety for the patient/professional; continuing education; response time; professional remuneration; professional/patient satisfaction; access; host; humanization; performed service; safety demonstrated by the team; privacy to the patient; guidelines on care; relationship between the professional/patient; opportunity of the patient to complaint.

Conclusion: The establishment the of the quality of care indicators the in mobile emergency services will allow the construction of instruments to evaluate this type of service to search for excellence results in mobile emergency services.

Keywords
Quality Indicators; Health Care; Prehospital Care; Health Evaluation.

Introduction

The quality of care (QC) to health is a current and growing demand in Brazil and worldwide since patients expect excellence in care offered by health services. Complaints from patients and family members can be seen in the media, denouncing negative aspects of care provided to the population [1-2].

It is necessary to identify the QC assessment indicators to get better results and provide better care in health services [3-4].

In this context, the emergency services have greater problems because they have been subject to criticism in the care provided. Some studies claim that this is due to the high demand for services, the structural deficiencies of the health system as a whole; the fragmentation of care; the influence of the biomedical model in the emergency service and the lack of work philosophy and focused education for a effectively care qualification, among other factors [5-6].

Together with this context, there is the mobile prehospital emergency, trying to get early to the victim, in the occurrence of an injury to his health, leading him to suffer, sequels or even death. The pre-hospital mobile care should provide care and/or appropriate transportation to a health service. Being a mobile service with a fast service, with specific characteristics and little studied, it was decided to research this subject [7-9].

It is important to have a critical review of the literature on the subject to produce a positive impact on results of health care and to improve the quality of care in emergency services [9].

Defining QC indicators in pre-hospital mobile emergency services based on scientific evidence will allow the creation of instruments to evaluate this type of service.

Thus, this study aimed to identify the quality of care indicators in pre-hospital mobile emergency services.

Methods

This study is a systematic review of the literature with the following steps: preparation of the research question, the establishment of the review objectives and inclusion criteria of the publications; definition of information to be extracted; selection of publications in the literature; analysis of the results; discussion of findings and presentation of the review [10].

The following question elaborated to guide this research: which are the quality of care indicators used in studies that analyzed pre-hospital mobile emergency services?

Literature search was conducted to consolidate this work, in December 2015, in the following databases: LILACS (Latin American and the Information Caribbean Health Sciences) and MEDLINE (Medical Literature Analysis and Retrieval System online) through the Virtual Health Library (BVS); Web of Science (Thomson Scientific / ISI Web Services); CINAHL (Cumulative Index to Nursing and Allied Health); PubMed; COCHRANE LIBRARY; EMBASE. Searches were also carried out in the Electronic Library SciELO (Scientific Electronic Library Online).

Studies that met the following inclusion criteria were included: articles that used indicators of evaluation of care in pre-hospital emergency services and articles related to the evaluation of the assistance available in Portuguese, English and/or Spanish and free in full text on the database aforementioned; published in the January 2008 to December 2015. This period is because, in 2008, a pioneering study in Brazil was published on the implementation of the prehospital mobile care system [11].

Publications that were available only in abstract in databases, without the text or text in full were excluded.

A structured form was used, including the database related questions, authors, year of publication, type of publication, study design, study focus, nationality, professional guidance, proposed QC indicators and level of evidence of the studies.

For the survey of publications in the VHL, the controlled Keywords in Health Sciences (DeCS) and Medical Subject Headings (MeSH) were elected: Quality Indicators, Health Care Prehospital Care. The intersection of these keywords in the database was the Boolean operator AND. In the other bases of CAPES Journals, the following keywords were used: Quality Indicators, Health Care; Prehospital Care and Health Care Quality, Access, and Evaluation.

After the procedure of electronic search in databases and libraries mentioned, the publications were pre-selected based on reading the title and abstract. After reading in full of the previously selected publications, they were identified, comprising the final sample of this integrative review **(Figure 1)**.

The critical evaluation process of the obtained studies consisted of reading in full, evaluation and completion of the data collection instruments. All selected studies were analyzed by two reviewers, and there was a consensus among them. Then, the data were entered in Microsoft Excel 2010 spreadsheet and analyzed using descriptive statistics and presented in tables.

Results

With the aim of a better understanding of the study, the results were presented in three stages: characterization of the selected studies in the review as the authors, year, database, type of publication, study design and country (**Table 1**); and presentation of

Figure 1: Flowchart of selection and acquisition of studies. Natal, Rio Grande do Norte, Brazil. Source: The author.

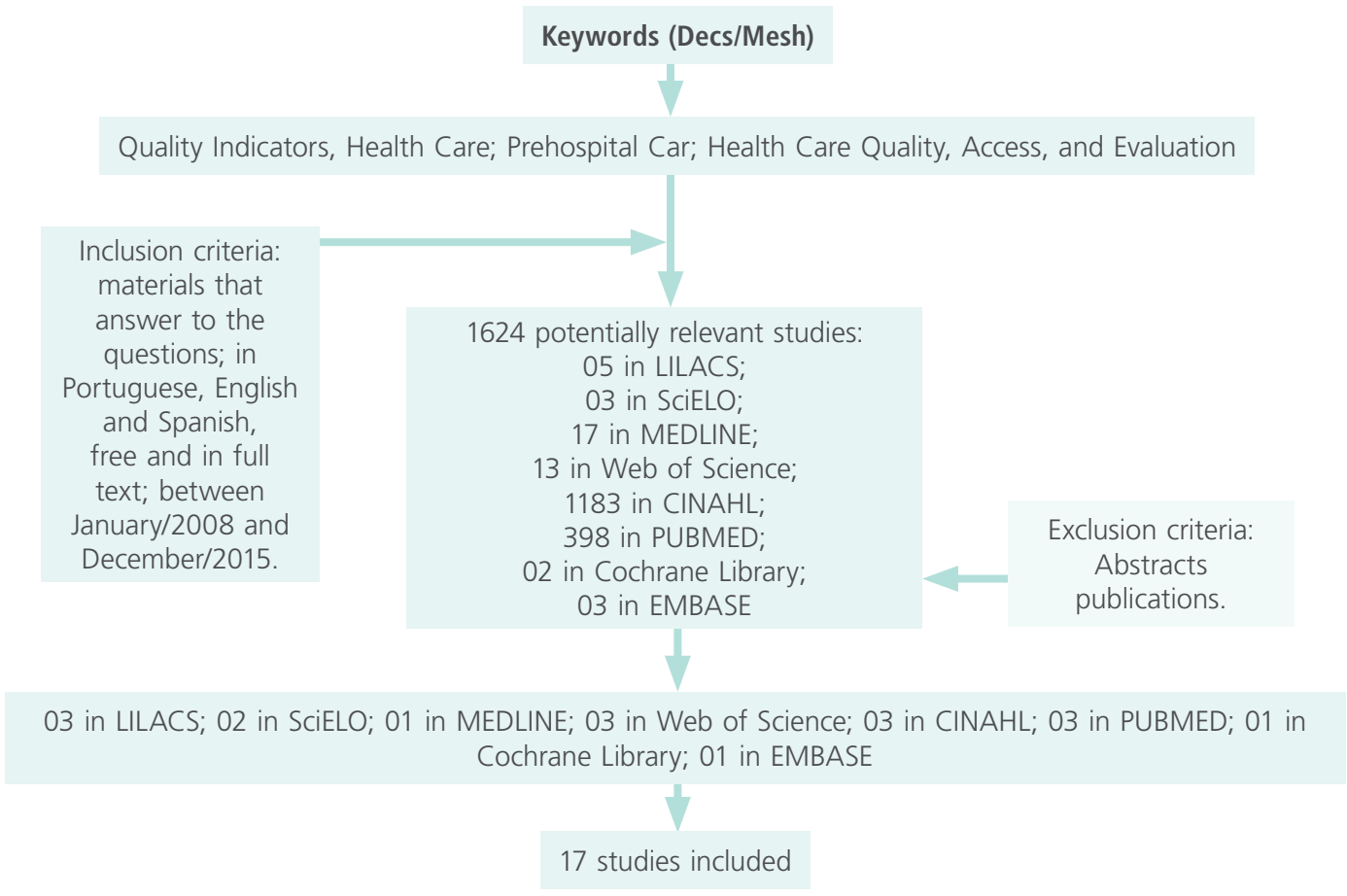

Table 1. Characteristics of the studies included in this review, according to the authors, year, database, publication type, type of study and country. Natal, Rio Grande do Norte, Brazil. Source: The author.

Author	Year	Database	Type Of Publication	Study Design	Country
El-Jardali, Jamal, Dimassi, Ammar, Tchaghcha-ghian [12]	2008	EMBASE	Article	Cross-sectional	U.S.
Munk, White, Perry, Platt, Hardan, Stoy [13]	2009	Web of Science		Study case	U.S.
Dantas, Costa, Nóbrega, Dantas, Costa, Torres [14]	2014	SciELO		Cross-sectional	Brazil
O'Dwyer, Oliveira, Seta [15]	2009	SciELO		Descriptive	Brazil
Dantas, Torres, Salvetti, Dantas, Mendonça [16]	2015	PUBMED		Methodological	Brazil
Evans, Howes, Pickett, Dagnone [17]	2009	Cochrane Library		Systematic review	Canada
Luz, Junger, Cavalini [18]	2010	LILACS		Longitudinal, environmental	Brazil
Souza, Correia [19]	2010	LILACS		Evaluative	Brazil
Al-Shaqsi [20]	2010	PUBMED		Descriptive	New Zealand
Siriwardena, Shaw, Donohoe, Black, Stephenson [21]	2010	CINAHL		Descriptive	United Kingdom
Atack, Maher [22]	2010	CINAHL		Descriptive	Canada
Stelfox, Bobranska-Artiuch, Nathens, Straus [23]	2010	Web of Science		Systematic review	Canada
El Sayed [24]	2012	MEDLINE		Systematic review	U.S.
Snooks, Anthony, Chatters, Cheung, Dale, Donohoe et al. [25]	2012	PUBMED		Randomized clinical trial	United Kingdom
Leonard, Scharff, Koors, Lerner, Adelgais, Anders et al. [26]	2012	CINAHL		Descriptive	U.S.
Von Kaufmann, Kanz [27]	2012	Web of Science		Evaluative	Germany
Silva, Nogueira [28]	2012	LILACS		Evaluative	Brazil

studies regarding the QC indicators and references used **(Table 2)**.

There were 17 studies selected, 06 (35.3%) published in 2010; 01 (5.9%) in 2008; 03 (17.6%) in 2009; 05 (29.4%) in 2012; 01 (5.9%) in 2014 and 01 (5.9%) in 2015. As for databases, Web of Science, CINAHL, LILACS and PUBMED were the most published articles with the subject studied (03 in each database).

The descriptive method prevailed in 05 studies (29.4%); followed by 03 (17.6%) systematic reviews; 03 (17.6%) evaluative studies and 02 (11.7%) cross-sectional studies; 01 (5.9%) was longitudinal environmental; 01 (5.9%) was a study case; 01 (5.9%) was methodological study and 01 (5.9%) was randomized clinical trial.

Regarding the country of the research, 06 (35.3%) were from Brazil; 04 (23.5%) from the United States, 03 (17.6%) from Canada; 02 (11.7%) from the UK; 01 (5.9%) from Germany and 01 (5.9%) from New Zealand.

As for the QC indicators in the pre-hospital mobile emergency services, studies have found some common findings from the research, because it is a specialized assistance such as emergency care, despite the cultural differences between countries.

Among the indicators, some are structural in nature as the condition of the ambulances, the overall

Table 2. Indicators and Evidence levels of the studies dealing with the quality of care used in the studies analyzed. Natal, Rio Grande do Norte, Brazil. Source: The author.

Reference	Indicators of qc*	Level of Evidence
[18]	Access; material resources; response time.	VI
[19]	Physical structure; access; patient safety; host; patient privacy; satisfaction and relationship of the professional and patient.	VI
[24]	Physical structure; material resources; knowledge of professionals; response time; performance by protocol; job satisfaction; conservation of ambulances; safety of staff and patients.	V
[25]	Conservation of ambulances; comfort in the ambulance; performed service; safety demonstrated by the team; humanization.	II
[20]	Response time; conservation of ambulances; host; continuing education; access; the opportunity to the complaint; guidelines on care; patient satisfaction.	VI
[21]	Conservation of ambulances; response time; host; team security; remuneration; job satisfaction; patient privacy.	VI
[22]	Team security; host; patient privacy.	VI
[26]	Humanization; physical structure; material resources; patient security; performed service; response time; safety demonstrated by the team.	VI
[27]	Continuing education; response time; the structure of highways; multi-professional joint; condition ambulances.	VI
[23]	Physical structure; comfort in the ambulances; continuing education; professional joint.	V
[13]	Recursos materiais; remuneração; satisfação profissional. Material resources; remuneration; job satisfaction.	VII
[14]	Host; patient security; patient privacy; guidance during care.	IV
[15]	Continuing education; physical structure; material resources; access; job satisfaction.	VI
[16]	Physical structure; patient security; material resources; team security; remuneration; humanization; service performed.	IV
[12]	Material resources; remuneration; job satisfaction.	IV
[17]	Physical structure; response time; service performed; safety demonstrated by the team; humanization.	V
[28]	Response time	VI

*QC: Quality of Care.

physical structure of the service; comfort in the ambulance; availability of material resources; security mechanisms for the patient and the professional; continuing education; response time; remuneration of the professional; and professional and patient satisfaction.

Other indicators are more related to the care process, such as access to the service; host; humanization; service performed; safety demonstrated by professional staff; patient privacy; guidelines on care; the relationship between the professional and the patient; the patient opportunity to the complaint and multi-professional joint.

The studies considered the response time as the interval between the activation of the service and the arrival of the team at the scene of occurrence [28].

Regarding the level of evidence of the studies, most of them 09 (53%) were in the level VI, which corresponds to descriptive studies, 03 (17.6%) in the level IV, 03 (17.6%) in the level V, 01 (5.9%) at level VII and only 01 (5.9%) at level II evidence pyramid.

Discussion

In recent decades, several initiatives aimed at health evaluation have been developed progressively in Brazil. Since conducting academic research to the evaluation of health services and its implementation by the Ministry of Health, it is necessary evaluative research to support the development of sectoral policies and programs and the dissemination of its results [16, 30].

The evaluation of the quality of emergency services is an old concern, but currently, there is an important recovery of this issue, considering evaluation as a necessary step to set goals and search for quality in health care [30]. The assessment of QC is relevant mainly to the demands of international organizations and reform in the Brazilian government with the reform of the State [18].

In the United States, a study by the American Department of Medicine, University of Beirut Medical Center said that since 1966, with the increase in Emergency Medical Services, the search for indicators for assessment of quality care has been a common practice to monitor continuously the effectiveness of services provided and the costs of such assistance [24].

Regarding the type of study, the descriptive studies prevailed in this research, which can be explained by adaptation of this method for conducting research involving health evaluation, as seeking the description of phenomena in natural settings, deeply examining the practices, behaviors and attitudes of people or groups in real life [5].

Regarding the indicators surveyed in the study, the study [31] classifies them as structure, process, and outcome. The structure indicators are physical, human, material and financial resources needed for health care, including funding and availability of skilled professionals. The process indicators are activities involving health professionals and patients based on accepted standards, and the analysis may be under the technical and administrative point of view. The outcome indicators are analyzed only after the service provided.

As regards the structure indicators, studies [18, 20-22, 24, 26] say that the dependence of the health system for the equipment and technology to provide services has grown continuously in recent years. All health professionals, especially those working in the emergency area, depend on this equipment and a well-defined physical structure, either for assistance or education related to health.

In the same context, authors [16, 20] emphasize that technological advances have driven the steady increase in care complexity and demanding an increasingly high level of attention from health professionals, creating a growing demand for material resources and equipment. Thus, the need for health services to improve the management system for these resources to ensure continuous assistance are necessary for ensuring the quality and quantity of materials and displacement devices such as ambulances, so that professionals can carry out their activities safely, with the appropriate time response for each occurrence requested.

Another structure indicator often cited in studies [15, 20, 23, 27] is the continuing education of professionals in the pre-hospital mobile staff, since, in this scenario, it is imperative that professionals have the multi-purpose-oriented training to the reality. Thus, there is the importance of working from the definition of areas of expertise, enabling the integration of different knowledge and expertise and multidisciplinary interaction, contributing to the formation of a professional who adds skills for decision-making, communication, leadership, and management.

Moreover, in the emergency service of the work process, these characteristics are expressed in many different ways: the need to respond to the problems of any kind, whether clinical, traumatic, obstetric or psychiatric, not always coinciding with the professionalization areas of workers or specific training; the need to be prepared to meet patients of any age, to interact with professionals

who are not of health, but participating in the emergencies, to take care of completely adverse conditions, supplementary assistance, entering in service which are not relevant to their roles. There are several other situations that, in the prehospital care, run a reverse way: it is not the team waiting for the patient within a service; it is the nurse going to meet him, to assist him in the most varied situations [32].

Regarding the process indicators cited in the study, there are those that articulate with the professional interaction with the patient who needs help. In this sense, scholars [14,17] claim that the health work in emergency characterized by the encounter between people who bring suffering or health needs and others who have specific knowledge or tools that can solve the problem presented. At this meeting, feelings, emotions, and identifications are mobilized that may hinder or facilitate the application of professional knowledge in the perception of the needs or interpretation of the demands brought by the patient.

Thus, care that is the final product of health work is inseparable from the process that produced it, that is, it is the performance of the activity, being consumed by the patient at the same time it is produced.

Therefore, research [20] conducted by the Department of Social and Preventive Medicine of the University of Otago in New Zealand, bring some process indicators as host; access; opportunity for patients to the complaint and patient satisfaction, referring as well as light technology tools for the quality of care.

Regarding the use of light technologies, studies [16, 33] emphasize that health work, especially the emergency cannot be expressed only in equipment and technological knowledge structured as its most strategic actions configured in processes intervention and professional interaction with the patient, operating as relationship, meetings, subjectivities technologies, in addition to structured technological knowledge.

Analyzing the studies in levels of evidence of the studies found, it was observed that most studies were of evidence level VI, which corresponds to descriptive studies. These findings point to the need for new research that generate relevant evidence to contribute to the further development of science in the area of this study.

It is noteworthy that the level of evidence ranging from I to VII are: level I - meta-analysis or systematic reviews; Level II - randomized controlled trial; Level III - clinical trial without randomization; Level IV - cohort and case-control studies; Level V - systematic reviews of descriptive studies; level VI - descriptive studies; level VII - expert opinion [35].

Moreover, it is emphasized that the knowledge of the levels of evidence is important to make the working process in the safest team and provide the selection of the best practices to be incorporated in the care [35].

Conclusions

The quality of care indicators in pre-hospital emergency services in the national and international literature can be divided into two groups: structure and process. The indicators identified were conservation of ambulances, general physical structure of the service; comfort in the ambulance; availability of material resources; security mechanisms for the patient and the professional; continuing education; response time; remuneration of the professional; professional and the patient satisfaction; access to the service; host; humanization; service performed; safety demonstrated by professional staff; patient privacy; guidelines on care; relationship between the professional and the patient; patient opportunity to complaint and multi-professional joint.

One limitation of this study was the fact of including in this review only articles with full text available in databases, since potentially relevant studies may have left out. Despite this limitation, this review has identified the quality of care indicators for pre-

hospital mobile emergency services, which subsidizes the construction of tools to assess the quality of care in these services.

The establishment of quality of care indicators in mobile emergency services will allow the construction of instruments to evaluate this type of service to search for excellence results in mobile emergency services.

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