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Outcomes of pharmaceutical care in Brazil: a literature review

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ABSTRACT

The practice of pharmaceutical care (PC) is recent in Brazil and little is known about its impact on the health system or patients. The aim of this review was thus to identify the clinical, humanistic and economic outcomes achieved by the practice of PC in Brazil. In order to assess those outcomes, data published in studies from 1997 to 2011 were collected from Lilacs and MEDLINE databases, using the technique of content analysis. Original studies on PC that included pharmacotherapeutic follow-up were considered eligible for this descriptive review. A total of 306 articles were identified through the chosen descriptors. Of those, ten studies were eligible for this review and only two did not report significant results. The others reported increased adherence to pharmacotherapy, resolution of pharmacotherapeutic issues and control of clinical parameters of diseases (such as maintenance or reduction of blood pressure, reduction in HIV viral load and increase in lymphocyte count), promoting improvements in the general state of health and behavioral changes. However, economic impact was not assessed in any article analyzed, nor was a direct measurement of life quality performed. Although there are few studies on the outcomes of pharmaceutical care services in Brazil, it is demonstrated in this review that positive results were obtained when the pharmacist acted as a provider of optimized pharmacotherapy. This may be considered a result of the actions that followed the Brazilian Pharmaceutical Care Consensus of 2002, such as the restructuring of the curricular basis of pharmacy courses. From this point on, Brazilian researchers and pharmacists should think of a strategy to expand the offer of pharmaceutical care beyond academia and reach people in general who need this type of health care.

Keywords: Pharmaceutical care. Clinical outcomes. Brazil.

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INTRODUCTION

The main focus of the activities of the pharmacist has, historically, been the drug and its planning, development, production and management. In 1988 in New Delhi, the World Health Organization convened a Consultative Group, of representatives of many countries, with the objective of discussing the role of the pharmacist in relation to the social needs of the medicine user (OMS, 2004). Later, at the 1993 WHO meeting in Tokyo, the discussion was resumed, ratifying the role of the pharmacist as a health agent and describing the attributes and responsibilities of the profession, in both the individual and collective contexts, within the health care system (OMS, 1993).

In Brazil, the first consensus on Pharmaceutical Care was reached only in 2002, defining a model of professional practice in order to meet the pharmacotherapeutic needs of the patients and solve their medication problems (OPAS, 2002). Nevertheless, difficulties are still experienced in understanding this professional practice, focused on the patient, which may be confused with that of Pharmaceutical Services, whose actions concentrate on the drug, such as the development, production and management of medicines.

It has been reported that Pharmaceutical Care in Brazil is still far from the ideas enshrined in the Brazilian Consensus on Pharmaceutical Care and in the meetings of the consultative groups of the WHO (Oliveira et al., 2005). This phenomenon can be explained by the curriculum of pharmacy courses, predominantly technical and focused on the development and production of goods (medicines, cosmetics or foods) and on clinical analysis.

Only since 2002, with the implementation of the new curricular guidelines, has the training of these professionals included the needs of medicine users and of public health. This process of curricular reformation required changes in the attitude of the teachers in order to create a new professional posture, that is, a generalist pharmacist with humanistic and care abilities, focused on the patient (Brazil, 2002).

Studies that sought to understand this process and the obstacles to implementing pharmaceutical care services, and the skills and knowledge needed by the pharmacist to address the new social needs, concluded that the main difficulties were the lack of knowledge, preparation and practice in pharmaceutical care. The pharmacist feels unmotivated and too busy with management activities to

dedicate himself to this new practice (Araújo et al., 2006; Lucchetta & Mastroianni, 2010; Oliveira et al., 2005; Penaforte et al., 2007; Yokaichiya et al., 2007).

In an article about the scientific research on pharmaceutical care in Brazil until 2009, it was found that these studies, which were descriptive and cross-sectional, had been performed mostly in the south and southeast of the country and usually referred to outpatients at hospitals linked to universities (Funchal-Whitzel et al., 2011). However, little is known about the results of the pharmacotherapeutic follow-up carried out in pharmaceutical care and its impact on the health of medicine users.

Aim of the review

The aim of the present study was to identify the clinical, humanistic and economic outcomes achieved by the practice of pharmaceutical care (PC) in Brazil.

METHODS

This literature survey may be characterized as a descriptive review (Torrelio et al., 2011). Studies published from 1997 to 2011 were found by searching the databases Lilacs and Medline with the health descriptors: "pharmaceutical services", "pharmaceutical care", "pharmacy service, hospital", "national policy of pharmaceutical assistance" and "clinical pharmacy information systems". The Boolean operator "or" was used between each of these expressions. In the search performed in Medline, the Boolean operator "and" was included for the descriptor Brazil, as country of affiliation.

The inclusion criteria were: original studies of pharmaceutical care, comprising pharmaceutical interventions, pharmacotherapeutic follow-up and problems related to the use of medicines (PRM). Studies of pharmaceutical services, such as those related to the logistics, distribution and dispensing of medicines, were excluded, as were literature reviews, monographs, books, dissertations, conference proceedings, studies that were not performed in Brazil, pharmacoepidemiological surveys and pharmacovigilance studies.

The selected studies were analyzed by the technique of content analysis, in which an initial "floating reading" is done to obtain "impressions and orientations" from the document under study (Bardin, 1977); subsequently, the material previously analyzed and selected is subjected to a more careful reading, to assess in a systematic way the information relevant to the research in hand, which in this case consisted of: *type of pharmaceutical intervention, method, subject of the research* (patient or group of patients), *place/scope* (family health strategy, pharmacy or drugstore, basic health unit or hospital outpatients), *period of intervention* (in months), *number of visits or pharmaceutical encounters performed, parameters monitored and/or results* (clinical outcomes, quality of life or economic parameters).

RESULTS

Using the pre-defined descriptors, 309 publications were identified as having Brazil as the country of affiliation, of which 272 came from the Lilacs database and 37 from Medline.

After a first reading, 229 studies from Lilacs were excluded for the following reasons: 20 comprised conference proceedings, books, manuals and dissertations, 95 were literature surveys, 47 consisted of historical reports and public policies on pharmaceutical care, 56 were about pharmaceutical services, 10 belonged to another jurisdiction, 6 dealt with pharmaceutical teaching, 5 with medication compounding and 4 with medication errors. In the Medline database, 21 publications were excluded for being about the management of medicines (pharmaceutical services). There was redundancy in three articles, which appeared in both databases.

Thus, 40 articles were selected for content analysis, after which 29 were excluded for being: literature surveys (7), descriptive studies (5), pharmacovigilance (4), pharmaceutical services (3), validation of questionnaire (2), already published as theses (3), articles about hospital indicators (2), opinion of a specialist (1), letter to the reader (1), not performed in Brazil (1) and a study in which just one author was Brazilian.

After content analysis, nine studies were identified that met the inclusion criteria. Most of the interventions were aimed at hypertensive patients. Other health conditions reported in the analyzed articles were persistent asthma, seropositivity for HIV, diabetes mellitus, tuberculosis and polypharmacy in elderly people (Table 1).

Table 1. Studies of Pharmaceutical Care practiced in Brazil from 1997 to 2011: type of patient, place, method (technique, period of intervention, number of encounters), parameters monitored and results found.

Subject	Author	Place (scope)	Period of follow up	Technique used	Number of encounters	Parameters monitored	Results
Patients with HIV(20)	**Moriel et al, 2011**	University Hospital (Hospital Dia)	12 months	A method for pharmacotherapeutic follow up developed by the researcher based on the method PWDT. Groups "intervention" and "control".	Variable, at least 2 encounters during the period of study	Hemoglobin, T CD4+ lymphocyte count, viral load, occurrence of pharmacotherapeutic problems.	Reduction in the number of pharmacotherapeutic problems, increase in the count of T CD4+ lymphocytes, reduction in the viral load and in the incidence of anemia, reduction in spending on the "intervention" group relative to the "control" group.
Patients with asthma(15)	**Santos et al, 2010**	Clinic of the School of Medicine, USP	1 month	Educative intervention about the correct use of medicines and inhalation devices. Groups "intervention" and "control".	3 encounters	Adherence to therapy and technique of the inhalation device.	There was no increase in adherence to therapy; however, the technique of using the inhalation device improved.
Elderly patients with hypertension (21)	**Souza et al, 2009**	School-pharmacy	7 months	Dáder Method of Pharmacotherapeutic Follow up (3rd Consensus of Granada).	Not specified	Blood pressure, occurrence of negative effects of use of medicines and resolution of the problems found.	60% of the medicine users had their blood pressure normalized, and 77.8% of the detected problems related to the use of medicines were solved.
Elderly patients with hypertension (22)	**Brito et al, 2009**	Basic Health Unit (neighborhood clinic of public health service)	20 months	Pharmaceutical Intervention at home, with advice about health, change of lifestyle, encouragement to adhere to therapy, identification of sign and symptoms of the use of drugs.	Variable, according to the condition of the patient	Polypharmacy, self-medication and profile of the medicines taken.	Reduction of 33.3% in polypharmacy and of 15.3% in the use of NSAIDs and increase of 53.3% in the use of hydrochlorothiazide.
Patients with resistant hypertension (14)	**Souza et al, 2007**	Clinic of Cardiovascular Pharmacology at Teaching Hospital	12 months	Oral instruction and printed material, assessment of profile of physical symptoms, self-report visits to emergency and hospital admissions, quality of life (SF 36).	Average of 10.5 encounters per patient	Blood pressure, adherence to therapy, quality of life.	Increase in adherence, positive correlation between adherence and pharmaceutical intervention, blood pressure controlled in 49% of the patients.
Elderly patients subjected to polypharmacy (16)	**Lyra jr. et al, 2007**	Basic Health Unit in Ri beirão Preto SP	12 months	Pharmaceutical advice given within Paulo Freire's educational approach.	12 encounters	Presence of comorbidities and problems related to the use of medicines.	56% of the patients presented with diabetes, hypertension and hypercholesterolemia. 69% of the detected problems related to the use of medicines were solved, and 78.5% of the potential problems were prevented.
Elderly patients with diabetes (23)	**Balestre et al, 2007**	Family Health Program of a Basic Health Unit of Atalaia, PR	6 months	Pharmaceutical intervention to encourage the practice of physical exercise and an adequate diet and to provide information on how to minimize undesired effects of medicines.	encounters	Characteristics of the pharmaceutical intervention.	50% of the Pharmaceutical Interventions focused on the use of medicines, demonstrating a need for pharmaceutical orientation.
Patients with tuberculosis (24)	**Santos et al, 2006**	Outpatient phthisiology of HMCP	9 months	Dáder Method of Pharmacotherapeutic Follow-up.	6 encounters	Attendance in consultations, therapeutic regimen, clinical evolution.	5 in 7 patients had pharmacotherapeutic problems, and one of them continued to have a problem even after counseling.
Patients with hypertension (13)	**Castro et al, 2006**	University Hospital of Porto Alegre	6 months	Dáder Method of Pharmacotherapeutic Follow-up, elaboration of printed material about hypertension and hydrochlorothiazide. Groups "intervention" and "control".	24 encounters (weekly)	Blood pressure, adherence to therapy, blood levels of hydrochlorothiazide.	High adherence in both groups, making it impossible to assess the impact of the pharmaceutical intervention. Average reduction of 5.1 mmHg in the blood pressure, not considered significant, probably owing to the method used.

DISCUSSION

Even ten years after the Brazilian Consensus on Pharmaceutical Care (OPAS, 2002), the publishing of the Resolution CNE/CES 2/2002 and various studies that are classified as of pharmaceutical care in the databases, there have been few prospective studies of pharmaceutical interventions in Brazil, the first ones being published in 2006.

This phenomenon may be explained by two factors. The first of them is the conceptual confusion between pharmaceutical care and pharmaceutical services that exists in Brazil. The second would be the very recent changes in the curriculum for the education of pharmacists. Time was needed for the Pharmacy Schools to reformulate the curriculum and implement it and only four years later, which is the average time taken for a pharmacist to graduate, would a professional with a more humanistic profile be expected to arrive on the market.

Besides the low level of support provided by the graduation courses to the exercise of pharmaceutical care, there are few *strictu-sensu* post-graduate courses on pharmaceutical care and clinical pharmacy in Brazil. Currently, there are 56 post-graduate courses in pharmaceutical sciences (Capes, 2007), but very few of them include pharmaceutical care in their study program. In 2012, a multicentre course in Pharmaceutical Services was set up to supply this need. This was the first scientific-technological incentive to the development of this technology in the health services.

As for *lato-sensu* post-graduate courses, several exist, but most of them do not include practical activities in their program, nor are they linked to university extension services or a health service, which makes it

harder to implement the program and offer services in pharmacotherapeutic follow-up.

Regarding the pharmaceutical care service on offer at health establishments, the country possesses 82,000 pharmacies and drugstores, but this type of service is not offered because the pharmacists have an excessive work load related to management activities, combined with a lack of infrastructure for private meetings with patients and a lack of adequate professional training (Araújo et al., 2006; Oliveira et al., 2005; Penaforte et al., 2007; Yokaichiya et al., 2007). Furthermore, the feeling of discouragement must also be taken into account, for the owners of the establishments do not see the implementation of pharmaceutical care services as a source of profit, but as an activity that may even cause financial loss (Oliveira et al., 2005).

Considering other medicine-dispensing services, such as pharmacies in basic health units and involved in family health strategy, in most of these services there is no pharmacist, or, when this professional is present, s/he is overloaded with management activities and is unable to exercise pharmaceutical care. Thus, the few and recent pharmaceutical care activities in Brazil are linked to Universities (Funchal-Whitzel et al., 2011).

On the outcomes reported after the pharmaceutical interventions, most of the studies presented positive results, especially when the work was done with specific groups, such as hypertensive patients (Souza et al., 2007), persistent asthma patients (Santos, 2010) or the elderly (Lyra Jr et al., 2007), given that these patients were already followed by a specialized health service.

For the results in which there was no significant difference between the groups "intervention" and "control", the authors hypothesized that this was due to the strong connection between the patient and the health service (in the case of patients with asthma) and to the high adherence of the patients and the lack of sensitivity of the method used to detect the clinical relevance of the blood pressure reduction observed in both groups, in the study by Castro et al. (2006).

It is likely that the studies were performed with these patient groups on account of the high prevalence of chronic diseases and because the clinical parameters assessed are easy to check, non-invasive, cheap and good indicators for the monitoring and control of the disease. It is also believed that the interventions were conducted in specific groups of patients because their distinctive features were easy to understand (Cipolle et al., 2012).

However, according to the philosophy behind Pharmaceutical Care, these services should be offered to all medicine users that need follow-up (Cipolle et al., 2012). The universal implementation of pharmaceutical services is still in progress in Brazil.

The sanitary regulation of pharmaceutical care services was approved only recently by the Brazilian health and sanitation federal agency (ANVISA). Only in mid-2009, with the publication of its regulation 44 on August 17th (Brasil, 2009), did ANVISA establish the minimal infrastructure, procedures and recording of this practice in pharmacies and drugstores.

The authors of the assessed articles suggest that, for there to be progress in the practice of pharmaceutical care in Brazil, legal regulation of professional practice is not enough, but public policies of incentives for PC, through more specific programs of implementation of the services in health units, pharmacies and drugstores, are required

It may be suggested that incentive policies should be based on already existing programs such as "Popular Pharmacy" and on the program to provide incentives and promote the "Rational Use of Medicines", proposed by the Brazilin Federal Ministry of Health, including the practice of pharmaceutical care in a systematic manner. Also, educational programs in health that cover pharmaceutical service activities should include and motivate the practice of pharmaceutical care.

The databases consulted may be considered a limitation of this study, since there may be Brazilian studies in pharmaceutical care published in non-indexed journals or in journals available only in databases that were not consulted.

Although various Brazilian studies were classified as of pharmaceutical care, very few really were studies of pharmaceutical follow-up, even ten years after the Brazilian Consensus in Pharmaceutical Care and the implementation of the new curricular guidelines. However, these few studies did show positive clinical results, among which the follow-ups lasting for at least six months were the most effective, irrespective of the method adopted.

Finally, it was observed that Brazil has sanitary legislation in force that regulates and permits the practice of PC, besides advances in specific and multicenter programs of post-graduation, covering the main regions of the country.

RESUMO

Resultados da atenção farmacêutica no Brasil: uma revisão

A prática da atenção da atenção farmacêutica (AF) é recente no Brasil e pouco se conhece sobre seu impacto. O objetivo deste trabalho foi identificar os desfechos clínicos, humanísticos e econômicos alcançados pela realização da atenção farmacêutica no Brasil. Por meio de um levantamento da literatura caracterizado como uma revisão descritiva e utilizando a técnica de análise de conteúdo, buscaram-se os estudos publicados de 1997 a 2011 disponíveis nas bases de dados Lilacs e MEDLINE. Consideram-se elegíveis os estudos originais de atenção farmacêutica, contemplando seguimentos farmacoterapêuticos. Foram identificadas 306 publicações, sendo dez elegíveis ao presente trabalho. Apenas dois estudos não apresentaram resultados significativos, os demais obtiveram aumento na adesão à terapia medicamentosa, resolução da maioria dos problemas farmacoterapêuticos e controle dos parâmetros clínicos da doença monitorada (controle ou diminuição da pressão arterial, redução da carga viral e aumento de linfócitos), promovendo a melhora do estado geral de saúde e mudanças de condutas. No entanto, nenhum trabalho avaliou diretamente a qualidade de vida e o impacto econômico das intervenções. Mesmo com poucas publicações, os estudos demonstram resultados positivos após dez anos

do Consenso Brasileiro de Atenção Farmacêutica e da reforma das bases curriculares dos cursos de farmácia. *Palavras-chave*: Atenção farmacêutica. Desfechos clínicos. Brasil.

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