EVALUATION OF HOSPITAL PHARMACEUTICAL SERVICES: INTEGRATIVE REVIEW

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ABSTRACT

Background: Pharmaceutical services performed in the hospital context have specific structure and processes, which should be continuously evaluated because they influence the results obtained. **Objective**: To identify, describe and compare studies of evaluation of pharmaceutical services performed in the hospital context. **Methods**: Integrative review of articles found in databases SciELO, LILACS, MEDLINE and IBECS, indexed in the period from 2000 to 2016, using the following descriptors: *"Hospital Pharmacy Service"* and *"Evaluation"*. The references were analyzed according to year, language, country of publication and type of study and classified according to their focus on the components of the hospital pharmacy service logic model that dealt with the management, selection, programming, acquisition, storage and distribution of medicines, information, pharmacotherapeutic, pharmacotechnical and teaching and research follow-up. **Results**: Of the 25 publications, 16 (64%) were in the English language, of which 10 (40%) were in the United States; 17 (70%) studies were published from 2010 to 2016 and 13 (52%) were observational descriptive type. The most discussed component of pharmaceutical services was distribution logistics addressed in 15 publications (60%), followed by the management component addressed by 14 (56%) studies. **Conclusions**: The publications emphasized the discussion on drug logistics. Only a few presented discussions on the impact of these services on health care, such as patient safety. Such studies can support the decision-making process and the formulation of strategies aimed at increasing the management capacity and the quality of the service provided.

Keywords: Integrative Review; Hospital Pharmacy Service; Evaluation of Health Services.

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INTRODUCTION

In the context of health care organization, ensuring access to services is essential. Hospitals are an important alternative of a Health Care Establishment (EAS), which must be adapted to the epidemiological and geographical peculiarities of the region where it is located. It is essential that hospital care be linked to other health care points and support systems.[1]

Hospital services are the result of an interrelationship between technical and administrative.[1] Among the technical services, are the pharmaceutical services, which correspond to a set of activities that aim at the access and rational use of medicines (URM) and involve technical-managerial and assistance activities. For the effective realization of these services, it is essential physical area, adequate equipment and furniture and qualified and trained human resources[2] besides logistical planning from the perspective of efficiency and security.[3]

Pharmaceutical services are performed in the hospital environment by the hospital pharmacy, which requires the pharmacists and collaborators involved to perform care, management and advisory functions related to activities in the clinical, administrative and economic context,[4] ranging from selection and logistics activities to the programming, acquisition, storage and distribution of drugs to pharmacotechnical activities.[5]

As important as knowing what pharmaceutical services are performed in the hospital context, is to understand that they present structure and processes that influence the results obtained that must be continuously evaluated in order to aid the decision-making process.[6,7] This evaluation refers to the value judgment, contrasting structure, process and results with standardized criteria and norms.[8]

Quality evaluation is a recurring theme in the context of management, and it is essential that it is operationalized through systematized methodologies seeking continuous improvement of care.[9,10]

EAS use this system to improve the quality of care provided and patient safety.[11] According to this assessment, accreditation can result in certification and involves the verification of basic elements of health care structure and security and elements related to the management system based on strategic planning and the use of standardized protocols for care processes and management.[5,10]

In order to structure or restructure hospital pharmaceutical services, it is essential that they be evaluated so that, in view of the resulting situational diagnosis, interventions are proposed with the objective of increasing management capacity and the quality of the service provided.[12]

Given the importance of the thematic evaluation of pharmaceutical services and the need to know the methodological aspects involved in order to make it feasible in different hospital contexts, the objective of this integrative review was to identify, describe and compare studies evaluating the pharmaceutical services performed in the hospital context.

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METHODS

This is an integrative review carried out through a bibliographical survey related to the evaluation of hospital pharmaceutical services, according to a methodology defined by Tavares et al.[13]

In order to answer the guiding question: "What are the main qualitative and quantitative aspects addressed by the studies of evaluation of hospital pharmaceutical services in the national and international scopes?", A survey of articles in the literature was carried out from the databases of health sciences in general SciELO (Scientific Electronic Library Online), LILACS (Literatura Latino-Americana e do Caribe), MEDLINE (National Library of Medicine, USA) and IBECS (Indice Bibliográfico Español de Ciencias de la Salud, Spain).

The electronic search was performed through a combination of Descriptors in Health Sciences (DeCS): "Hospital Pharmacy Service" and "Evaluation" and was based on the adoption of the inclusion criterion related to the indexation of articles in databases published between 2000 and 2016 without limitation of language with central theme related to the evaluation of hospital pharmaceutical services. Exclusion criteria were: letters to the editor, articles of opinion, productions without the full text, publications related to specific interventions in the context of hospital pharmacy services, such as clinical pharmacy, for example, and studies involving services pharmacists at the outpatient primary care and community pharmacy.

A first analysis was carried out by reading the titles of the selected publications, followed by the reading and critical analysis of the abstracts respecting the exclusion criteria. Then, the articles were verified in their entirety to identify the central ideas.

The data were collected by means of a descriptive instrument tabulated in Excel spreadsheet covering the origin, title, authorship, periodic, methods, objectives, results and conclusion. The references were also analyzed according to year, language and country of publication and type of study and classified according to their focus on the components of the hospital pharmacy service logic model proposed in the Projeto de Diagnóstico da Farmácia Hospitalar no Brasil[8] and updated by Magarinos-Torres et al. [5], which dealt with management, selection, programming, acquisition, storage and distribution of medicines, information, pharmacotherapeutic, pharmaco-technical and teaching and research services.

RESULTS AND DISCUSSION

After searching the databases the final sample for analysis consisted of 724 articles of the total of 2532 available after advanced search with the descriptors. After the first analysis, the sample totaled 25 articles (figure 1).

Of the 25 publications, 16 (64%) were in the English language, 10 (40%) of the surveys carried out in the United States (Table 1); 17 (70%) studies were published from 2010 to 2016 and 13 (52%) were observational descriptive type. The most discussed component, considering all 25 publications, was distribution logistics, approached by 15 studies (60.0%), followed by the management component, addressed by 14 (56.0%) (table 1).

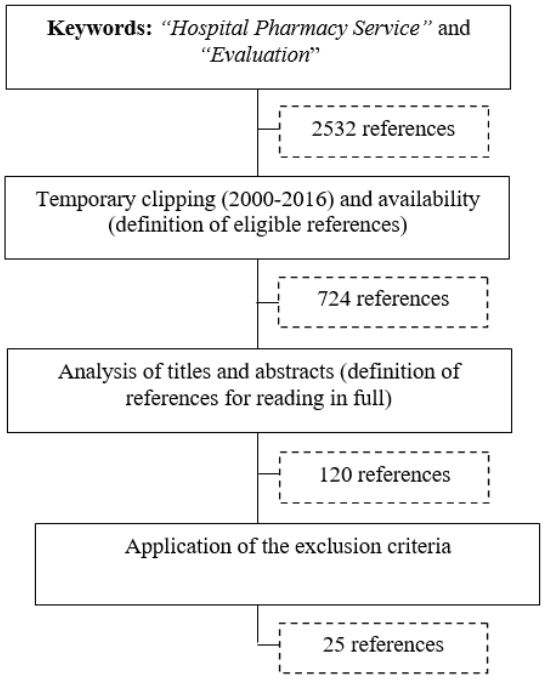

Figure 1: Schematic representation of sample collection.

Table 1: Qualitative and quantitative analysis of the references analyzed according to year, language, country of publication and type of study and objectives and components of the logical model addressed by the references analyzed.

Author – Year	Quote	Language/ Country	Type Of Study	Objectives	Component(S) Of The Logic Model(S) Addressed
Abdelaziz et al. – 2016	14	English/USA	Analytical	Evaluate the time needed to distribute emergency medications and identify associated factors in a US hospital.	Distribution.
Nicolau – 2015	15	Portuguese/ Brazil	Descriptive observational	To evaluate requests for non-standard drugs in a university hospital in São Paulo, Brazil.	Selection; acquisition.
Gebicki et al. – 2014	16	English/USA	Analytical	Evaluate the performance of four inventory policies in the pharmacy service of an American hospital.	Management; program.
Ferrandéz et al. – 2014	17	Spanish/Spain	Descriptive observational	To present a methodology for the preventive evaluation of risks associated with the incorporation of new medicines in the practice of care in a Spanish hospital.	Selection; acquisition; information.
Rabuñal-Álvarez et al. – 2014	3	Spanish/Spain	Descriptive observational	Establish indicators to evaluate the storage and distribution of drugs in a Spanish hospital.	Management; storage; distribution.
Nascimento et al. – 2013	18	Portuguese/ Brazil	Analytical	To evaluate the existence of associations between variables of hospital pharmacy services related to the general characterization of the hospital and the pharmacy service and stages of pharmaceutical care.	Management; selection; program; acquisition; storage; distribution; information; pharmacotherapeutic follow-up; pharmacotechnical; teaching and research.
Schumock et al. – 2013	19	English/USA	Analytical	Evaluate pharmaceutical services in small and rural hospitals in Illinois (USA) and compare the results with similar survey data conducted prior to the survey.	Distribution; pharmacotherapeutic follow-up.

*Abbreviations: *ASHP*: English, American Society of Pharmacists Health System; CFT: Pharmacy and Therapeutics Committee; USA: USA; SAD: Automated Distribution System.

Table 1: Qualitative and quantitative analysis of the references analyzed according to year, language, country of publication and type of study and objectives and components of the logical model addressed by the references analyzed (continued).

Author – Year	Quote	Language/ Country	Type Of Study	Objectives	Component(S) Of The Logic Model(S) Addressed
López et al. – 2013	20	Spanish/Spain	Analytical	To know the degree of implementation of safe practices for the design and use of SAD in Spanish hospitals.	Distribution.
Silva et al. – 2013	21	Portuguese/ Brazil	Descriptive observational	Evaluate hospital pharmacy services under the management of the State Department of Health of Rio de Janeiro, Brazil.	Management; selection; program; acquisition; storage; distribution; information; pharmacotherapeutic follow-up; pharmacotechnical; teaching and research.
Torreblanca et al. – 2012	22	Spanish/Spain	Descriptive observational	Suggest methodology for definition of the safety stock of medicines distributed in a Spanish university hospital.	Management; program.
Pedersen et al. – 2012	23	English/USA	Analytical	Assess trends in the drug delivery system in US hospitals.	Management; acquisition; distribution; pharmacotechnical.
Rutter et al. – 2012	24	English/USA	Analytical	To evaluate the acceptance and validity of a tool to evaluate the performance and performance of pharmacists in a hospital in Singapore.	Management; information; pharmacotherapeutic follow-up; teaching and research.
Holden et al. – 2012	25	English/USA	Analytical	Describe the perception and acceptance of pharmacists and employees to the bar code technology for drug distribution.	Distribution; teaching and research.
Barnum et al. – 2011	26	English/USA	Analytical	Develop a methodology for evaluating pharmaceutical services to know their suitability and when the results reflect random variations.	Management; distribution; pharmacotherapeutic follow-up.
Kostagiolas et al. – 2011	27	English/Greece	Analytical	To investigate the information search profile of pharmacists of public hospitals in order to encourage the development of hospital information services.	Teaching and research.
Temple et al. – 2010	28	English/USA	Descriptive observational	Describe the implementation of a SAD at a university hospital pharmacy in the USA.	Management; programming; distribution.
Puigventós et al. – 2010	29	English/Spain	Analytical	Define the structure and working procedures and performance of CFT in Spanish hospitals.	Drug selection.
Pollard et al. – 2009	30	English/USA	Descriptive observational	Record more valued skills and provide insight into the work experiences of pharmaceutical managers linked to ASHP.	Management.
Wright – 2009	31	English/ Afghanistan	Descriptive observational	Provide overview of pharmaceutical services performed at a military hospital in Afghanistan.	Management; selection.
Sweet et al. – 2008	32	English/USA	Descriptive observational	To describe the development of a computerized protocol for the management, distribution and management of drug stocks by the pharmacy of a university hospital in the USA.	Management; storage; distribution.
Saginur et al. – 2008	33	English/Canada	Analytical	Determine the use of technologies and/or services related to the drug delivery system in Canadian hospitals.	Distribution.
Messeder et al. – 2007	34	Portuguese/ Brazil	Descriptive observational	Develop an approach capable of hierarchizing Brazilian hospitals according to the performance of pharmacies in relation to structure and process indicators.	Management; selection; program; acquisition; storage; distribution; information; pharmacotherapeutic follow-up; pharmacotechnical; teaching and research.
Penaforte et al. – 2007	35	English/Brazil	Descriptive observational	To evaluate the services performed by pharmacists of a university hospital in São Paulo (Brazil).	Selection; programming; acquisition; storage; distribution; pharmacotherapeutic follow-up; pharmacotechnical; teaching and research.
Magarinos-Torres et al. – 2007	36	Portuguese/ Brazil	Descriptive observational	To describe the construction of criteria and outcome indicators for the Brazilian hospital pharmacy using the Delphi method.	Management; selection; program; acquisition; storage; distribution; information; pharmacotherapeutic follow-up; pharmacotechnical; teaching and research.
Balen et al. – 2004	37	English/Canada	Descriptive observational	Understand skills and needs regarding the use of Canadian teaching hospital pharmacists' computers.	Teaching and research.

*Abbreviations: *ASHP*: English, American Society of Pharmacists Health System; CFT: Pharmacy and Therapeutics Committee; USA: USA; SAD: Automated Distribution System.

Considering the presented results, we opted for this review by discussing them according to the research site and with the logical model component discussed.

Evaluation studies of hospital pharmaceutical services in Brazil

The scarcity of information about the situation of the hospital pharmacy in the country motivated the realization of the Projeto de Diagnóstico da Farmácia Hospitalar in Brazil which was based on the importance of the Rational Use of Medicines (URM) in the hospital context. This project brought about the need for efficiency and professional qualification of the services performed by the pharmacy and it was proposed a logical model involving structure and process indicators for the evaluation of hospital pharmaceutical services.[8]

Of the six Brazilian publications belonging to the sample, four[18,21,34,36] were linked to the abovementioned project.[8] This allows to infer that, in

addition to having few articles, there is little diversity of research related to the evaluation of hospital pharmaceutical services in Brazil. These four articles were the only ones to deal with all aspects of the logical model used as a methodological framework.

Each of the study articles addressed different aspects, both directly related to the source study and derived aspects. Messeder et al.[34] proposed and applied an evaluation methodology based on the level of complexity and interdependence of the activities performed by the hospital pharmacy of 250 Brazilian hospitals focusing on structure and process indicators. This methodology, associated to the performance evaluation by means of indicators published by Magarino-Torres et al.[36] and constructed using the Delphi method[36] was applied by Silva et al.[21] in 20 hospitals under the direct management of the State Department of Health of Rio de Janeiro.

Despite the number of hospitals evaluated in the studies of Silva et al.[21] and Messeder et al.[34] presented different proportions, the results showed low compliance of a large part of the pharmaceutical services, regardless of the degree of complexity of the hospitals, with subsequent reduction of the effectiveness of the activities, leading to errors with potential risk to the patients' health.[21,34]

Nascimento et al.[18] also presented results related to the evaluation of pharmaceutical services, which were obtained through indicators defined by a methodology that involved group analysis and multiple correspondence analysis, showing that a greater compliance with these services was associated to management-related variables, to the time of dedication of the pharmacist to the service and to the higher level of training.

It is noteworthy that, despite involving similar samples from a single project, studies defining indicators such as those discussed above[18,36] are essential, considering the evaluation of hospital pharmaceutical services as a complex task due to the amount of interrelated activities performed and the large amount of data that is required.(18)

Only two Brazilian surveys were carried out outside the context of the above-mentioned project.[15,35] The two presented different focuses of discussion, one of them being broader in terms of evaluated components, that of Penaforte et al.[35] This research, although involving only one hospital, presented results similar to those obtained in the researches that were based on the mentioned project, pointing out problems in relation to the service of information about medicines, pharmacotherapeutic follow-up and programming of medications, besides the questions of human resources and activities centered on the logistics of the medicinal product. [35]

Positive results in the study by Penaforte et al.[35] were found in relation to teaching and research activities and participation of pharmacists in interdisciplinary teams such as the Pharmacy and Therapeutics Commission (CFT), whose role was widely discussed by Nicolau[15], which stated that a review of the list of medicines should be carried out in order to reduce expenditure and waiting time for treatment.

The Brazilian studies, therefore, presented a broad approach to the components of the logical model used as a methodological basis. However, they focused mainly on the evaluation of technical-managerial activities without extrapolating them to the care setting and correlating them, for example, with activities related to patient safety. This factor is important from the practical point of view, since a greater focus on technical-managerial services as compared to caregivers within hospital pharmacy services may result in problems related to the drug use process in this area.[38]

Evaluation studies of hospital pharmaceutical services carried out outside Brazil

The studies in this section also focused on issues related to drug logistics, but with a broader discussion of the impact of these services on health care, such as issues related to patient safety. Unlike most Brazilian publications, the approach of the logical model by international studies was focused on specific components and in different proportions, which motivated the discussion in this section in a divided form according to the component of the logical model addressed.

Management

This component is related to the promotion of an organizational structure that makes pharmacy actions feasible and, although it is recognized that organized logistics services in terms of management allow greater availability of pharmacists and employees to perform care activities[39] and greater systematization of actions,[40,41] few publications have addressed it as the main focus of the discussion.[5,8]

The studies in this section focused their discussion on the implementation of computerized management systems[31,32] or in aspects related to human resources,[23,30,31] which were brought as essential for better implementation of pharmaceutical services with a view to reducing costs and increasing the quality of assistance provided.[23,28,30–32] Despite the importance of the discussion in this sense, only one research in the context of this component presented evaluation results as to the pharmaceutical capacity and ability to provide adequate organizational structure in the pharmacy service. In this research, it was observed that a high level of capacity related to management activities reflected directly in the execution of other pharmaceutical services.[24]

Management has been approached indirectly in some research focusing on other components of the logical model.[3,16,22] Such studies discussed specific data regarding programming and storage in the context of a broader discussion on management policies or even in the context of the importance of indicators for performing pharmaceutical services, as will be discussed further below.

Selection

The selection component refers to the definition of the medicines needed to meet the needs according to criteria of efficacy, safety, quality, dosage convenience and cost to ensure the URM.[5,8,42] Despite the recognition of the importance of this component in the context of any EAS[38,42], it has been little touched upon by international publications.[17,29]

The importance of CFTs in the hospital context, as well as the need for organization and defined methodology of their activities and multidisciplinary composition, was mentioned, however, without further discussion regarding a potential correlation between this service and care aspects, safety of the patient.[29] This last approach, however, was brought by Ferrandéz et al.[17], who discussed and applied a methodology for the preventive evaluation of risks associated with the incorporation of drugs into clinical practice. This evaluation culminated in the elaboration of information that was made available to the team and this process was effective in reducing the frequency of errors in the medication use process in the hospital setting.[17]

Program

This component involves the definition of quantities of the medicines and health products to be purchased, in view of the stock, resources and time available.[5,8] Considering the restriction of physical space and the limitation of economic resources that exist in most health services, it is considered essential that programming be discussed so that stock management is guided by adequate strategies, which adequate purchasing and storage services and aims to ensure that the demands are met within a defined period of time.[22,38]

Only three studies have discussed this component more specifically,[16,22,28] two of which brought it as part of the wider context of pharmaceutical services, makingunderstand them as part of a broad set of logistical procedures with direct influences on one another.[16,28] Research has inferred through its results that adequations in the programming service, especially in terms of inventory turnover and related costs, can be reflections of adaptations in the hospital distribution system and also observed an important relationship between an adequate stock management policy to ensure the availability of the drug and aspects related to patient safety.[16,28]

Acquisition

This service aims to meet hospital demands considering quality and associated costs.[5,8] Despite the knowledge that the pharmaceutical services are characterized by logistics activities related to the supply of medicines and health products through appropriate procurement processes,[38,43] this service was referred to little.[17,23]

The approach of this component merely mentioned the importance of information on costs of procurement of medicines for the management of activities carried out in the context of the hospital pharmaceutical service[15,23] or to describe the reason why it was necessary to purchase medicines which were not on the list of medicinal products.[17]

There was therefore no further discussion about the interrelationship between the acquisition process and costs or aspects of risk management related to the use of drugs in the hospital context.[15,17,23] One of the reasons for this approach to the subject may be associated with the fact that in the hospital setting there is often an acquisition process that can provide few interventions of the pharmacy service.[5,21]

Storage

The purpose of the storage is to ensure the quality of products in stock and to provide information on the movements carried out,[5,8] and although it is recognized that the activities of the pharmacy service are largely dependent on this component,[44] it was covered only by Rabuñal-Álvarez et al.[3] The authors sought to establish and calculate indicators to evaluate the quality of the storage service in a Spanish university hospital.[3] Although the publication also involves aspects related to drug distribution and has evidenced low error rates associated with services, the focus of the research discussion turned around the technical data sheets of the indicators independently, without correlation between the evaluated services and extrapolation of the data in relation to other services.[3]

Distribution

The activities foreseen in the distribution component were the most discussed by the international surveys analyzed.[3,14,19,20,23,26,28,32,33] This component was addressed by nine non-Brazilian studies and is related to the supply of medicines under adequate conditions and with a guarantee of process quality[5,8] and the studies that addressed it presented a variety of discussion points.

Some publications in this section have shown developments in hospital pharmacy services as a result of changes in the drug distribution system, which have become more decentralized, including automated distribution system (SAD) and satellite pharmacies.[19,23,28] This evolution was characterized by a greater focus on care services (such as pharmacotherapeutic follow-up) and an increase in human resources with subsequent positive clinical impact, cost reduction and promotion of URM.[19,23,28,45]

Changes in the distribution system, however, should be continually evaluated in terms of specific service indicators correlating them with aspects associated with patient safety.[5] Despite the importance of the discussion, only three studies[20,25,33] focused their discussions on issues related to widespread use and the strong trend of incorporation of new technologies related to drug distribution and its correlation with safety in the hospital use of medicines.

Although these publications show that this incorporation has been accompanied by the implementation of safe practices in the various hospitals, several points of risks have been identified to be continuously monitored, in addition to being evidenced the incorporation of several technologies without scientific and practical evidence proving the positive impact on patient safety, highlighting the concern about the implementation of technologies in this context.[20,25,33]

The other searches that addressed this component[3,14,26] have done little or no approach related to the potential association between the effectiveness of the pharmaceutical distribution service and aspects related to patient safety, focusing on the methodology itself[26] or in what the results reflected in relation to the pharmacy service itself, without extrapolating them in relation to their influence on care services with an impact on patient safety.[3,14] These publications, however, highlighted the importance of continuous evaluation of the distribution of medicines and the need for this service to be effective in order to adjust the process of use of medicines in the hospital environment.[3,14,26]

Information

This service refers to the production and provision of information for the improvement of the practices of health professionals and managers.[5,8] The activities provided for in this component are of paramount importance for risk management related to the process of use of medicines in the hospital environment[46] and its low frequency of approach, even with the high frequency of reports of requests for information by the team, can indicate how much this component is neglected and not perceived as an essential part of the central purpose of care quality in the which refers to the URM in the hospital context.[5]

Only two publications discussed this component and, although none of them specifically addressed it, they presented important discussions about this service in the hospital setting.[17,24] These discussions have focused on the importance of providing information on medicines to be incorporated into care practice in order to increase patient safety in the hospital use process and reduce the costs associated with medication errors[17] to a wider discussion on the importance of enabling pharmacists to become capable of providing information to staff and patients.[24]

Pharmaco-therapeutic follow-up

In the context of this component, the monitoring of the use of medicines in the hospital environment is ensured by ensuring their rational use.[5,8] Although there is an approach related to this theme in three of the analyzed publications, none of them did so in a specific way. The focus of these studies was different and two of them presented an important correlation between the drug distribution service and the evolution of services related to pharmacotherapeutic follow-up bringing the discussion regarding the importance of the joint execution of logistics and care services.[19,26]

Only one publication involving this theme referred to the pharmacotherapeutic follow-up as an assistance practice seeking to guarantee the URM in the hospital context, approaching it as one of the services that require an adequate professional qualification process.[24] This little approach to the issue may reflect the fact that pharmaceutical services focused on the logistics of pharmaceuticals in the hospital scope still overlap in large proportion to services of a more assistance type, despite the growing approach of the correlation between pharmaceutical services and patient safety, especially in studies international.[47]

It is worth considering the current need for care activities, such as those provided for in this component, to be performed and evaluated in a systemic and continuous way with the objective of obtaining quality of care with subsequent positive impact on patient's quality of life.[48,49] Furthermore, the exclusion of publications specifically related to clinical pharmacy may have compromised the insertion of research with an approach related to pharmacotherapeutic follow-up in the sample.

Pharmacotechnics

The pharmacotechnical component involves the preparation of master and officinal preparations and/or the fractionation of pharmaceutical specialties to meet patients' needs, safeguarding their quality.[5,8]

This component was addressed only by Pedersen et al.[23], whose publication had as main objective the discussion on aspects of the distribution service and addressed aspects such as preparation of intravenous mixtures and Parenteral Nutrition (NP), discussing that the use of related technologies, especially in relation to the former, is uncommon due to the high cost associated with it. However, the authors evidenced an increase in the use of technologies in the context of the

preparation of intravenous mixtures and evidenced that, in relation to the preparation of NP, there is a great tendency of outsourcing of services, especially in large hospitals.[23]

Although there is evidence that most of the hospitals used in the evaluation studies analyzed in this review, aspects related to this component did not appear as the focus of discussion in any publication. Additional research in this context is necessary and aims at assessing the adequate provision of quality products that meet the individual needs of patients.[5,8]

Teaching and research

This component addresses actions related to the training of human resources and the production of information and knowledge for the execution of pharmaceutical services[5,8] and has also been little touched upon in international publications. In addition to the study of Rutter et al.[24], which had as its main objective the elaboration of a tool for performance evaluation of hospital pharmacists that favors a process of learning based on the needs and the improvement of the execution of the services, only two studies presented a wider discussion on this subject.[27,37]

Despite having different objectives, the two[27,37] discussed important aspects about the training of human resources to perform effective pharmaceutical services and the production of information and knowledge that would subsidize the improvement of current practices. Publications corroborate the need for improvement in information and health, as well as other aspects, in pharmacy undergraduate courses and the need for information organized in the form of specialized libraries and information services in hospitals to perform efficient and safe pharmaceutical practices within the hospital environment.[27,37,50]

Limitations

In spite of the quantitative of scientific productions identified through the specified methodology, it is worth considering the possibility of not inserting some publication related to the evaluation of hospital pharmaceutical services due to the limitation referring to the descriptors; In addition, the use of these descriptors in English possibly referred to publications that used them in that language, which is also a limitation of the study, since studies in languages other than English, Spanish and Portuguese were expected. The possibility of publication bias should be mentioned, and, more specifically, limitations regarding the exclusion criteria provided for in the methodology should also be considered. Another limitation could be associated to the difficulty of access to some so-called restricted publications not available in the bases used.

CONCLUSION

Considering the importance of the discussion of pharmaceutical services in the context of health care provided in the hospital, few articles were included in the final sample of the present review, which evidences the scarcity of studies with the evaluation theme in this context. Despite this, it was verified that the researches, regardless of where they were carried out, evidenced the dependence between the pharmaceutical services and the sufficiency and qualification of human and infrastructure resources, so that the more unsatisfactory the resources and the structure, the more unsatisfactory were the services and more focused on the logistics of the medicine they presented themselves.

This lack of research and the still frequent focus on issues related to drug logistics, especially in Brazilian publications, point to the need for more research to correlate these services with care aspects, such as the risk management associated with the use of medicines in the hospital. Evaluation studies support the diagnosis of services and, consequently, help the decision-making process and the formulation of strategies aimed at expanding health management capacity within the pharmaceutical services.

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Conflict of Interests

The authors declare that there is no conflict of interest.

Authors' Contributions

FRL: Conception, design, analysis, data interpretation and writing of the article. JOSN and MIT: critical review of the intellectual content and approval of the final version to be published. All authors were co-responsible for the accuracy and completeness of the entire article.

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