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Original Research

Trends in Scientific Production on Pharmaceutical Follow-up and the Dader Method

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Abstract

Objective: Pharmacotherapeutic Follow-up is the Professional Pharmaceutical Care Service aimed at detecting Drug-Related Problems for the prevention and resolution of negative medicine outcomes. The Dader Method is considered a clear and simple tool to develop Pharmacotherapeutic Follow-up. This research aims to analyze the evolution of the international scientific production related to Pharmacotherapeutic Follow-up and the Dader Method to show the current situation of this Professional Pharmacy Assistance Service. In addition, from the data obtained, we give a critical perspective on the implementation of the Dader Method in Community Pharmacy, considering its advantages and disadvantages based on the published scientific literature. **Methods:** Using bibliometrics tools, indicators were obtained to analyze the international production of scientific articles on Pharmacotherapeutic Follow-up and the Dader Method during the period (1999-2022) through the Scopus database. **Results:** The results showed a growth in the international scientific production of publications on Pharmacotherapeutic Follow-up, obtaining 30,287 papers, placing the United States, the United Kingdom, Australia, Canada and Spain as the five most productive countries. The publication of 83 papers on the Dader Method places Spain with the highest number of publications, followed by other Spanish or Portuguese speaking countries, among which Brazil and Colombia have the most prominent number of published papers in Latin America. The most frequent international journal covering the topic of Pharmacotherapeutic Follow-up was the *American Journal of Health-Pharmacy* (12.4%), while on the Dader Method, the journal *Pharmaceutical Care Spain* (21.7%) is in the first position, followed by *Farmacia Hospitalaria* (8.4%). **Conclusion:** The publications on the Dader method highlighs the greater productivity of the University of Granada and the author María José Faus Dáder. The inclusion of patients in the PTF service using the Dader Method, is more frequent in the hospital context, and is based on the presence of defined chronic pathologies (mainly diabetes), polymedication or specialized care follow-up, with elderly population being the most represented in all cases.

Keywords: pharmaceutical care; pharmaceutical services; community pharmaceutical services; health care facilities; pharmacist practice patterns; health planning; health services research; bibliometrics

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INTRODUCTION

Pharmacists, through the professional practice of Pharmaceutical Care, take an active role in improving patient's health across the different levels of care (community, primary and hospital care). The main goals of Pharmaceutical Care include identification and resolution of Drug-Related Problems (DRP), as well as ensuring the effectiveness of prescribed medicines, to guarantee the prevention and resolution of negative outcomes related to medicines (NOM).[1,2] Based on these goals, the Pharmaceutical Care Forum was created in Spain in 2004, whose efforts culminated in the publication of the "Consensus Document" in 2008,[3] in which recommended guidelines were defined for the three fundamental Professional Services in the field of Pharmaceutical Care Practice: Dispensing, Minor illness Service, and Medication Review with Follow-Up. The later of these three services is the one whose goal is detecting DRP for the prevention and resolution of NOMs, and

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the suggested procedure was named Pharmacotherapeutic Follow-up (PTF).[4]

According to the Consensus Document on Pharmaceutical Care of the Ministry of Health in Spain,[3] personalized PTF is the professional practice in which the pharmacist is responsible for the patient's medication-related needs. The implementation of the PTF Service is very demanding for the pharmacist, since it should be provided on an ongoing, systematic, and documented manner, and, ideally, in collaboration with other health professionals, to share pharmacotherapeutic information or case history, as a part of the comprehensive treatment of the patient[4]. The benefits of providing PTF are of grate relevance, since it allows, first, the improvement of the patient's health and quality of life and, second, the financial savings in both direct and indirect costs to the public health system, particularly in the elderly who experience pluripathology and polymedication.[5]

Pharmacists, as qualified health professionals, are suited to conduct the PTF because of the knowledge, skills and competences obtained in the Degree in Pharmacy. Earlier publications from various national and international official bodies, such as the World Health Organization (WHO) Tokyo Report,[6] the Consensus Document on Pharmaceutical Care of the Ministry of Health in Spain[3] and the European Council,[7] recommend that, to avoid iatrogenic risks of medicines, pharmacotherapeutic monitoring should be implemented in the Community Pharmacy.[8]

In 2016, the "Forum of Pharmaceutical Care in Community Pharmacy in Spain", specified what constitutes a Clinical Professional Pharmacy Services (CPPS) in Community Pharmacy and the criteria that must be met[9]. In addition, CPPS were classified into two groups: Pharmaceutical Care Services, and Community Health Related Services. The Pharmaceutical Care Services portfolio has expanded. Besides the PTF service, aimed at guaranteeing the proper use of medicines and health products according to the clinical needs of each patient, two new CPPS were included: the Medication Reconciliation Service, in which the pharmacist performs a systematic and protocolized comparison of the list of medications used by the patient, before and after a transition between levels of care, with the aim of ensuring the need, effectiveness and safety of the current pharmacological treatment; and the Therapeutic Adherence Service, in which the pharmacist actively collaborates with the patient to ensure the proper use of medicines and health products, with the hygienic-dietary habits and/or lifestyle, to achieve the expected results in the patient's health.[9]

Focusing on PTF, different procedures have been developed to put this method into practice in both Hospital and Community Pharmacy services.[5,10] In this context, the Dader Method was designed in 1999 by the Pharmacy Research Group of the University of Granada (Spain).[11] This method constitutes a useful tool that allows the pharmacist to follow clear and simple guidelines to implement PTF in a systematic, continuous, and documented way, in any care setting.[12]

The purpose of this article is to describe the evolution of the international scientific production related to PTF and the Dader Method to show the current situation of this CPPS. In addition, from the data obtained, we give a critical perspective on the implementation of the Dader Method in the Community Pharmacy setting, considering its advantages and disadvantages based on the published scientific literature.

METHODS

This is an observational bibliometric study using the Scopus database in which the published scientific literature on PTF and on Dader Method was analyzed for the period 1999-2022, since the first publication of the Dader Method is from 1999. The search of published documents was made in February 2023 and was limited to original articles and reviews. The search equations used in Scopus were as follows:

· Search criteria equation for international PTF: (TITLE-ABS-KEY ("Pharmac* Care") OR TITLE-ABS-KEY ("Pharmac* Service*") OR TITLE-ABS-KEY ("Pharmac* Follow up") OR TITLE-ABS-KEY ("Dader Method*") OR TITLE-ABS-KEY ("Method* Dader") ANDDOCTYPE (ar OR re)) AND (PUBYEAR > 1998 AND PUBYEAR < 2023). Resulted in 30,280 documents.

· Search criteria equation for PTF at national level (Spain): ((TITLE-ABS-KEY "Pharmac* Care") OR TITLE-ABS-KEY ("Pharmac* Service*") OR TITLE-ABS-KEY ("Pharmac* Follow up") OR TITLE-ABS-KEY ("Dader Method*") OR TITLE-ABS-KEY ("Method* Dader") AND DOCTYPE (ar OR re)) AND (PUBYEAR > 1998 AND PUBYEAR < 2023)) AND (AFFILCOUNTRY (Spain)). Resulted in 1,463 documents.

· Search criteria equation for the Dader Method at international level: ((TITLE-ABS-KEY ("Dader Method*") OR TITLE-ABS-KEY ("Method* Dader")) AND DOCTYPE (ar OR re) AND PUBYEAR > 1998 AND PUBYEAR < 2023). Resulted in 83 documents.

· Search criteria equation for the Dader Method at the national level (Spain): ((TITLE-ABS-KEY ("Dader Method*") OR TITLE-ABS-KEY ("Method* Dader")) AND DOCTYPE (ar OR re) AND PUBYEAR > 1998 AND PUBYEAR < 2023) AND (AFFILCOUNTRY (Spain)). Resulted in 34 documents.

In a second phase of the study, we used the tools contained within Scopus that allow the analysis of the records retrieved from all the relevant searches, which contain: the year of publication, authors, institutions, countries, type of document, journal, and area of knowledge. These data were then used to investigate the productivity of each author, performing a manual normalization to unify the different variants of the same author or institution names in the necessary cases. To evaluate the impact and quality of the journals, the SCImago Journal & Country Rank (SJR) impact index (2021 edition) was used. SJR is a relative quality index of the journals indexed in the Scopus database, since many non-English language journals are not indexed in the Web of Science database and therefore it is not possible to consult the journal impact factor of the Journal Citation Reports (JCR). The quartile (Q), as well as the

category to which the journals are ascribed, were also obtained from SJR.[13] The Q of each journal, where the numerical scale goes from Q1 to Q4, indicates the journals with the highest to the lowest SJR in their category.

Finally, a third phase consisted of a bibliographic review of the 83 documents corresponding to the international search on the Dader Method, evaluating the scientific content of each paper related to PTF, analyzing health care level, drugs, diseases, and therapeutic results.

The quality of the observational study was performed based on the STROBE guidelines, being scientific articles the study units. A descriptive analysis of the variables was carried out to obtain the frequencies and percentages. All charts, tables and figures were created using Microsoft Excel.

RESULTS

The literature search strategy resulted in a total of 37,035 documents on the topic of PTF research, of which, 1,522 were from Spain. Regarding the international production on Dader Method of PTF, 34 documents, from the 83 documents that were recovered, were from Spain.

Analysis of the Scientific production on PTF

The chronological evolution of publications on PTF at the international level shows a growing trend in publications, with one peak production around 2008, followed by a clear decline until 2012, and the second stage with an exponential increase in publications between 2013 and 2014, reaching the highest scientific production in 2021 (figure 1).

The evaluation of the geographical origin of publications on PTF showed that 10 countries produced most publications (n=23,002; 62.7%). Of these, the United States leads the publication of scientific articles (27.5%), followed by the United Kingdom (7.9%), Australia (4.7%), Canada (4.3%) and Spain (4.0%). However, table 1 represents the relative scientific productivity considering each country's Gross Domestic Product (GDP), instead of using absolute productivity (number of documents). Spain ranks second in terms of relative productivity according to GDP behind Australia and they are followed by United Kingdom.

Table 1. Ranking of Production of International Scientific Publications relative to GDP

Country	Number of documents	GDP (2021) $ million	Nº Documents / $100 million
Australia	1716	1542659,9	11,1
Spain	1474	1425276,6	10,3
United Kingdom	2888	3186859,7	9,1
Netherlands	909	1018007,1	8,9
Canada	1593	1990761,6	8,0
Brazil	960	1608981,2	6,0
United States	10103	22996100	4,4
France	957	2937472,8	3,3
Germany	1213	4223116,2	2,9
China	1189	17734063	0,7

When assessing the topmost productive journals on PTF scientific publications, a global view shows that most of the top ten ranking journals were of North American origin, being *American Journal of Health-System Pharmacy* in first place, with more than ten percent of the publications (table 2). On the other hand, considering the impact and quality of the journals, most of them belong to the category of Pharmacy and are positioned in the first quartile, with *Annals of Pharmacotherapy* having the highest impact amongst them, according to the 2021 SCJ edition.

It is noteworthy that the *American Journal of Hospital Pharmacy* was created in 1965 by the American Society of Health System Pharmacists. In 1994, the journal was renamed *American Journal of Health System Pharmacy*. For this work, the values of both publications were unified, and the current name was kept.

Analysis of the Scientific production on the Dader Method

Regarding the temporal evolution of publications on the Dader

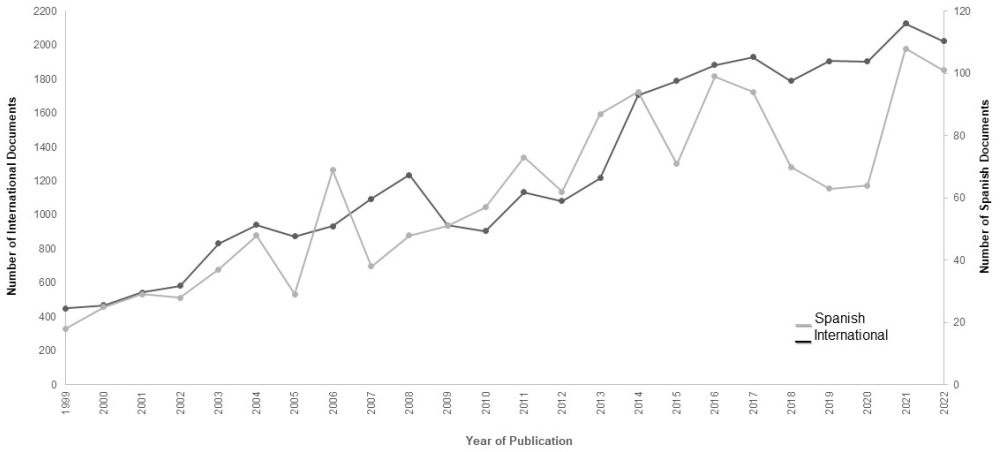

Figure 1. Chronological Evolution of International (black) and Spanish (grey) scientific production on PTF

Table 2. Impact of the Leading Document Production Journals on PTF related to the SJR index, position in the category and quartile (Q)

Journal name	Number of publications (% of N=16778)	Country	SJR 2021	Q 2021	Category
American Journal of Health-System Pharmacy	2,080 (12.4%)	United States	0.483	1	Pharmacy
Research In Social and Administrative Pharmacy	706 (4.2%)	United States	0.674	1	Pharmacy
International Journal of Clinical Pharmacy	704 (4.2%)	Netherlands	0.501	1	Pharmacy
International Journal of Pharmacy Practice	548 (3.3%)	United Kingdom	0.437	1	Pharmacy
American Journal of Pharmaceutical Education	481 (2.9%)	United States	0.805	1	Pharmacy
Pharmaceutical Journal	452 (2.7%)	United Kingdom	No data	No data	No data
Annals of Pharmacotherapy	357 (2.1%)	United States	0.756	2	Pharmacology
Pharmaceutical Care and Research	339 (2%)	China	0.163	3	Pharmacy
Pharmacy World and Science	316 (1.9%)	Netherlands	No data	No data	No data
Pharmacy Practice	291 (1.7%)	Spain	0.409	2	Pharmacy

Method of PTF, figure 2 shows that there is a progressive growth in the number of publications from 2001, both in international and Spanish publications, highlighting 2011 and 2014 as the highest production peaks internationally with a total of 83 documents from 93 different countries, as some publications had a participation of authors from various geographical origins. Figure 3 shows that the predominant country in the geographical distribution of the production of Dader publications was Spain with 41%. In the next positions were Brazil (32.5%), Colombia (14.5%), Argentina (7.2%), Cuba (7.2%), Mexico (3.6%) and finally with 1.2% each, Peru, Ecuador, and the United States.

The top ten institutions that produce publications on the Dader Method represent 92% of the total publications (table 3). The first five positions include the University of Granada (Spain), with 31 documents (46%). Then the National University of Cordoba (Argentina) with 6 documents (9%), the University of Antioquia (Colombia) and the Queen Sofia University Hospital (Spain) with 5 documents each (7%) and the Federal University of Alfenas (Brazil) with 4 documents (6%).

Concerning to the productivity of authors, the list is headed by MJ Faus Dader (table 3), creator of the Dader Method for PTF, followed by colleagues from the University of Granada Pharmaceutical Care Group. This finding shows that PTF is barely a consolidated area of research.

The ten journals with the most articles published on the Dader Method are of Hispanic origin as shown in table 4. In the top five are *Pharmaceutical Care España* (23%), *Pharmacy Hospital* (12%), *Ars Pharmaceutica* (8%), *Journal of Basic and Applied Pharmaceutical Sciences* (7%) and *Atención Farmacéutica* (5%). Regarding the impact of the most productive journals related to Dader Method, it is shown that are mainly found in Q3 and Q4 of the Scopus database, and only 7% of published articles are in the Q1. This may be explained because it is a research area with low investigation and even less scientific production in terms of publications.

The analysis of the publications content performed to evaluate the care levels in which the Dader Method was applied, showed that from the 83 documents recovered, 11 documents corresponded to publications about the method itself (including its development and adaptations etc.) and the remaining 72 documents were developed in different care levels. Our results

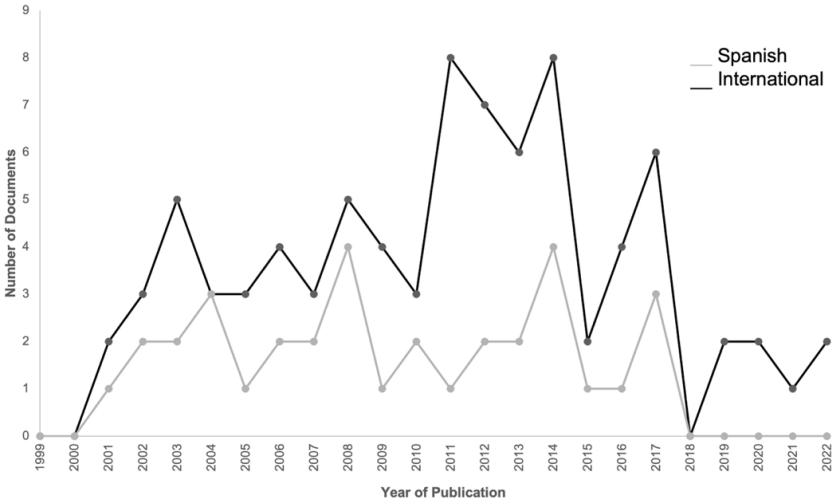

Figure 2. Chronological Evolution of the International (black) and Spanish (grey) scientific production on the Dader Method of PTF

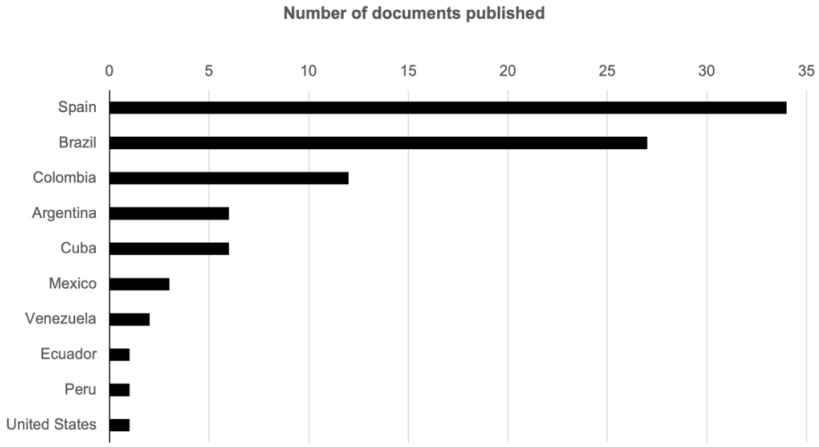

Figure 3. Geographical Production of Publications on the Dader Method

Table 3. Productivity of Authors and affiliations on the Dader Method Publications			
Author	**Number of Publications**	**h-Index (2021)**	**Affiliation**
M.J. Faus Dader	13	25	University of Granada, Spain
P. Amariles	7	14	University of Antioquia, Colombia
M.A. Calleja Hernandez	7	20	University Hospital Virgen Macarena, Spain
E. García Jimenez	5	10	University of Granada, Spain
M.I. Baena Parejo	4	15	University of Granada, Spain
D. Lores Delgado	4	2	Community Pharmacy of Santiago de Cuba, Cuba
L.A.M. Marques	4	3	Universidad Federal Alfenas, Brasil
M.A. Rodriguez Chamorro	4	5	Community Pharmacy of Talavera de la Reina, Spain
J.A. Hincapie Garcia	3	6	University of Antioquia, Colombia
Y. Lazo Roblejo	3	2	University Medica, Cuba
A. Salazar Ospina	3	5	University of Antioquia, Colombia
J.M. Torres Murillo	3	14	University Hospital of Valme, Spain

Table 4. Impact of the Leading Document Production Journals on Dader Mehod related to the SJR index, position in the category and quartile (Q)					
Journal name	**Number of publications (% of N=83)**	**Country**	**SJR 2021**	**Q 2021**	**Category**
Pharmaceutical Care Espana	18 (21.7%)	Spain	ND	ND	ND
Farmacia Hospitalaria	7 (8.4%)	Spain	0.222	Q4	Pharmacology
Ars Pharmaceutica	6 (7.2%)	Spain	ND	ND	ND
Revista de Ciencias Farmaceuticas Basica e Aplicada	5 (6%)	Brazil	0.118	Q4	Pharmaceuticals Science
Atencion Farmaceutica	4 (4.8%)	Spain	ND	ND	ND
Revista Mexicana de Ciencias Farmaceuticas	4 (4.8%)	Mexico	ND	ND	ND
Brazilian Journal of Pharmaceutical Sciences	3 (3.6%)	Brazil	0.285	Q2	Pharmacology, Toxicology & Pharmaceutical
Latin American Journal of Pharmacy	3 (3.6%)	Argentina	0.125	Q4	Pharmaceuticals Science
Journal Of Managed Care Pharmacy	2 (2.4%)	United States	0.699	Q1	Pharmaceuticals Science
Pharmacy Practice	2 (2.4%)	Spain	0.409	Q2	Pharmaceuticals Science
Trials	2 (2.4%)	United Kingdom	0.865	Q2	Pharmacology
Revista Cubana De Farmacia	2 (2.4%)	Cuba	0.196	Q3	Pharmaceuticals Science

show that Hospital Pharmacy is the care level where this method is most applied, with a total of 36 documents. The Community Pharmacy level ranks second, with 20 documents; and lastly, Primary Care, with 16 published documents as shown in figure 4. In parallel, regarding the criteria used for the inclusion of patients in the PTF service, the results of this study showed that, of the 72 documents on the Dader Method developed in different Pharmaceutical Care areas, 39 publications (54.2%) included patients with chronic pathology. Among the chronic pathologies, type 2 diabetes mellitus (23%) and central nervous system disorders (28.2%) (depression, epilepsy, schizophrenia, and bipolar disorder) were the most prominent, followed by hypertension and cardiovascular diseases (12.8%), and then patients receiving transplants (liver or kidney) (5.1 %). Many of the patients in these articles presented comorbidities, with the PTF being made specifically to suit the characteristics of the group, analyzing the complete pharmacotherapy in each case. In 19 documents (26.4%), patients who used five or more medicines (polymedication) were included. And the remaining 14 documents (20%), included patients admitted to specialized care (pediatric units, emergency services, surgical procedures, and internal medicine), with the aim to detect DRP, and to figure out the cause of the hospital admission and/or improve the patient pharmacotherapy.

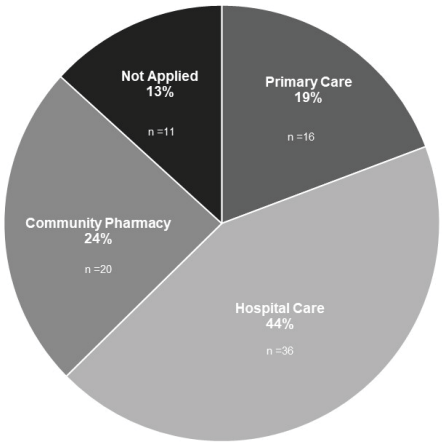

Figure 4. Pharmaceutical Care area where the Dader Method is applied

DISCUSSION

There has been a slow but progressive growth in worldwide publications on PTF until the 1990s, when there was an increase in the number of international publications. This increase is due to several factors, such as the definition of the term Pharmaceutical Assistance by Hepler and Strand in 1990,[14] as being "responsible provision of pharmacological treatment to achieve satisfactory health outcomes, improving patients' quality of life". The WHO has expanded this concept and reinforced the need to promote patient safety as a fundamental principle.[15] Another factor of global importance occurred in 2004, when the European Union also recommended to its member states that patient safety had to be at the center of health policy.[15] Spain has started to publish articles on this PPS with some delay and presents low production when compared to international publications. It should be considered that it is possible that not all PTF programs with their different methodologies implemented in hospitals, health centers and community pharmacies have been published.

We saw that in Spain, an increase in scientific production began in the late 1990s. The translation of the work of Hepler and Strands[14] and the creation of the Dader Method of PTF by members of the University of Granada Research Group on Pharmaceutical Care,[16] led to an increase in publications related to Pharmaceutical Care.[10,17,18] At this time, increased diffusion consequently led to a growth in the research in this area, which materialized in scientific publications.[18] Iglesias and Rodrigues[19] suggest that one of the relevant factors for the growth in publications in Spain was the emergence of specialized journals such as *Pharmaceutical Care España* (2002) and *Seguimiento Farmacoterapéutico* (2003).

Regarding the geographical origin of publications on PTF, the results of this study showed that the United States leads the publication of scientific articles. However, if instead of the absolute productivity (number of documents), a relative productivity indicator is used, such as a scientific approach that considers the GDP of each country, the perspective changes, and Australia and Spain become the leaders in publications. Andrade et al.[18] found a similar result, observing a higher production in Spain's Pharmaceutical Care compared to the United States from 2000 to 2009. These same authors mentioned that among the Latin American countries, Brazil is the main producer of publications on this subject.[18,20] One of the main reasons that rank Australia first could be related to the Community Pharmacy Agreement (a deal between the Guild and the Government), by which professional services, such as Home Medication Reviews (HMR) and Medication Use Reviews (MedsCheck), are supported by the Australian Government. This agreement positions community pharmacies as a collaborative business model through the implementation of a range of professional health services by community pharmacists.[21]

Brazil was in seventh place, being the only representative of Latin America amongst the top-ten countries publishing articles about PTF. Funchal-Witzel et al.,[22] studying Brazilian scientific production in Pharmaceutical Care from 1990 to 2009, showed that the increase in the production of scientific publications occurred in 2006, with 20.6% of publications in the period studied being specifically about pharmacotherapeutic monitoring. Osorio and Cárdenas[23] report that the number of publications on PTF has been growing in Latin America in recent years, with Brazil accounting for more than 50% of the documents. Despite this growth, publications are still limited. It is noteworthy that Canada is in the top-five, regardless of whether productivity is relative or absolute, reflecting the commitment of Canadian pharmacists to Pharmaceutical Care.

Andrade et al.,[18] in an earlier article, suggested that the large production of scientific publications in North America was stimulated by the study by Hepler & Strand in 1990 [14] in which the term "Pharmaceutical Care" was first introduced and later stabilized, emphasizing the superiority of this country in the

quality of publications.

Concerning to Dader Method publications, a certain parallelism between international and national production (Spain) was evident. The highest number of documents was achieved in 2014, certainly due to the development of the impact program conSIGUE.[24] This program is a partnership between the General Council of Pharmacists and the University of Granada (Spain) for the implementation of the pharmacotherapeutic monitoring service in Community Pharmacy. This work was developed between 2009 and 2015 in Spanish Community Pharmacy, with the aim of advancing the sustainable implementation of pharmacotherapeutic monitoring. Nevertheless, there is an occasional decrease in the number of documents during 2005, 2010, 2015 and 2018.

The fall of 2005 coincides with the results obtained by Iglesias and Rodrigues[19] who, in a bibliometric study of research in Community Pharmacy, showed a slight decrease in the production of Spanish publications in 2005, due to the non-publication for a period of three months of *Pharmaceutical Care España* journal, which is one of the country's leading journals. These data may also reflect the worldwide results since most of the work on the Dader Method is of Spanish nationality. The fall in the production of publications in 2010 may reflect the economic crisis of 2008-2009, as it generated a great imbalance in some countries of the European Union (Portugal, Italy, Ireland, Greece, and Spain). Nevertheless, we cannot explain the falls in production in 2015 and 2018, other than the fading out of the revived interest following the impact program conSIGUE.[24]

It should be noted that most countries that lead publications on the Dader Method are Hispanic, and most publications are in Spanish. This result is reasonable, since the Dader Method itself is of Spanish origin.[12] The bibliometric study by Funchal-Witzel et al.[22] found that 62% of the articles on pharmacotherapeutic monitoring in Brazil used the Dader Method. Previous studies report that the Dader Method is the most used in Brazil and the most accepted in the practice of Pharmaceutical Care.[22, 25,26] Despite being the first producer of articles on the Dader Method in Latin America, Brazil still has a modest scientific production.[22]

The main application of the Dader Method is taking place in the hospital pharmacy setting, this is due to the care function inherent to the hospital pharmacist. In addition, hospital pharmacists tend to do more publications than their counterparts at the Community Pharmacy because they are needed during the training process of their internship. Another factor to consider is that in Spain, where the Dader Method is most widely used, the researchers adapted the Dader Method to the particularities of PTF of hospitalized patients.[10] These same authors, in a systematic review of the literature on the pharmacotherapeutic segment in a hospital environment,[10] describe the good timing of PTF in hospitals in Spain, although they consider the scientific production to be scarce. In Brazil, the second largest producer of publications on the Dader Method, there is still a shortage of literature related to PTF studies of hospitalized patients, due to problems at earlier stages (such as stockpiling, storage, distribution of medicines) that need to be addressed, before PTF studies of hospitalized patients are performed on a larger scale.[22]

The Community Pharmacy occupies the second place in terms of the application of the Dader Method. Since the establishment of the Spanish Society of Family and Community Pharmacy (SEFAC) in December 2000, Community Pharmacy in Spain has been increasingly committed to research and dissemination of results, although it is not predominant in the publication of documents on PTF due to difficulties still present today. There are several points that may provide an overview of the difficulties faced by the Community Pharmacy in providing Pharmaceutical Care services, which include the PTF: 1) the fact that the pharmacists' remuneration for providing PPS is not adequately established; 2) the impossibility of the community pharmacist to access the patient's clinical and pharmacotherapeutic history; 3) the need for specialized training of pharmacists and a regulatory framework to endorse the accreditation of pharmacies to provide PTF by the Professional Councils and Scientific Societies. In sum, the key point is the regulation of Pharmaceutical Care services.

Today, society demands a Community Pharmacy, not only for the health benefits it can bring to the patient, but for ensuring its sustainability due to the economic difficulties of recent years. According to the International Pharmaceutical Federation, Community Pharmacy cannot have a future based solely on drug dispensation[27] and should be directed towards a clinical care activity through the implementation of PPS.

Regardless of the criteria used for the inclusion of patients in the PTF service, we emphasize that in most publications the service provided by professional pharmacists was designed to help the elderly population, who were polymedicated, affected by chronic pathologies or in need of specialized care. Lopez et al.[28] in a bibliometric study on Pharmaceutical Care activities, reported that the higher incidence of chronic diseases in this age group leads to greater use of medications, generating the need for continuous monitoring to ensure the effectiveness and safety of their pharmacological treatment.

CONCLUSIONS

The production of national and international scientific publications on PTF has been increasing over the years, which shows that the pharmaceutical profession is moving towards a more clinical and care-giving aspect. The Dader Method is not widely applied internationally as almost all publications are from Spanish-speaking countries led predominantly by Spain. Most of the authors of the publications on the Dader Method are referred to as small producers, which proves that this Professional Pharmaceutical Care service is poorly expanded.

The journals with the largest number of publications on PTF and the Dader Method do not have high impact rates, suggesting that it is possible that the information on this care service is not a hot research area and may not being issued optimally.

The inclusion of patients in the PTF service, using the Dader

Method, was based on the presence of defined chronic pathologies (mainly diabetes), polymedication or specialized care follow-up, with elderly population being the most represented in all cases. Most of the applications of the Dader Method in the hospital context highlights the difficulties presented by the Community Pharmacy to implement this method, which can be summarized as being a paid service, access to clinical and pharmacotherapeutic history, obtaining training and accreditation, as well as overall regulation by the relevant authorities and legislation.

CONFLICTS OF INTEREST

The authors declare that they have no competing interests.

ABBREVIATIONS

DRP: Drug-Related Problems; GDP: Gross Domestic Product; NOM: Negative Outcomes related to Medicines; PPS: Professional Pharmaceutical Services; PTF: Pharmacotherapeutic Follow-up; SJR: SCImago Journal & Country Rank; WHO: World Health Organization

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